

# RECOLLECTIONS OF WMC

*by A.H. PARBO*

## CONTENTS

### **BOOK ONE :     *AN OVERVIEW OF WMC     1933 - 1999***

	Page
Foreword	1
Acknowledgments	2
Structure of the Manuscript	3
Name of the Company	4
The First Forty One Years	5
The World Economy After World War II	9
Summary of 1974 - 1999	11
-     The Scene in 1974	11
-     Western Mining at June 1974	13
-     Overview of 1974 - 1999	17
-     Events 1974 - 1998	27
-     WMC Limited at December 1998	79
-     Update to April 1999	81
Productive Operations 1932 - 2002	83
Statistics	86
-     Metal Prices 1950 - 2001	87
-     Production and Financial Statistics 1969 - 2002	89
-     Australian Share Price Movements 1900 - 2000	93
-     WMC Share History 1933 - 2002	95

### **BOOK TWO: PART A. OPERATIONS AND PROJECTS**

#### **VOLUME ONE:             *THE GOLDEN THREAD***

Foreword	1
On The Golden Mile	7
Gold In Kalgoorlie	
Hidden Gold At Norseman	17
Central Norseman Gold Corporation, WA	
The Magnetic Mountain	27
Hill 50, WA	
The China Episode	33
Attempts At Gold Mining In China	
Rebirth Of St Ives	37
Gold at St Ives, WA	

Rewards On The Eastern Goldfields	43
Kalgoorlie Gold Operations, WA	
Lancefield's Landmark Mine	47
Gold Mining at Lancefield, WA	
WMC's Stawell Gift	49
Joint Venture with Central Norseman, Vic	
 The Boys In Brazil	 55
Gold Exploration and Mining In Brazil	
Gold In The Volcano	61
Joint Venture with Emperor Mines, Vatukoula, Fiji	
Gold From Tarnagulla	69
Gold Exploration, Vic	
Agnew's Golden Charm	71
Agnew (Leinster) Gold Operations, WA	
Gold In Texas Tar	75
Gold Exploration with a Difference, USA	
Yandan Gold	79
Gold Exploration, Qld	
Bendigo Revisited	81
Gold Exploration, Vic	
Liberian Adventures	85
Gold and Diamond Exploration in Liberia	
Consolidated Gold Fields	91
Possible Acquisition	
The Northern Venture	93
Goodall Gold Operation, NT	
North American Fiasco	<b>95</b>
Unsuccessful Operations in Canada & USA	
Olympic Gold	101
By-Product Gold, SA	
Gold In Frozen North	103
Meliadine, Canada	
Gold That Can't Be Detected	107
Haoma Mining NL, WA	
Great Central Mines	111
Possible Acquisition, WA	
Gold On The Silk Road	113
Gold Project in Zarmitan, Uzbekistan	
 <b>VOLUME TWO:</b>	 <b><i>THE SHINE OF NICKEL</i></b>
 Overview	 119
A Company Transformed	123



From Gold Miner to Diversified Minerals Producer	
Kambalda: Where It Started	125
Kambalda/St Ives Nickel Operations	
Making Metal At Kwinana	135
Kwinana Nickel Refinery, WA	
The Fiery Furnace At Kalgoorlie	139
Kalgoorlie Nickel Smelter	
Helping The Chinese	147
Assisting with Jinchuan Nickel Smelter	
Great Boulder	151
Kalgoorlie, WA	
The Windarra Joint Venture	155
Windarra Joint Venture, WA	
 Moving North: Adding Leinster	 161
Leinster Nickel Operations, WA	
Further North: Mt Keith	169
Mt Keith Nickel Operations, WA	
Nickel In Laterites	177
General & WMC Interest in Nickel Laterites	
Laterites In Eastern Goldfields	181
Sherritt Gordon & Resolute Joint Ventures, WA	
In Fidel's Domain	185
Pinares Joint Venture, Cuba	
Yakabindie For The Future	187
Yakabindie Nickel Deposit, WA	
To Market, To Market	189
The Marketing of Nickel	
The Pastoral Suite	201
Pastoral Properties in WA & SA	

**VOLUME THREE:                    *THE BRIGHTNESS OF ALUMINIUM***

Overview	203
Casual Encounters	209
Involvement 1974 – 1978	
Australian Chairman	213
Chairman of Alcoa of Australia 1978 – 1996	
In The Big Pond	225
Director of Aluminum Company of America	
Stepping Up?	229
WMC Shareholding in ACOA?	
Buying Back The Farm	231
Increasing WMC's Ownership of A/A	

World Our Oyster	233
The AWAC Agreement	
In Retrospect	235

### ***THE BURNISH OF COPPER***

Overview	237
The Search For Copper 1957 – 1975	239
In WA & SA	
Olympic Dam	241
Copper-Uranium-Gold-Silver, SA	
A Nifty Show	275
Copper Heap Leaching at Nifty, WA	
High Grade At Benambra	279
Copper-Zinc-Silver at Benambra, Vic	
In The Philippines	283
Copper at Tampakan, Mindanao	
Being Ernest In Queensland	291
Ernest Henry Copper Discovery, Qld	
The Polish Mazurka	295
Possible Joint Venture with KGHM near Lubin	
Good Decision In Zambia	301
Possible Interest in Konkola Deeps, Zambia	
In The Marketplace	303

### **VOLUME FOUR:                   *THE GLOW OF URANIUM***

Overview	305
The Nuclear Fuel Cycle	307
For And Against Uranium in Australia	309
Government Policy And Public Opinion	
The Find At Yeelirrie	335
Uranium At Yeelirrie, WA	
Wondering About Nabarlek	351
Possible WMC Involvement in Nabarlek, NT	
Enrichment	353
Uranium Enrichment Studies In Australia	
The Olympic Glow	357
Uranium At Olympic Dam, SA	
Acquisition Of Jabiluka	359
Possible WMC Involvement in Jabiluka, NT	
Radioactive Resting Places	361

Disposal Of Radioactive Waste	
The Marketing Of Uranium	363

### ***THE WHITE NESS OF TALC***

Overview	371
White Rock At Three Springs	375
Talc Mining At Three Springs, WA	
Into Europe	381
Milling In Amsterdam & Marketing	
Further To Finland	385
Half-share In Finnminerals OY	
To Mondo And Back	387
Mondo Minerals OY & Plüss Stauffer	

### ***THE FERTILE ROCK***

Overview	389
Fertilizer At Kwinana	391
Ammonium Sulphate	
West(ern) Meets South	395
The BH South Takeover	
Testing The Soil With Hi-Fert	399
Marketing Of High-Analysis Fertilizers	
Duchess Awakens	401
Queensland Fertilizer Project	

### ***THE TREASURE HUNT***

Overview	405
Terra Australis Explored	417
Minerals Exploration In Australia	
Beyond The Borders	425
Minerals Exploration Overseas	
Looking For ...	439
Search For Particular Minerals	
Logbook 1992 – 1999	445

### ***DISCONTINUED BUSINESSES***

Bogged In The Sands	447
Mineral Sands At Jurien Bay, WA	
Delving Into Oil And Gas	453
Petroleum Exploration & Production in Australia & USA	
Gas To The Goldfields	471
Goldfields Gas Transmission Joint Venture, WA	

### ***DISCONTINUED PROJECTS***

Frustrations At Hail Creek	475
Hail Creek Coal	
Kingston Drained	483
Kingston Brown Coal	
The Pilbara Punt	485
Coal In The Pilbara	
Ilmenite Upgrading	487
Discussions With Mitsubishi Chemical Industries	
The Titanium Temptation	489
Possible Joint Venture With General Dynamics	
Armour For The Army	491
Silicon Carbide Tiles	
Chromium Around The World	493
Eyeing Iron Ore	497
- Background	
- Geraldton Operations Joint Venture (GOVJ)	
- Robe River Limited	
- Efforts in Mid-1990s	
- Overview	
- CAEMI	
- CVRD	
- North Ltd	
Some Odd Ones	507

**VOLUME FIVE:                   *PART B. THE TROUBLES***

Overview	509
The Seabright Saga	511
Court Cases About Seabright Resources Inc in Nova Scotia	
Ernest Henry	527
Court Case with Savage Exploration Pty Ltd	
Lady Not So Bountiful	541
Court Case Between Consolidated Exploration & Ord Minnett	

**VOLUME SIX:                   *PART C. CORPORATE ACTIVITIES***

Part I	
Corporate Governance	545
Corporate Environment	563
Corporate Philosophy	577
Corporate Alliances	585
Global Issues	595

Management	605
Risk Management	641
Employee Relations	647

**VOLUME SEVEN:    *PART C. CORPORATE ACTIVITIES***

**Part II**

Shareholder Relations	675
Government Relations	683
Community Relations	703
Aboriginal Relations and Native Title	711
Safety and Health	725
Environmental Care	731
Technology	737
Venture Capital	745
WMC Representation in Japan	751

**VOLUME EIGHT:                    *PART D. EPILOGUE***

Looking Back	753
Minerals And The Future	759
Difficulties Of Historical Comparisons	769
The Recording Of History	771
WMC Historical Records	773
<i>Index (to be prepared)</i>	775

**BOOK THREE**

***APPENDICES***

**VOLUME ONE**

Appendix I:	A Bibliography of Works on WMC Group History (Published and Unpublished)
Appendix II:	Directors, Alternate Directors, Secretaries, and Assistant Secretaries
	of WMC, WMCH, and WMC Limited 1933 to 1999
Appendix III:	WMC Capital

Appendix IV:	WMC Market Value and Share Price 1933 to 1998
Appendix V:	WMC Production 1933 to 2001
Appendix VI:	WMC Financial Results 1934 to 1998
Appendix VII:	WMC Exploration Expenditure and Discoveries
Appendix VIII:	WMC Group Employees and Contractors 1981 to 2000
Appendix IX:	WMC Acronyms
Appendix X:	WMC Organisation and Management
Appendix XI:	WMC Safety and Health Chronology of Major Corporate Activities
Appendix XII:	WMC Group Historical Corporate Structure (Simplified)

## **VOLUME TWO**

Appendix XVI:	Consumer Price Index 1974 to 1999 Australia and USA
Appendix XVII:	\$A/\$US Exchange Rate 1971 to 1997 and \$US Commodity Price
	Index 1984 to 1998
Appendix XVIII:	World Production, Consumption and Price of Nickel 1900 to 1998
Appendix XIX:	World Consumption and Price of Aluminium 1900 to 1998
Appendix XX:	Gold Chronology and Price of Gold 1946 to 1998
Appendix XXI:	World Consumption and Price of Copper 1900 to 1998
Appendix XXII:	Uranium Spot Price 1970 to 1992
Appendix XXIII:	Silver, Lead, Zinc Prices 1950 to 2001
Appendix XXIV:	Various Metal Prices
Appendix XXV:	Australian Population 1963-64 to 1999-2000
Appendix XXVI:	Australian Unemployment Rate 1961 to 2000
Appendix XXVII:	The Australian Economy 1960 to 2001
Appendix XXVIII:	Australian Gold Production 1851 to 2001
Appendix XXIX:	Accident Statistics – WA Mines
Appendix XXX:	World Nickel Laterite Producers 1997
Appendix XXXI:	Influences on the Gold Mining Industry in Australia by G M Ralph
Appendix XXXII:	Dispute with Broken Hill South Ltd in 1971
Appendix XXXIII:	Marketing in WMC, With Particular Reference to Olympic Dam
	By Dr I J Duncan

10 March 2009

# **BOOK ONE**

## ***AN OVERVIEW OF WMC***

***1933 - 1999***

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## ***AN OVERVIEW OF WMC***

### ***1933 - 1999***

## **CONTENTS**

	<b>Page</b>
<b>Foreword</b>	<b>1</b>
<b>Acknowledgments</b>	<b>2</b>
<b>Structure of the Manuscript</b>	<b>3</b>
<b>Name of the Company</b>	<b>4</b>
<b>The First Forty One Years</b>	<b>5</b>
<b>The World Economy After World War II</b>	<b>9</b>
<b>Summary of 1974 - 1999</b>	<b>11</b>
- The Scene in 1974	11
- Western Mining at June 1974	13
- Overview of 1974 - 1999	17
- Events 1974 - 1998	27
- WMC Limited at December 1998	79
- Update to April 1999	81
<b>Productive Operations 1932 - 2002</b>	<b>83</b>
<b>Statistics</b>	<b>86</b>
- Metal Prices 1950 - 2001	87
- Production and Financial Statistics 1969 - 2002	89
- Australian Share Price Movements 1900 - 2000	93
- WMC Share History 1933 - 2002	95



## ***FOREWORD***

My predecessor as Chairman of Western Mining, Sir Lindesay Clark, gave his book *Built On Gold* the subtitle 'Recollections of Western Mining'. The story covered the time from the formation of the Company in 1933 until his retirement as Chairman in 1974.

This manuscript, while not a book, is the sequel to Sir Lindesay's, being a summary of the main events and my personal recollections of Western Mining during the nearly twenty five years from when I succeeded Sir Lindesay in October 1974 until the time I retired in April 1999.

Starting out thinking of a book, it was initially intended to be completed by the end of 1995. It soon became apparent that my ongoing duties as Chairman and other commitments were not conducive to reflective writing and, in any case, it was not possible to publish a meaningful book while I was still active in the Company. After having retired, I realised that even then considerable time had to pass before some matters could be made public. This led to the conclusion that the aim in the first instance should be to record an account of the happenings as I saw them, without restrictions of space or consideration of what could or could not be said in public.

The objective has been to establish a record of the events, to include information which is unlikely to be available elsewhere, and to express my personal views where appropriate. For some of the events described I am the only person still around who knows what happened. Other people still with us have knowledge of other events, but are unlikely to write about them.

The result is a manuscript which is too long, editorially inconsistent, and inappropriate to be published as is. Eventually an abbreviated and edited version could be published, but this is not important. What is important is that there should be a record.

The description which follows is as factual as records and memory can make it. This is important because I have already heard versions of some of the events which are quite inaccurate. There are no doubt omissions and errors; for these I accept responsibility. The interpretations and the opinions expressed are mine. Others may have different views.

One day, I hope, a history of WMC will be written. During my time with the Company I encouraged the preservation of historical records and the recording of the reminiscences of people in the organisation, to make the task of future historians easier. Hopefully, Sir Lindesay's and my recollections will be helpful also.

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***A.H. Parbo***

***22 December 2003***

## **ACKNOWLEDGMENTS**

Gilbert M Ralph MBE retired from WMC in 1994. During his last several years with the Company he was, in addition to his direct duties, very active in preserving, gathering, collating, and publishing historical information. He assisted materially with the recording and publishing of Sir Lindesay's recollections in *Built on Gold* and has himself published numerous papers on aspects of WMC history. Other, unpublished, papers by him are deposited in the *Group Historical Information Collection* which he initiated and organised.

Since retirement Gilbert has continued part time as Consultant Group Historian. He has generously permitted me to use his writings in the Group Historical Information (GHI) Collection and I have done so freely, without particular reference except for word for word quotations or where I have borrowed extensively. Gilbert has also provided data, information, suggestions, and assistance as the writing has progressed.

In addition to the GHI Collection Gilbert has also maintained a *Group Historical Photographic Collection* which contains hundreds of photographs of places and events recorded in this manuscript.

I am greatly in his debt and acknowledge it gratefully. It would not be too much to say that without Gilbert's input this manuscript would not have been written.

I am equally grateful to my assistant of 16 years, Mrs Barbara Giles, who typed, collated, and generally assisted with the many drafts and changes during the writing of this manuscript. She has done so in her usual energetic, cheerful and very competent manner which has helped greatly in what has been at times a laborious task. She has made many useful suggestions and has been a wizard in finding information on the internet for the more general background sections and appendices.

A number of ex-WMC people have helped with recalling the events in which they were involved and checking and correcting the relevant drafts. Kym Saville, in particular, has been very helpful. Colin Wise contributed to the chapter on The Troubles. Various people have assisted with several other episodes. I thank them all.

Finally, I appreciate WMC having provided me after my retirement, until the end of 2003, with an office and the continued services of Barbara as well as access to WMC records and personnel, which has made the writing possible.

## ***STRUCTURE OF THE MANUSCRIPT***

**Book One** is an overview of WMC from its formation in March 1933 to the Annual General Meeting in April, 1999. The reader interested only in a brief historical sketch of WMC can stop at the end of Book One.

**Book Two** is a more detailed description of, and commentary on, the various operations, projects and corporate activities during 1974-1999.

**Book Three** contains Epilogue and Appendices.

In addition, Gilbert M Ralph has compiled a separate volume of biographical information on hundreds of people in WMC, including most of those referred to in this manuscript. Gilbert's work, *Biographical Sketches of Some WMC People* complements this manuscript.

## ***NAME OF THE COMPANY***

The name of the principal company changed twice between its incorporation as Western Mining Corporation Ltd on 2 March 1933 and April 1999.

Following the takeover of BH South Limited in 1979-80 it was decided for legal, taxation, and accounting reasons to restructure the Company. As a prelude to this Westminer Investments Pty Ltd (which had been formed in April 1970) changed from a proprietary status to a public company and its name became Westminer Investments Ltd. Then, in readiness for the corporate restructure, Westminer Investments changed its name to Western Mining Corporation Holdings Limited (WMCH) on 13 July 1979. At the time investments held included Great Boulder Holdings, Central Norseman Gold Corporation, WMC Engineering Services Pty Ltd (WES), WMC Mineral Sands, Roxby Mining Corporation, a few overseas subsidiaries and the minority interests in Hill 50 Gold Mine NL, Gold Mines of Kalgoorlie Ltd (GMK), Kalgoorlie Lake View Pty Ltd (KLV), and Alcoa of Australia Ltd.

A Scheme of Arrangement was put to the shareholders (and the Stock Exchange) and was duly approved by them and by the Supreme Court. The arrangements took effect on 19 November 1979. Western Mining Corporation (WMC) became a wholly owned subsidiary of WMCH. Shareholders received an equivalent number of shares in WMCH and their shares in WMC were cancelled. WMCH shares were listed on 17 January 1980. This restructuring resulted in most of the wholly owned operations being owned by the subsidiary WMC and the investments by WMCH.

At the Annual General Meeting in Melbourne on 16 November 1995 the name of Western Mining Corporation Holdings Ltd was changed to WMC Limited. The reasons were that the Company's activities had expanded well beyond mining into smelting and refining and were about to include fertilizer manufacture, and the word 'mining' had acquired an undesirable image (the Australian Mining Industry Council had changed its name to Minerals Council of Australia). Also, the name was too long for the Australian Stock Exchange and the media; the Company had been commonly referred to as WMC for a long time, including on its own logo. The name of the fully owned subsidiary Western Mining Corporation Ltd was changed at the same time to WMC Resources Ltd.

There were two incidents related to this name change.

When application was made for the name 'WMC Limited' to be registered, it was found that there was already a company WMC Pty Ltd registered in South Australia, owned by a farmer with these initials on Kangaroo Island. He was not interested in giving up the name until WMC generosity persuaded him to do so in 1995.

Meanwhile, a small exploration and mining company in Western Australia, observing the name change, applied for and was permitted to change its name to Western Mining Company Ltd and began to be referred to in the media as 'Western Mining'. The Company applied to the Court showing evidence that Western Mining Corporation had been for more than 60 years commonly referred to as Western Mining, and the small company was obliged to revert to its former name.

In this manuscript 'Western Mining' and 'WMC' are used interchangeably to denote the principal company.

A further change has taken place since then. In December 2002 WMC Ltd demerged into two companies: Alumina Limited, which holds the 40% interest in Alcoa World Alumina and Chemicals (AWAC), and WMC Resources Limited which holds the other interests. This is another story.

## ***THE FIRST FORTY ONE YEARS***

Sir Lindesay Clark's book *Built on Gold* is a more detailed account of the first forty one years of what was WMC Limited. Other published and unpublished works are listed in Book Three, *Appendix 1*. The following is a brief summary of that period as background for the events during the next twenty five years, from 1974 to 1999.

Throughout the forty one years public opinion, the community and governments strongly supported and encouraged minerals development.

### **Twenty Years of Gold Only**

Western Mining Corporation Limited (WMC) was formed on 2 March 1933 to take over and manage the Western Australian interests of Gold Mines of Australia Limited (GMA), which had been incorporated in April 1930. Both companies subsequently became subsidiaries of Gold Exploration and Finance Company of Australia Ltd (GEFCA), formed in London in July 1934. The rationale for establishing these companies was to take advantage of the likely devaluation of the pound sterling, equivalent to an increase in the price of gold in the sterling area which included Australia. The business of all the companies was gold exploration and production in Australia.

Gold mining profits and dividends were taxed in England, but not in Australia. In 1949 the domicile of the Group was therefore transferred to Australia, Western Mining taking over its parent GEFCA and becoming the principal Company in the Group. GMA became a subsidiary of WMC.

Gold exploration and mining remained the Group's sole business as a matter of policy for the first twenty years, until 1953. Gold was produced in Queensland at Mt Coolon, in Western Australia at Triton, Norseman, Cox's Find, Kalgoorlie, Yilganie, Coolgardie and Bullfinch, and in Victoria at Bendigo, Woods Point, Newstead, and Amphitheatre. Exploration was carried out at these and many other locations within Australia. The Company was not involved in minerals exploration outside Australia until 1969.

In the early 1950s there was a very high rate of inflation in Australia, nearly 15% in 1952, while the price of gold was held fixed by international government fiat. The economic outlook for gold mining in Australia was therefore clouded. The Federal Government in 1954 introduced a subsidy (£4.0.0 or \$8.00 per ounce) for higher cost producers in an effort to maintain in operation mines supporting substantial population centres. It was increased to £6.0.0 (or \$12.00) per ounce in December 1971. The subsidy scheme was terminated in 1974, after the price of gold had been freed in 1972 and had risen substantially.

### **Diversification**

In view of the then uncertain future of gold mining, the Board of Western Mining in 1953 decided to diversify into minerals other than gold. The change of policy was announced in the Chairman's speech at the Annual General Meeting.

This new policy brought a number of successes in the 1960s.

The Company acquired a half-interest in a talc mine at Three Springs in Western Australia in 1960. Western Mining's exploration teams proved the existence of extensive bauxite deposits in the Darling

Range near Perth, Western Australia and these became the basis of the integrated aluminium producer, Alcoa of Australia Limited, in 1961. Further exploration successes were the discovery of iron ore at Koolanooka in 1961 from which the first commercial shipment of Western Australian iron ore left for Japan in 1966 and the discovery of nickel sulphides at Kambalda, south of Kalgoorlie, in January 1966.

## **Transformation of WMC**

The proving of bauxite in the Darling Range and the Kambalda nickel discovery had profound long term effects on Western Mining.

While the full importance of the Alcoa of Australia development did not become apparent until the late 1980s, the entry into the nickel industry transformed the Company overnight financially and expanded its activities from exploration, mining and ore dressing into smelting and refining of metals and international marketing of the products.

The Kambalda discovery occurred while there was a world shortage of nickel. This was recognised by the Board as an unusually favourable opportunity to enter this industry, which had been traditionally dominated by the International Nickel Company (INCO) of Canada. With a market share of as much as 80% in earlier times and still 65% in the mid-1960s, INCO decided the price of nickel by setting the so-called 'producer price', which was then followed by the other producers. Customers would be very careful not to offend INCO.

During the severe shortage of nickel in the late 1960s INCO lost its grip on the market. While the producer price system continued until INCO ceased publishing its prices in 1977, customers welcomed the entry of new producers such as Western Mining. In 1979 nickel started to be quoted on the London Metal Exchange. INCO's market share diminished steadily over the years to about 20% in 1999.

The Board was well aware that markets for minerals are cyclic and that the shortage of nickel and therefore the favourable conditions for WMC's entry into the business would not last long. It therefore decided that getting into production in the shortest possible time was the highest priority and instructed management accordingly. It also decided that becoming a producer of nickel metal and therefore gaining direct access to customers at the earliest possible time was of great importance.

## **A Running Start**

The first drill intersection of nickel at Kambalda was made on 28 January 1966. Mine development and construction of surface plant and services commenced in April 1966. The project got a running start by disregarding all normal planning and expenditure approval procedures, making full use of the proximity of Kambalda to the Group's gold operations in Kalgoorlie and of the availability of secondhand equipment, and having the great advantage of no delays due to government or community procedures. The capital cost up to the time production started was \$5.9<sup>1)</sup> million. The first shipment of nickel concentrate left the Port of Esperance for Canada on 2 August 1967.

Design and construction of the Kwinana Refinery to produce metal direct from concentrates was announced in October 1967. The first metal was produced in May 1970, at a capital cost up to that time of \$36.4 million.

Subsequently it was decided, mainly for marketing reasons, to add a nickel smelter to the complex. The

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<sup>1)</sup> Money values have, of course, changed greatly since then. The amounts many years ago, substantial at the time, appear minuscule today (in 2003). For a fuller discussion of the problem, see *Difficulties of Historical Comparisons* in Book Two, *EPILOGUE AND INDEX*.

first concentrate was fed into the K algoorlie Nickel Smelter in December 1972. The capital cost up to that time was \$16.3 million.

All facilities were constructed in the expectation that the nickel operations would continue to grow. This, in fact, happened. At June 1974, all operations were still being expanded.

### **The First Downturn**

The Board's decision to get into production quickly, while the market was good, had by then been proven wise. The world market moved into a surplus at the end of 1970 and WMC was experiencing its first downturn in the nickel industry. Many more ups and downs lay ahead.





## ***THE WORLD ECONOMY AFTER WORLD WAR II***

The Bretton Woods meeting of 45 nations in 1944 to consider the post-war international monetary system had in mind the problems experienced after World War I: financial crises, competitive devaluations, hyperinflations, and trade restrictions for balance of payments reasons. To eliminate these problems the meeting agreed to link the US dollar to gold at 35 dollars an ounce and other currencies to the dollar, ending competitive currency devaluations although the parity was adjustable in case of 'fundamental disequilibrium'. This placed a limit on inflationary policies. The International Monetary Fund was established as referee and to extend financial support to countries when needed to ride out temporary difficulties.

Subsequently the International Bank for Reconstruction and Development was established to make long term funding available for re-building war damage and developing the economic potential of nations. The General Agreement on Tariffs and Trade (GATT) established rules for international trade and the reduction of discrimination and trade barriers.

Against this background, the political and economic environment within the developed world was very favourable after World War II. The experience of the Great Depression, which was finally ended by preparations for the war, was fresh in policy-makers' minds and the three main conclusions were:

- unemployment is the key issue to avoid
- the remedy is to encourage demand
- governments can create demand by loose monetary policy and deficit spending.

The risk of inflation was considered the lesser of the two evils.

In 1946 the average Gross National Product (GNP) per capita in the three largest European economies - Britain, France, and Germany - had fallen to 75% of the pre-war level. By 1949 it had recovered to the pre-war level, and by 1951 it was more than 10% above the pre-war level.

The Marshall Plan in 1954 to finance reconstruction of war-damaged Europe added greatly to improving post-war productivity and economic growth. Labour peace was a potential pre-condition to Marshall Aid and the unions in Germany agreed to share in productivity growth, thus minimising inflation. The ample supply of labour from refugees assisted in this; in 1960 unemployment in Germany was 1%.

Output per capita soared and between 1953 and 1973 the European Gross Domestic Product (GDP) grew by an astonishing 4.8% per year. The investment share was nearly twice as high as it had been before World War II, or was again to be after 1972.

The reduction of unemployment took place without inflationary pressure; the average inflation rate in Germany from 1949 to 1970 was 1.7% per year.

As time passed the memory of the Great Depression and governments' determination to fight unemployment even at the cost of inflation and the ability of the economic system to produce high growth without high inflation diminished. The Korean and Vietnam Wars in the 1950s and 1960s-1970s respectively added to the inflationary impetus. In USA, Democratic governments tended to prefer relatively high inflation and low unemployment while Republican governments tended to the opposite, but by historical standards both inflation and unemployment were low.

The series of oil price increases in the early 1970s upset this relatively balanced environment. In 1973-74 there was an economic recession and a stock market downturn second only to the Great Depression in the 1930s. The stock market declined by 60% and inflation reached double digits, largely caused by the oil price increases.

What happened after that, with particular reference to Western Mining's business, is described in the following chapters.

## ***SUMMARY OF 1974 - 1999***

### **THE SCENE IN 1974**

When Sir Lindesay Clark retired as the Chairman of Western Mining Corporation at the end of the Annual General Meeting on 17 October 1974 the world was reeling from the major increases in the price of oil imposed by the Organisation of Petroleum Exporting Countries (OPEC). At US\$2.80 per barrel before the Arab-Israeli War of 1973, the price nearly doubled to US\$5.12 per barrel in mid-October 1973 and more than doubled again to US\$11.65 per barrel by the end of 1973, an increase of 387% in eight weeks.

The result was worldwide inflation, with dramatic increases in the cost of fuel, food, and materials. Economic growth in most industrialised countries slowed to near zero. The Dow Jones index fell to 663, its lowest level since the 1970 recession. The net profits of 30 of the world's largest oil companies, however, increased by an average of 93% during the first half of 1974. Shortage of petrol inconvenienced the car-dependent Americans.

The Club of Rome had issued in 1972 its report *Limits to Growth*, predicting that the world would rapidly run out of resources, including minerals. The oil price increases, although due to cartel action and not a fundamental shortage of petroleum, were taken by many to validate these predictions.

The world population reached 3782 million.

There were major changes in the world political scene in 1974. Golda Meir, the Prime Minister of Israel, stepped down. West German Chancellor Willy Brandt, British Prime Minister Edward Heath, and US President Richard Nixon resigned. Several White House aides were convicted and sentenced to jail in the Watergate affair. The President of Argentina, Juan Peron, was succeeded in office by his wife.

Aleksandr Solzhenitsyn was stripped of his Soviet citizenship and exiled. *The Gulag Archipelago* was published.

Clearing of the Suez Canal, closed since the Arab-Israeli War in 1967, began.

A US Air Force SR-71 jet flew from New York to London in 1 hour 55 minutes and 42 seconds, reaching speeds of 2000 mph (3220 kph).

American scientists detected a new subatomic particle, the psi or J meson, interpreted as a state composed of a charmed quark and a charmed antiquark.

Muhammad Ali became the heavyweight boxing champion of the world. Patricia Hearst, kidnapped heiress, announced that she had decided to join her captors, the Symbionese Liberation Army. 'Streaking' became a fad in the United States. The American yacht *Courageous* defeated the Australian yacht *Southern Cross* to retain America's Cup. West Germany won the World Cup Soccer championship.

In Australia the Whitlam Labor Government, which had won office in 1972 after 23 years of a Liberal-Country Party government, was re-elected, holding 67 of the 126 seats in the House of Representatives. In the Senate, the balance of power was held by two independents.

Australia ratified the World Heritage Convention. The *Environmental Protection Act* was passed, requiring environmental impact statements for new development projects. The Federal Government took over the financing of Universities and Colleges of Adult Education, abolishing fees.

Unemployment was 2.2%. Inflation was 14.4%, the average weekly wage \$118, the current account deficit for the year just over \$2 billion, and the Australian Government's overseas debt \$14.3 billion.

The Australian dollar was revalued in the first half of the year but devalued by 12% from US\$1.45 to US\$1.31 in September. The Builders Labourers Federation was deregistered, Bankcard was introduced and Post Offices were closed on Saturdays; Saturday mail deliveries ceased. Cyclone Tracy destroyed Darwin. 'Think Big' won the Melbourne Cup.

## WESTERN MINING AT JUNE 1974

At the end of the 1973-74 financial year in June 1974 Western Mining Corporation was the eighth largest company by market value (\$147 million) listed on the Australian Stock Exchanges, after BHP, CRA, MIM, Bougainville Copper, Hamersley Iron, CSR, and Myer Emporium, and the sixth largest minerals company.

There were 181.6 million shares issued to 76,000 shareholders. Total assets were \$322 million, shareholders' funds \$188 million and borrowings \$57 million.

The consolidated net profit was \$16 million, marginally lower than in the previous year. The return on shareholders' funds was 8.5%. Dividends of \$14.5 million were declared.

The Chairman at the Annual General Meeting said of the financial result:

This unsatisfactory result ....., was caused partly by inflated costs but mostly by adverse changes in the parity of the Australian dollar relative to the US dollar. These resulted in the price of nickel in Australian currency being lower throughout the year than in the preceding two years notwithstanding a 8% increase in the nickel price in January 1974. A further price increase of 14% in June, 1974, was too late to affect the year's result.'

WMC at June 1974 was a nickel producer, with minor interests in aluminium, gold, and talc, a terminating iron ore operation, and an ongoing greenfields exploration effort for minerals, oil and gas. Out of the total revenue of \$109 million for the year, \$102 million came from nickel.

The production for the financial year was 38,000 tonnes nickel (sales were 44,000 tonnes), 193,000 ounces gold, 582,000 tonnes iron ore and 38,000 tonnes talc. Through its equity in Alcoa of Australia Ltd, WMC also had, in effect, a 20% share in its production of alumina and aluminium metal but it is extraordinary that Alcoa did not report its production - only financial results. In 1974 (Alcoa reported on a calendar year basis) Alcoa paid a dividend of \$5 million of which WMC share was \$1 million, so it did not make a substantial contribution to WMC.

Capital expenditure in 1973-74 was \$47 million and exploration expenditure \$4 million. At 18 June 1974 (the end of the financial year) a total of \$237 million had been spent on establishing the nickel facilities. At year end there were 4257 employees.

Nickel production by WMC during 1973-74 was the highest since it began in 1967 and amounted to 8% of world production. In the Annual Report the Chairman commented:

'World nickel consumption continued to increase and, during the last four months of the financial year demand exceeded supply.'

Production at Kambalda (fully owned) increased and the first concentrate was about to be produced from the Windarra Nickel Project in which WMC had acquired a 50% interest in December 1972. Nickel production by a joint venture between 43.4% owned Great Boulder Mines Limited and North Kalgurli Mines Limited continued from the Scotia Mine and began at Carr Boyd Rocks.

Work was in progress to upgrade the fully owned Kalgoorlie Nickel Smelter to 35,000 tonnes of nickel in matte per annum and the fully owned Kwinana Nickel Refinery to 30,000 tonnes of metal per annum. Exploration at Kambalda defined the Long and Victor Shoots.

WMC's productive gold operations were Kalgoorlie Lake View Pty Ltd (21% interest) which in 1973-74 produced 162,000 ounces and Central Norseman Gold Corporation NL (50.48% interest) which produced 31,000 ounces. Rehabilitation of both operations, which had been on the verge of closure in the previous year, was under way. The increase in the price of gold in early 1973 had reversed the decision to close. Kalgoorlie Lake View had been formed in 1973 by merging the interests of Gold Mines of Kalgoorlie Ltd and Lake View and Star Ltd.

At the Annual General Meeting the Chairman commented:

'... it will take several years to make good the backlog of underground development to open up sufficient new ore and to replace worn out plant and equipment for normal operations to resume.'

The last shipment of iron ore from Koolanooka Hills (50% interest) left Geraldton for Japan on 22 July. Three Springs Talc (50% interest) continued in profitable operation. Commercial discussions continued regarding the Hail Creek Coal Project in Queensland, in which the Company had an option to take up a 25% interest. Technical work on the fully owned Yeelirrie Uranium Project in Western Australia, discovered in 1972, continued. An option was obtained to purchase a mineral sands deposit at Jurien Bay in Western Australia.

A 20% interest continued to be held in Alcoa of Australia which had refineries at Kwinana and Pinjarra capable of producing a total of 2.5 million tonnes of alumina per annum, an aluminium smelter and fabricating plant at Point Henry in Victoria, and a brown coal mine and power station at Anglesea in Victoria. Alcoa of Australia made a net profit of \$15.4 million in the calendar year 1974.

Minerals exploration continued in many parts of Australia and oil and gas exploration had started in the previous year. The Chairman commented:

'Although the current circumstances are in many respects unfavourable to new mineral developments, we are continuing with exploration at normal level in the belief that in the longer term conditions will improve.'

The Company's Head Office was at 360 Collins Street, Melbourne, the Operations Office in Perth, WA and the Exploration Division headquarters in Kalgoorlie, WA. There were nickel sales offices in London and Pittsburgh.

The Board consisted of six directors;

Chairman	Sir Lindesay Clark
Vice Chairman and Managing Director	A H Parbo
Executive Director (W.A.)	L C Brodie-Hall
	W D Brookes
Director of Administration	H O Clark
	Sir James Forrest
Company Secretary	S K Larsen

The senior management consisted of:

## In Melbourne Office:

Managing Director	A H Parbo
General Manager - Metals	D P McIntyre
General Manager - Fuel and Energy Minerals	E D J Stewart
Financial Controller	H S Amos

## In Perth Office:

Executive Director - WA	L C Brodie-Hall
General Manager - WA	K F Parry

## In Operations:

Exploration Division, Kalgoorlie: Exploration Manager and Chief Geologist	R Woodall
Kambalda Nickel Operations, Kambalda: Resident Manager	J E L Manners
Kwinana Nickel Refinery, Kwinana: Resident Manager	J K Copping
Kalgoorlie Nickel Smelter, Kalgoorlie: Resident Manager	C J D Williams
Kalgoorlie Lake View Pty Ltd, Kalgoorlie: General Manager	J B Oliver
Central Norseman Gold Corporation NL, Norseman: Resident Manager	L E Quan
Geraldton Operations Joint Venture, Koolanooka Hills: Resident Manager	F E Gray
Three Springs Talc Pty Ltd, Three Springs: Manager	P N Johnston
Hail Creek Associates, Brisbane: General Manager	K A Lamin





## OVERVIEW 1974 TO 1999

Between 1974 and 1999 WMC became the third largest listed company (after BHP and Rio Tinto) in the Australian minerals industry, with assets in December 1998 of over \$9 billion and an average market value during 1998 of \$6.55 billion.

In addition to nickel, gold, aluminium and talc the Company became a producer of copper, uranium, oil, and gas in Australia. Efforts to establish gold and copper production overseas in the late 1980s were unsuccessful, but there was substantial oil and gas production in USA from 1988 to 1997 and in 1995 WMC became a 40% partner in Alcoa World Alumina and Chemicals (AWAC), with interests throughout the world.

Minerals and petroleum exploration continued in Australia and began overseas in 1979. Overseas exploration intensified in late 1980s and became a major activity in the 1990s. The major discoveries were, however, in Australia: copper-uranium at Olympic Dam in SA in 1975 and the gold developments at St Ives in WA in the 1980s.

The business environment in Australia and elsewhere changed greatly during the period. The minerals industry was skilfully targeted by extreme environmentalists and the long standing community support and encouragement for minerals developments was replaced by antagonism. The Australian economy was freed up; the Federal Labor Government introduced 'economic rationalism' in the 1980s and floated the Australian dollar in 1983. Trade union power diminished. On the world scene the Soviet Union broke up in 1991 and became economically a part of the world markets. Communist China increasingly introduced a market system and entered world trade. Globalisation reduced the importance of national boundaries. There were revolutionary improvements in information and telecommunications technology. At the same time in Australia legal litigation grew, legislative regulation and bureaucratic procedures multiplied, Aboriginal land rights complicated land tenure and corporate governance came under criticism and attack. As a result of all these influences and as people within the Company changed, corporate and management practices within WMC changed also.

The broad overview in this section is followed by a year-by-year description of events in 1974-1998 and an update to April 1999. Book Two deals more comprehensively with individual operations, projects and issues.

### Nickel

Nickel markets and prices were subject to many ups and downs. There were several periods when output was reduced, but over the twenty four years from 1974-1998 WMC's nickel production grew from 38,000 tonnes in 1974 to 120,000 tonnes in calendar year 1998.

World nickel production exceeded demand from 1974 onwards and stocks continued to grow to about five months' consumption by 1977. INCO and FALCO cut production in 1977-78. WMC reduced production by about one third. The Scotia and Carr Boyd mines, placed on care and maintenance in 1977, were subsequently sold. No nickel was produced at Windarra between June 1978 and May 1981.

WMC accumulated very substantial metal stocks after a decision in 1977-78 not to sell at below a minimum price.

The Canadian producers also cut back production substantially in 1978, but excess stocks maintained oversupply and prices were well below US\$2.00 per lb at the end of 1978. WMC was seriously considering taking a 25% joint venture partner in its integrated nickel operations. Discussions with BP in 1978 terminated when it was found that, instead of a substantial premium, BP expected to enter such a venture at a discount.

Consumption increased and prices improved in 1979. The policy regarding nickel operations was to consolidate output at 40,000 tonnes per annum of product, approx 25,000 tonnes as metal and 15,000 tonnes as matte. Laterites in the district were investigated as a possible basis for an eventual expansion of production.

Kambalda was the mainstay of ore production until the early 1990s. Leases purchased in the Widgiemooltha area in the early 1980s became a part of Kambalda Nickel Operations and at about the same time nickel mines were opened up in the St Ives area south of Lake Lefroy. The Windarra Joint Venture became wholly owned by WMC in 1983.

In 1989-90 WMC purchased Agnew Mining from BP and MIM and brought the then dormant property back into production. In 1990 WMC embarked on a \$800 million upgrading and expansion of its nickel operations including an upgrade at Kambalda and Leinster, acquisition and bringing into production of the Mt Keith nickel deposit north of Leinster, rebuilding and expansion of the Kalgoorlie Nickel Smelter and upgrading of the Kwinana Nickel Refinery. The initial intention to increase nickel production from 35,000 to 65,000 tpa was increased further to 93,000 tpa after the Mt Keith deposit was acquired in 1992-93.

On the downside, nickel production at Windarra ceased in 1990-91 when the orebodies had been exhausted.

On 1 December 1992 it was announced that, following the substantial decline in nickel prices from an average of US\$3.38 per lb in the first half of 1992 to as low as US\$2.39 the Nickel Division was operating at a loss, with no improvement in sight. Long term expansion and cost reduction plans to lower total costs below US\$2.50 per lb would continue, but output would be reduced. Nickel Division operations would remain under review.

In 1994 WMC signed a *Memorandum of Understanding* with the Cuban Government regarding the development of the Pinares de Mayari West laterite nickel deposit in eastern Cuba in a joint venture, with WMC holding a 65% interest. In April 1999 work on this project was continuing.

In 1996 natural gas became available to the operations at Mt Keith, Leinster, the Kalgoorlie Nickel Smelter and Kambalda from the newly completed Goldfields Gas Transmission Pipeline initiated and managed by WMC. Spur lines were completed to the operations and a 40 megawatt gas turbine installed at each of the four sites, at a cost of \$120 million. In late 1998 WMC's interests in the pipeline, the spur lines and the turbines were sold to the Southern Cross Pipelines Australia Pty Ltd consortium to free capital for the Olympic Dam expansion.

The nickel expansion was complete by 1995-96 when production reached 94,805 tonnes. Production at Mt Keith was further upgraded and WMC nickel output was a record 113,959 tonnes in the year to June 1998.

During the market downturn and extremely low prices of nickel in 1997-98 a joint venture partner in all the nickel operations was again considered, this time Sumitomo Metal Mining who would contribute

their nickel operations and US\$600 million cash for a 40% equity. In the event, Sumitomo were unable to raise the cash.

At December 1998 the WMC nickel production capacity was about 115,000 tpa, with smelting capacity at Kalgoorlie at 105,000 tpa and refining capacity at Kwinana at 67,000 tpa. For comparison, the initial refinery capacity in 1970 was 15,000 tpa and the initial smelting capacity in 1973 was 20,000 tpa.

## **Gold**

While there were many ups and downs in WMC's gold business during this period, Group production doubled to 14,617,700 ounces from 1974 to end 1998 compared with 7,472,640 ounces from 1933 to 1973.

In Kalgoorlie, following amalgamation of Gold Mines of Kalgoorlie with Lake View and Star Limited in 1973, a near-shutdown in 1975 and a partnership with Homestake Mining Company (Kalgoorlie Mining Associates) in 1976, WMC's involvement continued until 1987 when all its interests on the Golden Mile were sold for \$268 million.

Production at Central Norseman Gold Corporation continued uninterrupted. After facing a shutdown in mid-1970s, a new ore source was discovered in oxidised ore in the Princess Royal area and the Company made record profits in the 1980s.

In 1974 WMC acquired a 37.9% interest in Hill 50 Gold Mine NL at Mt Magnet, subsequently became the Manager and resumed production in 1981. In 1988 a new treatment plant was built and in the following year Hill 50 became wholly owned by WMC, leading to further expansion of operations to become the second largest gold producer in the Group. In June 1997 Hill 50 was sold and WMC retired from the Mt Magnet area.

The discovery of several rich pockets of gold ore in the nickel mines at Kambalda in the latter part of the 1970s, a periodical downturn in the nickel industry at that time, and a rise in the price of gold prompted the installation of a gold plant at Kambalda in 1980. Discoveries followed in the old gold mining area of Paris-St Ives south of Kambalda. Production steadily climbed as a number of opencuts and underground mines were developed and in 1988 a new treatment plant began operating south of Lake Lefroy. Management of the gold operations was in June 1992 separated from Kambalda Nickel Operations to become St Ives Gold Mines - in 1999 the largest gold producer in the WMC Group.

Several small gold mines were developed in the 1980s in the Eastern Goldfields at Sand King, Lady Bountiful, Great Boulder, Siberia and Thiel Well and these were managed together under the name of Kalgoorlie Gold Operations. By 1989 they were either worked out or sold and Kalgoorlie Gold Operations was wound up. The economic working of these and many other oxidised gold ores was made possible by improvements in the cost of opencut mining and the development of the Carbon-In-Leach (CIL) and Carbon-In-Pulp (CIP) gold recovery processes.

The downturn in the nickel industry in the late 1970s prompted the management at Windarra Nickel Operations (WNP), north of Laverton, to search for gold in the vicinity of its temporarily closed nickel mine. This led to the reopening of the old Lancefield Gold Mine. It used some of the nickel treatment facilities at Windarra and remained in production until 1994.

WMC and Central Norseman Gold Corporation formed a 50/50 joint venture in 1979 to explore and later develop a gold mine at Stawell in Victoria. The Stawell Joint Venture came into production in August 1984. It was sold in 1992.

The Company's first overseas operating venture was in 1983 when WMC took an interest in, and management responsibility for Emperor Gold Mining Company's Vatukoula Mine in Fiji. The interest in the Vatukoula Joint Venture was sold in 1991.

The Windarra Nickel Project also initiated the reopening of the Emu (short for East Murchison United) Gold Mine near Agnew, which came into production in August 1986 after development of an opencut and building of a treatment plant. When WMC acquired the Agnew Nickel Mine and established Leinster Nickel Operations in January 1989, the nearby Emu Mine was absorbed and it became known as Leinster Gold Operations. Following a management re-arrangement in April 1994, it was renamed Agnew Gold Operations.

Another small opencut gold mine, named Goodall, began production in mid-1988 near Adelaide River in Northern Territory as a joint venture with W R Grace Australia Pty Ltd. It was worked out by 1992.

In 1988 four gold mines were acquired in Canada and the United States of America. These were all unsuccessful and were either sold or shut down by 1996.

In Brazil small opencut mines at Jenipapo (discovered by WMC) and Mara Rosa (purchased) came into production in 1989. Jenipapo was mined out by 1992 and Mara Rosa by 1996.

Gold was also won as a by-product of the nickel refining operations at Kwinana between 1988 and 1992 and was produced as a by-product from Olympic Dam Operations at Roxby Downs in South Australia beginning in 1988.

In addition to gold production, numerous gold exploration projects were pursued between 1974 and April 1999. A gold discovery of 23.7 million tonnes at 8.5 grams per tonne at what is known as the Wesmeg Project was being evaluated in April 1999 at Meliadine, near Rankin Inlet in northern Canada. WMC had a 56% interest. An agreement to develop a known gold orebody of 20 million tonnes at 10 grams/tonne at Zarmitan in Uzbekistan in a 50:50 joint venture with the Uzbekistan Government was nearing completion.

## **Aluminium**

Alcoa of Australia's alumina production capacity increased from 2.5 million tpa in December 1974 to 6.59 tpa in mid-1999. The Pinjarra Refinery was expanded and a new (third) refinery built at Wagerup. A third potline was added at the Point Henry Smelter in 1980 to increase the capacity from 90,000 tpa to 170,000 tpa and in 1979 it was decided to build a new 345,000 tpa smelter at Portland in Victoria. After difficulties with increases in the price of power and a downturn in world markets which led to two interruptions in construction, a Joint Venture with Alcoa a 45% owner and manager was formed in 1984 and the first stage of the smelter was commissioned in 1986. The second stage was commissioned in 1988.

Alcoa of Australia became very profitable beginning in 1988 and started to pay good dividends to shareholders. WMC's shareholding, 20% in 1974, was gradually increased to 48.25% in 1992 by buying shares from the other Australian shareholders. On 1 January 1975 The Aluminum Company of America and WMC pooled their alumina and aluminium chemicals interests in Alcoa World Alumina and Chemicals (AWAC), in which WMC acquired a 40% interest by contributing its shareholding in Alcoa of Australia and US\$360 million cash.

## **Copper**

The search for copper in Western Australia and South Australia over more than 20 years resulted in the discovery of a very large copper resource at Olympic Dam in South Australia in 1975. Production of copper and uranium, gold and silver co-products from the Olympic Dam Mine in a joint venture with BP Petroleum commenced 13 years later, in 1988. In 1993 WMC repurchased the BP interest and again became 100% owner of Olympic Dam. After several expansions, the output reached 200,000 tonnes of refined copper per annum in the year 2000. The project is capable of substantial further expansion

Of several other copper projects discovered or investigated, only the Nifty Project in the Great Sandy Desert in Western Australia became a producer in 1994. It was sold in 1998.

## **Uranium**

Uranium had been discovered by WMC at Yeelirrie in 1972. Politics intervened in its development. The Australian Labor Party, which had been pro-uranium, reversed its stance in 1977 and became strongly anti-uranium. The Federal Labor Government elected in 1983 withdrew permission to pursue sales contracts for Yeelirrie and the project was subsequently not granted development status. It has remained undeveloped.

Meanwhile, the Olympic Dam discovery contained uranium as well as copper and precious metals; it is the largest known single uranium resource in the world. In spite of anti-nuclear campaigns against the project and WMC, beginning in 1977, the Olympic Dam Project was granted development status by the Federal Labor Government in 1984 and commenced production in 1988. WMC became a significant uranium producer and supplier of yellowcake (uranium oxide) to electricity generating utilities throughout the world.

## **Fertilizers**

Ammonium sulphate produced as a by-product at the Kwinana Nickel Refinery was the only WMC interest in fertilizers until BH South Ltd was taken over in 1980. In the sharing out of BH South's assets between WMC and CRA the phosphate rock deposits in Queensland were allocated to WMC.

After an unsuccessful attempt in 1983-84 to develop a phosphate rock export business, production of high-analysis fertilizers at Phosphate Hill for the Australian and export markets was studied over the next twelve years. In December 1996 it was decided to construct at a capital cost of \$700 million a project to produce 1,000,000 tonnes per annum of di-ammonium and mono-ammonium phosphate. Construction was in progress in April 1999 and production was scheduled to commence at the end of 1999.

## **Talc**

After having bought a half-share in the Three Springs talc deposit in 1960, WMC became a 100% owner in 1987. In addition to supplying lump talc to customers in Europe and Japan it was decided to also become established as a producer of milled talc in Europe. Milling facilities in Amsterdam were acquired in 1990, improved, and commissioned in 1991. The entry into the market proved difficult against strong competition and the milling operations incurred losses for some years.

In May 1998 Plüss Stauffer, a privately owned Swiss-American calcium carbonate and other industrial minerals producer, processor and marketer and WMC merged their European talc activities with 50:50 owned Finnminerals Oy, which changed its name to Mondo Minerals Oy. WMC retained ownership of the talc deposit and mining operation at Three Springs. Mondo Minerals had talc sources in Australia, Norway, Finland, China and Egypt, technology centres in Finland and the Netherlands and processing facilities with a total capacity of 600,000 dry tonnes per annum in Finland, Sweden, Norway and the

Netherlands covering over 10% of the world market.

In April 1999 Mondo Minerals was modestly profitable. At Three Springs, a talc mill was under construction to produce milled talc for Australian and Asian customers.

## **Minerals Exploration**

From 1974 to early 1999 excellent exploration performance in the known mine areas continued. Ore reserves were maintained and often increased, both through extending the boundaries of known ore shoots and new discoveries.

After an involvement in New Zealand from 1969 to 1975 ExDiv's activities were limited to Australia until 1979. In the 1980s grassroots exploration activity was expanded to prospects outside Australia. After cautious and tentative steps in the first half of the decade, overseas exploration received a boost following the acquisitions in North America in 1987-88 and became the major exploration activity following the IMES (International Mineral Exploration Strategy) report in 1994.

There were two significant discoveries. At St Ives, where the existence of gold mineralisation was known, the achievement was somewhat similar to the bauxite in the Darling Range: the establishment of the great extent of it. The Ernest Henry copper-gold discovery in Queensland regrettably did not benefit WMC (see below). The Tampakan copper-gold discovery in the Philippines was made in this period but, while large, it was at April 1999 not yet clear whether it was an economic ore deposit. (In 2000 WMC decided to retire from Tampakan). There were also smaller discoveries in greenfields areas: copper-zinc at Benambra, copper at Nifty, gold at Jenipapo in Brazil and, close to the end of the period, gold at Meliadine in the Nunavut Territory (previously a part of the North-West Territories) of Canada. There were, however, no major discoveries after Olympic Dam in 1975 and gold at St Ives in the 1980s.

## **Oil and Gas Exploration and Production**

The Company continued oil and gas exploration onshore and offshore in Australia, offshore in Malaysia and New Zealand, and became an oil and gas producer. In Australia production started in 1984 from Eromanga Basin in Queensland and, after taking over Mesa Australia Limited, from Barrow Island and Saladin Field offshore WA, in 1987 and 1989 respectively.

A gas and condensate discovery at East Spar in the Carnarvon Basin in 1991-92 led to a decision in 1994-95 to develop it. This in turn led to the construction of the 1400 km long Goldfields Gas Transmission Pipeline in a joint venture with Normandy Mining and BHP Minerals.

Greenhill Petroleum Corporation (GPC) was formed in 1986 to pursue oil and gas exploration in the United States. Greenhill acquired a number of operating properties, onshore in New Mexico and West Texas and offshore in Louisiana, and enhanced these by re-development and further exploration. Production of oil and gas commenced in 1988-89.

With WMC's commitment to expansion of Olympic Dam, it was decided in 1996 that the Company was not able to finance both this expansion and the growth of the Petroleum Division into a significant producer. All petroleum properties and assets were sold in 1997. To partly finance Olympic Dam, WMC's equity in the Goldfields Gas transmission pipeline was sold in 1998.

## **Setbacks**

In contrast to the positive developments, between 1988 to 1994 the Company also experienced several setbacks.

The **mineral sands** operation at Jurien Bay in WA, purchased in 1975, encountered severe metallurgical problems and was terminated in 1979. None of the four operating mining properties purchased in **Canada** and **USA** in 1987-88 lived up to expectations. By 1996 all had been sold or shut down. A subsequent Court case in Nova Scotia between WMC and Seabright Resources resulted in judgement against WMC in 1993, upheld on Appeal in 1994. In addition to the financial loss, the resultant adverse publicity was very damaging. A Court case in 1993 regarding the **Ernest Henry** discovery in Queensland was settled out of Court. Besides paying damages and legal costs, WMC had to relinquish all claims to the discovery and, again, suffer much adverse publicity. Also in 1993, WMC contributed to an out of Court settlement in the **Lady Bountiful** case.

## Financial

While the comparison of production in 1974 and 1998 is a true measure of physical progress, financial comparisons must be adjusted for changes in money values. Even then, valid comparisons are difficult (see Book Two Part D, *EPILOGUE AND INDEX, Difficulties of Historical Comparisons*). Also, in a cyclical industry, a snapshot at any given time may give a biased impression.

With these caveats, the financial measures in 1974 (adjusted by a factor of 5.16, being the Australian inflation index from March 1974 to March 1998) compare with those at the end of December 1998 as follows (financial amounts in millions)

Measure	At June 1974	Adjusted to Dec 1988	At December 1998
Total Assets	\$322	\$1,662	\$9,049
Profit*	\$16	\$83	\$169
Market Value	\$147	\$759	\$6,550 (av. 1998)
Borrowings	\$57	\$294	\$2,294
Dividends	\$14.5	\$75	\$114
S/H Funds	\$188	\$970	\$4,644
Return on S/H Funds**	7.7%		3.6%
US\$/A\$ Exch. Rate	1.311***		0.642****

\* The financial results from year to year fluctuated widely, being greatly influenced by the ups and downs of the nickel price, changes in the exchange rate and on occasions by changes in accounting practices. The lowest reported result was a loss of \$21.2 million in 1991-92 and the highest a profit of \$422.6 million in 1989-90.

\*\* Arithmetic average return on shareholders' funds 1974-1998 was 7.2%, with the lowest return (-0.7%) in 1991-92 and the highest (18.6%) in 1987-88.

\*\*\* November 1974

\*\*\*\* April 1999

## Non-Financial

Non-financial measures compared as follows:

Measure	At June 1974	At December 1998
No. Shareholders	76,000	111,000
No. Employees	4,257	5,541*
Accident Rate**	n.a. (119 in 1977-78)	4.3

\* Including contractors

\*\* Lost Time Injury Frequency Rate (LTIF) per million hours worked

## Senior Executives and The Board

### Executive Directors

A H (later Sir Arvi) Parbo, Managing Director since November 1971 and also Vice-Chairman since October 1973 was appointed Chairman and Managing Director on 17 October 1974, Executive Chairman on 9 June 1986 and Non-Executive Chairman from 28 December 1990 until retirement on 15 April 1999.

H M (Hugh) Morgan was appointed Executive Director in September 1976, Managing Director on 9 June 1986 and Managing Director and Chief Executive from 28 December 1990. He continued in this capacity in April 1999.

L C (later Sir Laurence) Brodie-Hall was Executive Director WA until retirement on 30 June 1975. He continued as Non-Executive Director of WMC and Chairman of the Group gold companies until retirement from the WMC Board in November 1982.

H O (Hugh) Clark was Director of Administration and subsequently Director of Corporate Affairs until retirement on 9 November 1981.

K F (Keith) Parry was appointed Director of Operations in June 1976 and succeeded Brodie-Hall as Chairman of the Group gold companies in November 1982. He died suddenly on 10 May 1986.

R (Roy) Woodall was appointed Director of Exploration in June 1978 until retirement as an executive on 3 November 1995. He continued as a Non-Executive Director

D M (Don) Morley was appointed Director of Finance in March 1983, Director of Finance and Administration in 1986 and reverted to Director of Finance in 1995. He continued in this capacity in April 1999.

K R (Keith) Hulley was appointed Director of Operations in November 1991 until he resigned to return to the United States on 30 September 1996.



## Executive General Managers

In 1994 a number of Executive General Managers were appointed as the most senior executives after Executive Directors. The posts were held as follows:

### 1994-95

Nickel and Gold:	A G Michelmore
Copper-Uranium:	P M Bowman
Petroleum:	R Hutchinson
Alumina, Chemicals & Industrial Minerals:	H M Goern
Exploration:	J R Parry

### 1995-96

Nickel and Gold:	P B Johnston
Copper-Uranium:	P M Bowman
Petroleum:	R Hutchinson
Alumina, Chemicals & Industrial Minerals:	H M Goern
Exploration:	J R Parry
Business Development, Planning & Technology: Projects:	A G Michelmore R McCann

### 1996-1997

Nickel and Gold:	P B Johnston
Copper-Uranium:	P M Bowman
Alumina, Chemicals & Industrial Minerals:	H M Goern
Exploration:	J R Parry
Business Development, Planning & Technology: Projects:	A G Michelmore R McCann

### 1997-98

Nickel and Gold:	P B Johnston
Copper-Uranium:	P M Bowman
Exploration:	J R Parry
Industrial Minerals and Fertilizers:	A G Michelmore
Projects:	R McCann
Corporate Human Resources & Developmt.:	G Travers

## The Board

The directors of WMC at June 1974 were:

Chairman	Sir Lindesay Clark
Vice Chairman & Managing Director	A H Parbo
Executive Director (WA)	L C Brodie-Hall
Director of Administration	H O Clark
	W D Brookes
	Sir James Forrest

A total of 20 directors were appointed and 15 retired between 19 June 1974 and the end of the AGM on 15 April 1999. In addition, Keith Parry died in office on 10 May 1986, the sixth WMC director to do so. The number of directors increased from six in 1974 to ten in 1999.

The appointments and retirements were:

<u>Year</u>	<u>Appointed</u>	<u>Retired</u>
1974-75	Nil	Nil
1975-76	K J Townsing	Nil
	K F Parry	
1976-77	H M Morgan	Nil
1977-78	R Woodall	Sir James Forrest
1978-79	J L Greig	Sir L indesay Clark
1979-80	Sir Geoffrey Badger	Nil
1980-81	Nil	Nil
1981-82	Nil	Sir Wilfred Brookes
		H O Clark
1982-83	Sir Harold K night	Sir L aurence Brodie-Hall
	D M Morley	
1983-84	Nil	Nil
1984-85	Dame L eonie K ramer	Nil
1985-86	Nil	K F Parry (died)
1986-87	Nil	Nil
1987-88	D J Brydon	Sir K enneth Townsing
	J C Anderson	J L Greig
	D H Aitken	
1988-89	D H L aidlaw	Sir Geoffrey Badger
1989-90	Nil	Nil
1990-91	Nil	Nil
1991-92	K R Hulley	Sir Harold K night
1992-93	I G R Burgess	Nil
1993-94	Nil	Nil
1994-95	Nil	Nil
1995-96	Nil	D H L aidlaw
1996-97	A E Clarke	Dame L eonie K ramer
	M J Phillips	K R Hulley
	I E Webber	
1997-98	P J K night	D H Aitken
1999	R A G Vines	Sir Arvi Parbo
		J C Anderson

A compilation by Gilbert Ralph of all WMC directors from the establishment of the Company in 1933 until 15 April 1999 is given in Book Three, *Appendix II*.

## EVENTS 1974 TO 1998

Detailed production and financial Statistics from 1969 to 1998, from WMC Annual Reports, are given in the section *Statistics*. This section summarises the main WMC activities and results year by year during the period 1974 to 1998.

### Reporting Periods

In 1974 the Company's financial year ended on 18 June 1974. The financial year consisted not of 12 months but of 13 four-weekly periods. The Company's internal and external production and financial controls and reporting were geared to this system, the argument being that every period was then directly comparable with any other.

Because the year is not 364 but 365 or, occasionally, 366 days, this system meant that the end of the financial year gradually crept forward towards the middle of June until occasionally an additional two weeks were added to the last period to make a six-week period which made the year close nearer the end of June. The process then started all over again.

Beginning with the 1987-88 financial year the reporting was changed to a 12 calendar months basis from 1 July to 30 June, and beginning on 1 January 1999 to a calendar year basis from 1 January to 31 December.

### FINANCIAL YEAR 1974-75

The Annual General Meeting was held in Melbourne.

### Business Conditions

There was a downturn in world markets in the second half of the year and economic conditions in Australia were adverse.

There were two nickel price increases, 14.2% in June 1974, and 8.6% in January 1975. In addition, the Australian dollar was devalued by 12% relative to the US dollar in September 1974, which was the equivalent of a price increase to Australian producers. From then on the parity was adjusted daily by the Reserve Bank in accordance with a trade weighted formula, which upvalued the Australian dollar by up to 4.6% in March 1975. At year end the upvaluation was 2.1%. The exchange rate at 18 June 1974 was US\$1.4845 to A\$1.00 and at 17 June 1975 it was US\$1.3338 to A\$1.00.

Demand for alumina and aluminium was buoyant for most of 1974, but weakened in 1975. The price of gold increased, but was outpaced by the high rate of cost inflation.

Company income tax was reduced from 47.5% to 45% in respect of the 1973-74 year and to 42.5% in respect of the 1974-75 year. The exemption of 20% of taxable profit from the mining of nickel from company tax was withdrawn from 1 July 1974.

### Profitability

Consolidated profit was \$14.4 million, a slight decrease from the previous year. Dividends of 8 cents per share were declared. The return on average shareholders funds was 7.6%.

## **Financial**

Additional loans of \$79.5 million were raised from Australian and overseas banks and through a Eurodollar note issue, making the total debt at 30 June 1975 \$133 million.

## **Nickel**

Nickel production and purchases increased by 5%, but sales were 12% lower. Cost per unit of nickel sold (excluding depreciation and amortisation) increased by 30%, about twice the rate of increase of the Consumer Price Index. At Kambalda, cost of distillate fuel increased by 104% and of industrial water by 73%. Workers' compensation premiums in WA increased by 200% in the last two years. Contracts for sale of concentrate to Sumitomo Metal Mining Co were converted into contracts for sale of nickel matte. No further sales of nickel concentrate were envisaged.

Production at Kambalda continued, and commenced at Windarra Joint Venture. Now fully owned Scotia and Carr Boyd Rocks mines continued in production, the latter being suspended at the end of the year. The capacity of Kalgoorlie Nickel Smelter was increased by the addition of an oxygen plant. Installation of further equipment to achieve a throughput rate of 350,000 tonnes of concentrate per annum was nearing completion. Modifications and installation of additional equipment to lift the Kwinana Nickel Refinery capacity to 30,000 tonnes per annum continued. A production rate of 24,000 tonnes per annum was achieved by year end.

## **Gold**

Group production was slightly lower than in 1973-74. Financial results were affected by cost increases exceeding gains from the increased price. Kalgoorlie Lake View Pty Ltd, Central Norseman Gold Corporation NL, Gold Mines of Kalgoorlie (Aust) Ltd, and Kalgoorlie Southern Gold Mines NL all made losses. KLV announced that, in the absence of a substantial increase in the price of gold, it would be forced to discontinue underground operations at Fimiston.

WMC acquired a 37.9 % equity in Hill 50 Gold Mine NL.

## **Aluminium**

The Point Henry Smelter worked at reduced output. Results were adversely affected by cost increases, but profit and dividend increased. Expansion of the Pinjarra Refinery continued. Construction of storage and ship loading facilities continued at Bunbury.

## **Iron Ore**

The final shipment by Geraldton Operations Joint Venture from Koolanooka Hills was made in October 1974.

## **Talc**

Production increased, but sales fell slightly.

## **Projects**

The Company purchased a mineral sands deposit at Jurien Bay. Construction was completed and commissioning commenced. The operation was named WMC Mineral Sands Limited. The Yeelirrie Uranium Project remained on care and maintenance. Work on Hail Creek Coal Project continued.

## **Exploration**

Mineral exploration continued throughout Australia. In petroleum exploration a seismic survey was completed in the Pedirka Basin in South Australia. A coal drilling programme jointly with Shell Development (Australia) Pty Ltd was carried out in Queensland. Total exploration expenditure was \$5.2 million.

## **Board**

Sir Lindesay Clark relinquished the Chairmanship of WMC on 17 October 1974 after 22 years in the Chair, but continued as a director. He was succeeded by A H (Arvi) Parbo. L C Brodie-Hall retired as an executive in June 1975 but continued as a director and Chairman of the Group gold companies.

## **FINANCIAL YEAR 1975-76**

The 1976 Annual General Meeting was held in Melbourne

### **Business Conditions**

From the Chairman's speech in November, 1976:

'During the financial year 1975-76 the world passed through what has been described as the deepest economic recession since the 1930s. During the second half-year there were signs that an economic recovery was beginning, particularly in the United States, but markets for most metals and minerals, including the Company's products, remained depressed.

Nickel price increased 9.5% in late 1975-early 1976 and there was an improvement of about 8% in the average US\$:A\$ exchange rate.

Economic conditions in Australia continued to be adverse, although there was some reduction in the rate of cost increases and an emerging hope that within the next year or so the inflation rate in Australia might be reduced to a level comparable with most of the industrialised world.'

The price of gold decreased steadily during the year until it reached mid-1974 levels at about the end of the financial year.

### **Profitability**

From the Chairman's speech:

'Depressed markets, high costs, and an over-valued Australian currency affected the results of all operating divisions and resulted in a decrease in the profit for the year (before extraordinary items and after deducting minority interests) from \$14.4 million to \$11.8 million.

The return on shareholders' funds (6% after tax) and the dividend payment (5 cents per share) were both unsatisfactory in terms of normal investment expectations. This return was, however, the second highest amongst the world's major nickel producers, most producers reporting close to break-even results or losses during this difficult period.'

## Financial

From the Chairman's speech:

In June, 1976, a rights issue of new shares was made to finance initial expenditure on the Yeelirrie Uranium Project, to assist in financing current mineral exploration and increased petroleum exploration programmes, and to provide additional working capital. This issue will raise approximately \$32 million.

Net term borrowing for the year amounted to approximately \$9 million. No additional term loans have been raised since the end of the financial year.'

## Nickel

Nickel remained the source of over 90% of the Company's income.

Production and purchases of nickel at 47,800 tonnes of contained metal were at record level. The increase in production was due mainly to the 50% owned Windarra Project building up to full output.

Low demand necessitated the stockpiling of some production, although sales were maintained at the previous year's level of approximately 39,000 tonnes through substantial spot sales of matte. Stocks at the end of the year were more than twice normal requirements.'

Cost of sales increased by 23.3%. The Company's joint venture partner in the Windarra Project, Poseidon Ltd, applied for the appointment of a Receiver.

From the Chairman's speech:

The Kalgoorlie Nickel Smelter operated very satisfactorily .... The expansion of the Kwinana Refinery capacity to 30,000 tonnes of metal per annum was completed and the ammonia plant was commissioned.'

## Gold

Group gold production increased from 183,000 to 221,000 ounces.

Central Norseman made a profit of \$1.5 million, compared with a loss of \$0.2 million in the previous year. Reserves were sufficient for about three years' production.

The lower grade mineralisation of Kalgoorlie Mining Associates and Hill 50 Gold Mine NL (in which the Company has 11% and 38% interest respectively) was uneconomic. The Hill 50 Mine at Mount Magnet was placed on a caretaker basis and it was expected that the last operating mine in Kalgoorlie, the Mount Charlotte Mine, would cease production before the end of 1976.

Gold Mines of Kalgoorlie (Aust) Limited and Kalgoorlie Southern Gold Mines NL, in which the Company had a 32% and 39% interest respectively, sought independent advice regarding their future. Western Mining Corporation advised both companies in September that, in view of the outlook for gold mining in Kalgoorlie, it was unlikely to contribute further equity funds or advance further loans to either company, except for funds to enable Gold Mines of Kalgoorlie to meet administration expenses until its future had been determined.

In accordance with independent advice, Gold Mines of Kalgoorlie (Aust) Ltd was seeking offers for its share capital.

### **Mineral Sands**

From the Chairman's speech:

The mineral sands project at Jurien Bay has suffered from commissioning and production problems which have resulted in substantially lower than expected output, and from very depressed markets for rutile and zircon.

Additions to the plant to overcome production limitations have now been completed and the equipment is being run in. The market outlook, however, remains weak and is a matter for concern.'

### **Aluminium**

The Chairman's speech:

The fifth unit at the Pinjarra Alumina Refinery was completed, lifting Alcoa's total refining capacity to well in excess of 3 million tonnes per year and making it one of the largest alumina producers in the world.

Although world market weakness continued from 1975 into early 1976, Alcoa increased export shipments in 1976, and is now operating close to full capacity. It is expected that this year's operations will result in a marked improvement on last year's profit of \$17.2 million.'

### **Talc**

Production was 8% higher than in 1974-75. Sales increased 12%.

### **Projects**

From the Chairman's speech:

Development of the Yeelirrie Uranium Deposit has been waiting for the Federal Government's approval since 1972. Early in 1976 it was decided to re-commence preparatory work on the project, in the expectation that the Government's policy, when announced, would be favourable. This work has included review and refinement of pilot plant designs, environmental studies, investigations into water supply and other service facilities, and review of earlier feasibility work.

The Federal Government has been awaiting the results of the Ranger Uranium Environmental Inquiry headed by Mr Justice Fox, which has also been considering the more general aspects of mining, milling, and export of Australia's uranium. The Inquiry released its first report on 28 October and concluded, amongst other things, that:

"The hazards of mining and milling uranium, if those activities are properly regulated and controlled, are not such as to justify a decision not to develop Australian uranium mines.

The hazards involved in the ordinary operations of nuclear power reactors, if

those operations are properly regulated and controlled, are not such as to justify a decision not to mine and sell Australian uranium."

The Inquiry also recommended that no decisions be made regarding the uranium projects in the Northern Territory until the second part of the Report had been issued and considered. The Government has since announced that it will await the second report before making final decisions on any new uranium projects, but has approved preparation of environmental impact statements for projects such as Yeelirrie, which are outside the Northern Territory.

While plans for the development of the Yeelirrie Project cannot be finalised until the Government's policy is known and commercial discussions have advanced, market considerations suggest commencement of production in the early 1980s at a production rate between 2000 and 3000 tonnes of yellowcake ( $U_3O_8$ ) per year.'

## **Exploration**

In petroleum exploration Durham Downs No. 1 Well in the Innamincka Block in the Pedirka Basin flowed gas. Work continued in the Patchawarra East Block, in the Surat Basin in Queensland, and in the Arolhos Basin offshore Western Australia. Regarding minerals exploration, the Chairman said:

The Company has been searching for copper since 1958, at a total expenditure to date of \$9 million. A considerable part of this effort has been in South Australia which has a long history of copper mining. One of the major copper exploration efforts in South Australia has been at Moonta where, in a joint venture with North Broken Hill Ltd and BH South Ltd, the Company has contributed nearly \$1 million to a project which has so far cost in excess of \$3 million.

Following development of new theoretical concepts, bold exploration was undertaken by the Company in a previously unexplored and totally concealed area of South Australia in the vicinity of Andamooka. The first hole drilled in this area at the Olympic Dam prospect on Roxby Downs Station located copper mineralisation.

It was reported in the Annual Report that four vertical diamond drill holes near Roxby Downs had intersected copper mineralisation at a depth of about 350 metres below the surface. The holes were spaced over a distance of about 1.5 kilometres and intersections varied from 8 to 92 metres at a grade of approximately 1% copper.'

## **Board**

K J (Kenneth) Townsing and K F G (Keith) Parry joined the Board, Keith as Director of Operations.

## **FINANCIAL YEAR 1976-77**

The Annual General Meeting was held in Melbourne.

## **Business Conditions**

The world economic recovery, which began in the previous financial year, continued. Demand and prices for minerals and metals recovered in 1976-77 from the severe recession in 1975-76, but the recovery was slow and uneven and trading conditions remained difficult. Towards the end of the financial year there were again signs of a downturn in mineral consuming industries, such as the steel industry.



The rate of cost inflation in Australia was reduced, but remained higher than in USA, Canada, Japan, and West Germany. The average US\$:A\$ exchange rate moved in the Company's favour by 9%. Since 1972, Australia had suffered a serious net loss of competitiveness in world markets.

### **Profitability**

Profit before extraordinary items was \$22.1 million, up from \$11.8 million in the previous year. Extraordinary items reduced the profit to \$15.7 million (comparable figure in 1975-76 \$12.7 million). Dividends increased from 5.0 cents per share to 6.0 cents per share. Return on average shareholders' funds improved from 6.0% to 9.2%.

While the improved financial results were still disappointing, the Company's performance was good when compared with other world nickel producers, many of which reported losses.

### **Nickel**

Sales increased by 7%, while production, although less than in the previous year, was in excess of sales. World production exceeded demand and intense price competition developed. Stocks increased from already high levels. Unit cost of nickel sold increased by 13.6%, while the average price received in Australian dollars was 13.1% higher.

The capacity of the Kalgoorlie Nickel Smelter was being expanded by approximately 50% to 450,000 tonnes of concentrate per annum to enable toll smelting of concentrate from the Agnew Nickel Mine being developed by Western Selcast (Pty) Ltd and Mt Isa Mines Limited and due to come on stream in 1979. The Agnew Project was providing most of the finance.

### **Gold**

Group gold production decreased by 11%. The world gold price recovered and the Australian price benefited from devaluation against the US dollar. Central Norseman increased profit and the Mt Charlotte Mine of Kalgoorlie Gold Associates, which was due to close in December 1976, continued in operation.

### **Aluminium**

Alcoa of Australia benefited from firm demand for aluminium and alumina, increased production, and additional production from the Pinjarra Refinery. Profit, after deducting \$13.6 million abnormal and extraordinary items, increased from \$17.2 million in 1975 to \$42.7 million in 1976. Dividends received by WMC increased from \$1.7 million in 1975-76 to \$6.0 million in 1976-77. Directors revalued WMC's 20% interest in Alcoa of Australia from \$50 million to \$100 million.

### **Mineral Sands**

WMC Mineral Sands at Jurien Bay made a loss. Depressed demand and prices and continuing production problems led to the property being placed on care and maintenance towards the end of the financial year. An amount of \$7.7 million was written off the mineral sands assets as an extraordinary item.

### **Talc**

Production and sales increased. Operations continued profitably.

## **Projects**

Plans were completed for a small scale metallurgical research plant near Kalgoorlie to test ore from the Yeelirrie deposit.

## **Exploration**

Expenditure on minerals was \$5.6 million and on petroleum \$2.7 million.

At Olympic Dam a total of 13 vertical holes were completed, of which 9 had intersected copper and uranium mineralisation beginning at approximately 350 metres below the surface, varying from 8 to 248 metres in thickness and with grades averaging approximately 1.3% copper and half to one pound of uranium oxide per tonne. A very large prospective ore position was being outlined. A number of other mineral exploration projects, several in joint ventures, were pursued throughout Australia.

In petroleum exploration work continued in the Abrolhos, Pedirka, and Surat Basins. Drilling targets were outlined in the first two.

## **Board**

H M (Hugh) Morgan joined the Board as Executive Director.

## **FINANCIAL YEAR 1977-78**

The Annual General Meeting was held in Melbourne.

## **Business Conditions**

Western world demand for nickel, which was the Company's main source of income, was at its lowest since 1972. Producers had accumulated stocks in the expectation that the upturn in demand in 1976-77 would continue. In the event, demand turned down early in 1977-78 and nickel prices fell to uneconomic levels. Western Mining was one of the very few nickel producers still making a profit from nickel operations. Most major producers reduced production.

Markets for alumina and aluminium remained firm. The gold price increased substantially.

Cost inflation continued, although at a somewhat reduced rate. The average exchange rate to the US dollar, although on average more favourable than in 1976-77, moved adversely over 1977-78.

## **Profitability**

Profit before extraordinary items at \$10.1 million was reduced from \$22.1 million in the previous year. Dividends were reduced from 6.0 cents to 3.0 cents per share. The return on shareholders' funds was 3.7%.

## **Nickel**

Production was suspended at Great Boulder operations, the Fisher Mine and some other lower grade areas at Kambalda, and at the Windarra Joint Venture with Shell. The full effect of these actions was not felt during 1977-78. Production (including purchases) actually increased compared with the previous year, partly because of higher grade at Kambalda. Sales were deliberately curtailed because of

the uneconomic prices and stocks increased substantially. Unit operating cost of sales increased by 3.7%.

## **Gold**

Central Norseman increased profit and paid higher dividends. Kalgoorlie Lake View Pty Ltd remained profitable. WMC interest in Kalgoorlie Southern Gold Mines NL was sold to Universal Milling Company Pty Ltd. Hill 50 Gold Mine NL remained on care and maintenance.

## **Aluminium**

Alcoa of Australia profit in calendar 1977 increased by approximately 50%. Sales and prices were higher and A\$ devaluation in late 1976 was helpful. Alcoa announced its intention to proceed with the construction of the third alumina refinery at Wagerup.

## **Talc**

Production and sales by Three Springs Talc Pty Ltd increased.

## **Mineral Sands**

The project remained on care and maintenance.

## **Projects**

The Environmental review and Management Programmes and the *Environmental Impact Statement* for the metallurgical research plant at Kalgoorlie and for the Yeelirrie Project were submitted to the Western Australian and Federal governments and published.

## **Exploration**

Expenditure was \$5.3 million on minerals and \$7.5 million on petroleum.

Drilling continued at Olympic Dam. Copper-zinc-silver mineralisation was discovered in a joint venture with BP at Benambra in Victoria. Tin mineralisation was investigated at Mt Misery in Queensland.

Two wells were drilled in the Pedirka Basin, one of which flowed oil in uncommercial quantities. One dry well was drilled in the Abrolhos Basin. A farmout agreement was concluded in the Surat Basin and a seismic programme commenced in the Cooper Basin.

## **Board**

Sir James Forrest retired after seven years on the board. He was also the Chairman of Alcoa of Australia from 1970 to 1978. Roy Woodall joined the Board as Director of Exploration.

## **FINANCIAL YEAR 1978-79**

The Annual General Meeting was held in Kalgoorlie, the first time it was held away from Melbourne.

## **Business Conditions**

Business conditions improved, compared with the previous year. There was a rapid turnaround in the nickel market in the second half of the year from the very depressed conditions which had applied since mid-1977. Western world nickel consumption in 1978 increased by about 17% over 1977. Together with reductions in production during the last two years and lengthy strikes in Canada and New Caledonia, this resulted in excess stocks being reduced to normal by mid-1979. The price at the end of the year was back to mid-1977 levels in real terms (after taking inflation into account).

The gold price continued to increase. Markets for aluminium and alumina remained firm and prices rose due to tight supply.

## **Profitability**

Profit before extraordinary items increased from \$10.1 million in the previous year to \$24.6 million. Dividends increased from 3.0 cents to 7.0 cents per share. Return on shareholders' funds was 7.9 %.

## **Nickel**

Production remained curtailed, while sales were substantially in excess of production and a record. Stocks were reduced accordingly. Unit cost of sales was reduced by 4.6%. The major expansion of the Kalgoorlie Smelter, involving a number of novel features, was completed and commissioned.

## **Gold**

Central Norseman and Kalgoorlie Lake View achieved substantially higher profits. Hill 50 remained on care and maintenance.

## **Aluminium**

Alcoa of Australia profit increased. Construction of the 500,000 tonnes per annum Wagerup Refinery and of the third potline at Point Henry, increasing capacity from 100,000 to 160,000 tpa, were well advanced. It was decided to construct a second aluminium smelter at Portland in Victoria, to be in production by 1983.

## **Talc**

Production decreased marginally, but sales increased. Exploration disclosed two areas of potential talc deposits.

## **Mineral Sands**

The project remained inactive and it appeared unlikely that the plant could be economically re-started. A provision for a loss of \$2.4 million was made to recognise the change in outlook.

## **Projects**

The Yeelirrie Uranium project received environmental and foreign investment approvals. Preparations were made for the first stage of this project, expected to take three years and include metallurgical

testing.

## **Exploration**

Expenditure on mineral exploration was \$4.7 million and on petroleum exploration \$1.1 million.

Drilling at Olympic Dam increased the dimensions of the deposit. Drilling also continued at the Benambra Prospect and exploration and evaluation of nickel laterites in the Kalgoorlie district was resumed.

In petroleum exploration seismic programmes designed to outline targets for drilling continued.

## **Board**

Sir Lindesay Clark retired after 45 years as a Director of the Company, including 22 years as Chairman. Sir Lindesay was also the Chairman of Alcoa of Australia from 1961 to 1970. J L (John) Greig joined the Board.

## **Western Mining - Sir Lindesay Clark Trust Fund**

At the Annual General Meeting, which was attended by Sir Lindesay and Lady Clark, the Board established this Fund to record and acknowledge Sir Lindesay's great contribution to Western Mining Corporation and to Eastern Goldfields.

## **FINANCIAL YEAR 1979-80**

The Annual General Meeting was held in Melbourne. The Company was re-structured, with Western Mining Corporation Holdings Limited becoming the main listed company in the Group, Western Mining Corporation Limited becoming a fully owned subsidiary.

## **Business Conditions**

Compared with the depressed conditions two to three years ago, 1979-80 was a year of greatly increased activity and improved business conditions.

Leading nickel producers throughout the world continued to curtail production. The demand for nickel in 1980 was expected to be 15% less than in the record year 1979. The industry generally operated at about 75% capacity, with supply and demand in reasonable balance. Prices improved considerably, and stocks returned to normal levels by the end of the year.

Toward the end of the year economic downturn in USA affected nickel demand. However, as several large producers had taken steps to adjust production, nickel prices remained at their previous level.

Gold prices were higher. The markets and outlook for aluminium remained strong. Exchange rate changes had only a minor effect on the year's results.

## **Acquisition of BH South Limited**

An 80.2% interest was acquired in BH South Limited for 11 WMC shares and 55 cents cash for every 10 South shares. The issued share capital of WMC increased by approximately 25% as a result. A

number of operating companies and investments held by BH South were subsequently sold to CRA Limited. The main assets retained were 13.1% shareholding in Alcoa of Australia Limited, extensive phosphate deposits in Queensland, and a 16% shareholding in Beach Petroleum NL.

### **Profitability**

Profit for the year before extraordinary items was a record \$57.4 million, up from \$24.6 million in the previous year. Had the profit been calculated in accordance with the exposure draft on equity accounting which was under discussion, the profit would have been \$77.0 million (\$34.0 million in 1978-79). Had it been calculated in accordance with the exposure draft on current cost accounting, the profit would have been \$62.7 million (\$24.8 million in 1978-79).

Dividends declared increased from 7.0 cents per share to 14.0 cents per share. Return on shareholders' funds, after allowing for the acquisition of BH South at year end was 10.0%. Excluding the purchase of BH South, the return would have been 14.5%.

### **Nickel**

Production continued at a lower rate than sales. Stocks returned to normal. The Windarra Project remained suspended. The smelter and the refinery continued to operate very satisfactorily.

### **Gold**

Both Central Norseman Gold Corporation and Kalgoorlie Mining Associates achieved record profits. CNGC profit increased to \$23.6 million (previously \$9.5 million) and rehabilitation of the Ajax Shaft commenced. The North Royal wash plant was replaced by a plant of higher capacity. KLV Pty Ltd made a profit of \$14.9 million (\$4.0 million). Underground development at Fimiston increased in preparation of a 400,000 tonnes per annum operation and site clearing at Oroya began in preparation for the construction of a new refractory ore treatment plant.

At Hill 50 Gold Mine NL preparations were made for re-starting a 160,000 tpa operation.

While the Windarra Nickel Operation remained suspended, preparatory work began on bringing into production a known extension of ore at the Lancefield gold mine near Laverton. Part of the Windarra Nickel concentrator was to be modified to treat the Lancefield gold ore.

### **Aluminium**

Following the BH South acquisition, WMC's interest in Alcoa of Australia increased from 20.0% to 30.55%.

Alcoa of Australia profit increased from \$60.9 million in 1978 to \$94.9 million in 1979. The construction of the third potline at Point Henry was well advanced, and construction of the Wagerup Refinery continued. The environmental impact statement for the new smelter at Portland was approved by the Victorian and Federal governments.

### **Talc**

Production and sales increased. Additional talc reserves were delineated.

## **Projects**

Stage I of the Yeelirrie Uranium Project commenced. Mineralisation at the Olympic Dam Project was shown to extend over an area of 6 km by 3 km. Civil works in preparation of an exploratory shaft commenced. Testing of the Kingston Brown Coal deposit in South Australia began. Drilling of the Benambra copper-zinc-silver deposit in Victoria was completed.

## **Exploration**

Besides Olympic Dam, Benambra, and Kingston coal, exploration for nickel and cobalt-rich laterites continued in the Kalgoorlie district. New deposits of lateritic nickel were discovered at Bulong, 20 km east of Kalgoorlie.

WMC held equity in petroleum exploration areas in the Arolhos Basin offshore WA, in Cooper Basin, and in Perth Basin. Activity included approximately 5000 km of seismic surveying and the drilling of nine exploration wells, three of which yielded hydrocarbons.

## **Board**

Sir Geoffrey Badger joined the Board.

## **FINANCIAL YEAR 1980-81**

The Annual General Meeting was held in Melbourne.

### **Business Conditions**

The Chairman's speech:

'World markets for metals and minerals weakened in the second half of 1980. The hoped for upturn in the USA in 1981 did not happen. Unprecedented high interest rates contributed to the demand for minerals remaining sluggish and continuing in a depressed state during 1981.

Nickel was subject to all these influences. Western world consumption in 1981 is expected to be about 550,000 tonnes which is similar to the consumption in 1980 and well below the peaks in 1973 and 1979. Western world production continued at about 75% capacity.

Stocks held by consumers remained low while producer stocks were low to moderate. Price discounting which started in late 1980 continued and prices have fallen further in recent months.'

There was a downturn in the price of gold towards the end of the year. The market for alumina and aluminium was also affected by the downturn in the world economy in the latter half of 1980.

### **Profitability**

Consolidated profit before extraordinary items was steady at \$58.0 million (\$57.4 million in 1979-80). Dividends were maintained at 14.0 cents per share. The return on shareholders' funds at 9.7% was 'inadequate .... compared with interest rates available on risk free investments'.

Had the profit been calculated in accordance with the exposure draft on equity accounting, it would have been \$75.0 million (\$77.0 million last year). Had it been calculated in accordance with the exposure draft for current cost accounting the profit would have been \$19.9 million, which illustrated the effect of inflation.

## **Nickel**

Sales were again higher than production. The Windarra Mine was reopened towards the end of the year at a lower production rate than when suspended in 1978. The smelter and the refinery continued to operate very satisfactorily. The option to purchase the Mt Edwards property at Widgiemooltha was exercised.

The Chairman said:

'We continue to be in a strong position as a nickel producer. The financial returns are once again suffering from prices which for many producers are less than production cost and certainly less than replacement cost. It is an unrealistic situation which has to be corrected before long.'

## **Gold**

Results of gold operations were good, although the effect of the steep decrease in the price of gold was felt towards the end of the year. Excellent progress was made with the re-commencement of production at Fimiston and Hill 50 and the development of a number of new operations in the Kalgoorlie district, ore from which will be treated in the Kambalda Mill to which a gravity gold recovery circuit and a cyanide circuit has been added. The capacity of the mill increased to 1.7 million tpa, of which 0.5 million tonnes per annum was gold ore.

The district gold operations included opencut mining at Sand King north of Kalgoorlie, the Victory Mine at St Ives south of Kalgoorlie, and at the Hunt Mine at Kambalda. CNGC profit was \$20.4 million (\$23.6 million) and KLV profit \$14.0 million (\$14.9 million).

The new refractory ore treatment plant at Oroya was commissioned. Site work and detailed design commenced for a new 1299 metre deep haulage-service shaft at Mt Charlotte. Gold mining at Lancefield continued. Rehabilitation of the Ajax Shaft at Central Norseman continued, and work commenced on rehabilitating the old OK Shaft.

## **Aluminium**

Alcoa of Australia profit in 1980 was \$101.9 million (\$94.9 million in 1979). The third potline at Point Henry began operating in October 1980, increasing smelter capacity to 165,000 tonnes per annum. Construction at Wagerup continued, although rate of progress was slowed because of the weaker market. Construction of the Portland Smelter was well under way.

## **Talc**

Sales were higher, but production was substantially reduced because of removal of overburden on the talc discovered east of the existing pit.



## **Phosphate Rock**

Investigations continued into the re-opening of the Duchess Mine.

## **Projects**

Stage I of the Yeelirrie Uranium Project proceeded, including ore testing at the Kalgoorlie Research Plant.

From the Chairman's speech:

'Intense activity continued on the Olympic Dam Project in South Australia (51% owned). The exploration shaft is now at a depth of 320 metres and is expected to reach the orebody early in 1982. The main drilling effort is directed towards detailed assessment of the mineralisation in the vicinity of the exploration shaft, although grid drilling also continues on a wide pattern. Discussions with the South Australian Government regarding an Indenture Agreement under which development and production may take place are nearing completion. It is expected that the Agreement will be submitted to Parliament shortly. Planning and evaluation of the many aspects of an eventual mining and treatment operation and the necessary infrastructure are continuing.

A bulk sample from the brown coal deposit at Kingston in South Australia is now being tested in the United States for its characteristics as boiler feed for power generation. Results of an earlier smaller parcel tested in West Germany were favourable.'

## **Exploration**

Minerals exploration continued on the Stuart Shelf in South Australia and at Benambra in Victoria.

Regarding petroleum exploration, the Chairman reported as follows at the Annual General Meeting:

'In the 1980-81 financial year we participated with others in the drilling of seven wells, two of which were successful; Beanbush No.1 in the South Australian portion of the Cooper Basin flowed gas at a rate of 1.5 million cubic feet per day and Wareena No.1 in the Queensland portion of the Cooper Basin flowed gas at 11.3 million cubic feet per day.

.....

We held petroleum exploration rights to two large areas in the Canning Basin and have completed three stratigraphic holes to test new geological concepts and to assess the area's prospectivity for oil. To date the results have been most encouraging. Two of the three holes intersected thick section of porous carbonates and in one, Acacia No.1, the core showed strong indications of oil.'

## **Board**

There were no changes to the Board in 1980-81.

## **FINANCIAL YEAR 1981-82**

The Annual General Meeting was held in Melbourne.

## **Business Conditions**

In 1981-82 the world mineral industry experienced the most severe downturn in the last fifty years. Markets for metals and minerals were very depressed, while costs in Australia continued to rise.

From the Chairman's speech on 5 November, 1982:

'In 1981-82 the world nickel industry suffered its most severe downturn since we became a nickel producer in 1967. Western world consumption in 1982 is expected to be appreciably lower than in 1981 and well below the peak consumption in 1979. Canada is the largest nickel producer in the western world. Most of its production capacity has been inactive since June, 1982. The remaining large operation was put on care and maintenance earlier this week. The shutdowns have been announced to continue variously until January to April 1983. Notwithstanding this, prices have continued to weaken, partly because of unusually large quantities of Soviet nickel offered in western markets. Free market prices in real terms in recent weeks have been almost a record low.'

The price of gold declined. World alumina and aluminium markets deteriorated during 1981 and continued to weaken during 1982. The average exchange rate of A\$:US\$ declined slightly to 1.11 from 1.16 in the previous year.

## **Profitability**

Profit declined to \$6.9 million from \$58.0 million in the previous year. Had it been calculated in accordance with the exposure draft on equity accounting, the profit would have been \$18.3 million (\$75.0 million). Calculated in accordance with the exposure draft for current cost accounting, the result would have been a loss of \$71.4 million. Dividends were reduced from 14.0 cents per share to 2.5 cents per share. The return on shareholders' funds was 1.0%.

## **Financial**

During the year 19 million fully paid 50 cent shares, at a premium of \$3.10 were placed with financial institutions to raise \$68.4 million for general corporate purposes and to replace short term borrowings. Borrowings outstanding at year end were \$206.7 million, 31.0% of shareholders' equity.

## **Nickel**

Sales volume decreased by 7.5%, while production was 7.3% higher due to higher grade at Kambalda and the re-start of production at Windarra, resulting in a modest increase in stocks. The smelter and the refinery operated satisfactorily. The nickel sales contract with Sumitomo Metal Mining Company, which had been in force for 15 years, was extended for a further 10 years.

## **Gold**

Gold production was a record of 291,000 ounces (up from 178,000 ounces in 1980-81). This was the result of a deliberate effort to offset the downturn in the nickel business. The gold section of the Kambalda Mill reached the full capacity of 500,000 tpa, treating ore from Victory, Hunt, Sand King, and Great Boulder. Gold production at Lancefield continued.

Central Norseman's profit fell to \$10.9 million (\$20.4 million) and KLV profit declined to \$12.4 million (\$27.7 million), principally because of the lower gold price. Hill 50 operated for the full year, but made

a loss of \$2.2 million. A joint 50:50 venture with Central Norseman at Stawell in Victoria pursued surface drilling and exploratory underground development.

### **Aluminium**

Alcoa of Australia profit in 1981 was \$102.1 million compared with \$97.2 million in 1980. In 1982, however, profitability declined quarter by quarter, and was down 36% for the first nine months of 1982 compared with the previous corresponding period.

Because of market conditions, production of alumina at the Kwinana and Pinjarra refineries was cut back and the newly completed Wagerup Refinery was not started up. The Point Henry Smelter operated at capacity, but construction work at Portland was interrupted when a substantial increase occurred in the price of electricity in Victoria. In July, 1982, it was decided to defer the completion of Portland from mid-1983 to at least mid-1985.

### **Phosphate Rock**

Production of direct shipping grade rock commenced early in the year at the rate of 200,000 tonnes per annum.

### **Talc**

Talc sales exceeded production and stockpiles were drawn down.

### **Projects**

Metallurgical testing of Yeelirrie ore was completed and a feasibility study neared completion. Esso decided to withdraw from the project at the end of Stage 1. Major progress was made at Olympic Dam. The exploration shaft was completed to 480 metres and horizontal development commenced. Surface drilling and project planning continued. Planning at Kingston Coal deposit was completed and a proposal prepared for submission to The Electricity Trust of South Australia.

### **Exploration**

Expenditure for the year was \$33.1 million. Minerals exploration continued throughout Australia, including on the Stuart Shelf, at Bendigo, and at Benambra. In petroleum exploration, in addition to nearly 5000 kilometres of seismic surveys, seven exploration wells were drilled in various basins and seven stratigraphic holes were completed in the Canning Basin. Non-commercial hydrocarbons were encountered in some of this drilling.

### **Board**

Sir Wilfred Brookes and H O (Hugh) Clark retired after 35 years and 14 years as members of the Board respectively.

## **FINANCIAL YEAR 1982-83**

On 2 March 1983, Western Mining was 50 years old. The 1983 Annual General Meeting was held in Perth, Western Australia.

## **Business Conditions**

The world minerals industry remained depressed. The year was probably the 'worst ever' for the nickel industry. Virtually the whole Canadian nickel industry was shut down for a large part of the year. Production in several other countries was curtailed. The average price fell by 30%.

The gold price was satisfactory, having increased sharply early in the year. Conditions in the aluminium industry were difficult.

## **Profitability**

Consolidated profit at \$4 million and equity accounted profit at \$10.7 million for the year remained low. Dividends were reduced from 2.5 cents to 2.0 cents per share. The return on shareholders' funds was 0.6%.

## **Nickel**

Extract from the Chairman's speech in November, 1983:

'We decided that the best course for us was to maintain our nickel operations, while using all possible means to reduce the cost of production. This was a very difficult task in view of the general Australian inflation rate of 11.5%, but through a combination of measures we did succeed in lowering the average cost of nickel sold by 6.4% while nickel sales increased by 32%.

Even after this, the price of nickel was such that the operations ran at a loss for a part of the year notwithstanding a favourable gain of 16% in the \$US/\$Australian Exchange Rate during the year. Since then there has been a mild recovery, and today the nickel operations are no longer making a loss, although their profitability is still minimal. This is not surprising considering that the price of nickel in US dollars today is only some two thirds of the price three years ago. Costs in Australia in those three years have of course increased greatly.'

Opportunity was taken to purchase nickel leases in the Widgiemooltha area from INCO and Windarra Nickel Operation became fully owned through the purchase of the Shell Company's 50% interest.

## **Gold**

Group gold production increased by 48% and WMC's equity in this by 80% to 174,500 ounces. A joint venture was established with Emperor Gold Mining Company Ltd. WMC acquired a 10% interest and an option over a further 10% in Emperor's Vatukoula gold mine in Fiji.

From the Chairman's speech:

'While coping with the depressed conditions in the nickel industry we have made use of opportunities to extend our gold interests where the terms of trade have been better. The most important development here has been the gold mining operations established in the Kambalda/Kalgoorlie district, with the milling taking place at Kambalda. Over a period of 3 years we have developed an operation treating some 750,000 tonnes of ore per year, producing now in excess of 100,000 ounces of gold a year. This is a substantial gold mine on the Australian scale.

The establishment of this operation has been greatly helped by the existence of the facilities at Kambalda. We have commenced a substantial effort to search for additional gold ore within economic carting distance of the Kambalda mill. A similar effort was started in the Windarra district after acquiring full ownership of the Windarra project during the year, including the Lancefield gold mine. Also during the year we acquired an interest in and assumed management of the Vatukoula gold operation in Fiji and in the prospecting area surrounding the mine.'

## **Aluminium**

Alcoa of Australia's profit declined by 40%. The Wagerup Refinery remained inactive and the Portland Smelter project remained suspended. Shareholders reinvested their dividends.

## **BH South**

Phosphate rock production ceased. Shareholders placed BH South Limited in voluntary liquidation. As a part of the distribution of assets following liquidation, WMC received a 10.5% shareholding in Alcoa of Australia Limited (increasing WMC's interest to 30.5%), an 83.5% shareholding in Queensland Phosphate Limited, shares in some other companies, and \$46.9 million cash.

## **Talc**

WMC and Kalgoorlie Southern Gold Mines NL became 50:50 joint venturers in Talc Joint Venture, which replaced Three Springs Talc Pty Ltd as the operator. The talc business continued to operate well and profitably. Production of talc more than doubled.

## **Projects**

From the Chairman's speech:

'As you know we own 51% of the Olympic Dam Project in South Australia where work is continuing and a decision by the Joint Venturers regarding the project's future plans is expected in the first half of 1985. The South Australian Parliament recently reaffirmed its support for the project and it has been reported that the Federal Cabinet has decided to support it.

Recent exploration and development work has established within the mineralised area a probable 450 million tonnes of higher grade ore averaging 2.5% copper, 0.8 kg/tonne U<sub>3</sub>O<sub>8</sub>, 0.6 grams/tonne gold and 6 grams/tonne silver. Initial attention is focussed on possible production from these higher grade areas. As both copper and uranium must be produced and sold, any production plans will be amongst other factors heavily influenced by the market for uranium, which in turn will have an important influence on the economics of the project.

Planning and feasibility investigations of the Yeelirrie uranium project were completed, confirming that this project ranks amongst the best in the world in terms of the expected cost of production. Marketing and joint venturing discussions were interrupted in March when the Federal Government withdrew permission to pursue these. We are still awaiting the government's decision as to when the discussions can be resumed.

.....

The expenditure on the project during the 13 years since discovery has been \$35 million, of

which approximately \$10 million has been incurred by the Company. We own 90% of the project.

The anti-uranium campaign in Australia has recently become even more confused by attempts to relate the supply of Australian uranium for electric power generation to the use of uranium in nuclear armaments. The facts are that nuclear weapons were built and used long before the first nuclear power station was established. If all the 294 nuclear power stations now producing about 10% of the world's electricity and a further 215 under construction were shut down, this would not stop the production and use of nuclear armaments. It is grossly misleading to give the impression that the two uses are related. They are no more related than the use of steel or copper or any other metal for both weaponry and peaceful purposes.

Initial work on the Kingston brown coal deposit in South Australia was also completed. Its future development now depends on The South Australian Government decision regarding future electricity supplies for that State. We understand that this decision is likely some time in 1984. This project is fully owned by Western Mining.'

## **Exploration**

From the Chairman's speech:

'Another exploration project of possible interest as an early production operation is the Throssell Ranges copper discovery in Western Australia. While the primary mineralisation is at some depth and will take some years to explore, there is the likelihood of an economic occurrence of secondary mineralisation mineable by opencut methods. Drilling to evaluate the secondary copper mineralisation at the Nifty prospect is now in progress and results to date have been most encouraging. The drilling has proved mineralisation over a strike length of 1200 metres with widths of up to 280 metres and thicknesses of up to 40 metres between 30 metres and 75 metres below the surface. Sampling is difficult and assaying has not yet been completed, but the indications are that economic high grade copper ore has been discovered.'

Petroleum exploration continued on the Barrow Island field. Numerous other mineral and petroleum exploration prospects were under investigation in Australia, Fiji, and Brazil. Extensive petroleum exploration in the Surat, Cooper and Canning Basins was funded substantially through farm-out arrangements.

From the Chairman's speech:

'Gold exploration has continued in a number of other areas in Australia, including Stawell in Victoria in a 50:50 joint venture with Central Norseman, where underground exploratory development has been in progress for 2 years now. This development has confirmed a number of ore shoots in the upper levels, to a vertical depth of 200 metres. The best mineralisation, which occurs below the 180 metre level, is yet to be tested. This work is likely to take another year or so before a decision regarding the underground operation can be made. Meanwhile, surface drilling one and a half kilometres south of the decline has discovered 300,000 tonnes of proved and probable opencut ore averaging 4.5 grams gold per ton, with a further 240,000 tonnes of possible ore. Subject to government approvals, it is proposed to begin treatment of opencut and underground development ore together with some tailings, during 1984 to produce about 20,000 - 30,000 ounces a year.'

## **Board**

Sir Laurence Brodie-Hall retired, after 27 years as an executive and 21 years as a director of WMC. Sir Harold Knight and Mr D M (Don) Morley joined the Board.

## **FINANCIAL YEAR 1983-84**

The Annual General Meeting was held in Melbourne.

### **Business Conditions**

Difficult conditions in world mineral markets continued for the third year in succession. There was an improvement in the nickel market, the average price received increasing by 10%. Supply and demand came into balance and stocks were reduced to normal levels.

The gold price decreased by 7.5%, but virtually all WMC gold operations remained profitable. The aluminium market remained depressed. metal prices improved in the latter half of 1983, but fell again in the first half of 1984. Alumina prices remained unsatisfactory.

In December 1983 the Australian dollar was floated, the exchange rate from then on being determined by the market from day to day.

### **Profitability**

Consolidated profit increased to \$22.3 million and equity accounted profit to \$30.1 million. Dividends were increased from 2.0 cents to 4.0 cents per share. The return on shareholders funds on an equity accounted basis was 3.5 %.

### **Financial**

A placement of 27.5 million shares was made to Australian institutions, and 60.5 million options on a one for five basis were offered to shareholders, raising \$244 million. The placement was made to ensure that the Company remained 'Australian' which was in the interests of shareholders in view of the Australian Government's foreign investment policy.

### **Nickel**

Production and sales were at previous year's levels. Costs increased, but the increase was restricted to half the inflation rate, or 3.2%. There was a modest operating profit and a cash surplus. WMC agreed to advise China Non-Ferrous Metals Export And Import Corporation on the design, construction, and commissioning of a nickel smelter at Jinchuan in Gansu Province.

### **Gold**

Group gold production increased by 19% and the WMC share by 38%. The Stawell Joint Venture (50:50 with Central Norseman Gold Corporation) commenced production. WMC's interest in Vatukoula Joint Venture (VJV) in Fiji was increased to 20%.

## **Aluminium**

Alcoa of Australia profit in 1983 was slightly lower than in 1982. The Wagerup Refinery was commissioned, increasing total alumina production capacity to 4.5 million tonnes per annum, easily the largest producer in the world.

## **Talc**

The talc joint venture had record sales, and operated profitably.

## **Phosphate Rock**

Spot sales were made from stock. Studies of chemical upgrading of the rock commenced.

## **Projects**

Work on the Olympic Dam feasibility study continued. The project was granted development status by the Federal Government. Exploratory underground development to prove an ore reserve amounted to 3620 metres, to which was added 830 metres of raise drilling. A probable ore reserve was estimated at 450 million tonnes averaging 2.5% copper, 0.8 kilograms of uranium oxide, 0.6 grams of gold, and 6.0 grams of silver per tonne. The metallurgical pilot plant was commissioned and a 110 kilometre road to the borefield north of Olympic Dam was constructed.

There was no activity on the Yeelirrie Uranium Project. Work on the *Environmental Impact Study* of the Kingston Coal Project continued and wet dredging was being investigated as an alternative production method to opencut mining.

## **Exploration**

Expenditure on minerals exploration was \$17.1 million, including \$1.6 million by Central Norseman. Evaluation of the Bendigo Goldfield and the Nifty Prospect in the Throssell Range in Western Australia, and other prospects in Australia continued. Overseas exploration continued in Fiji in a joint venture with Emperor Gold Mines and in Brazil in a joint venture with the Aluminum Company of America.

In petroleum exploration WMC participated in 29 joint ventures and was the operator of 8 of these. Expenditure was \$25.7 million. WMC purchased Mesa Australia Limited, increasing its interest in the Barrow Island field to 40% and becoming the operator. WMC involvement in petroleum exploration began in 1973, although substantial effort began only in 1980. Since then to the end of 1983-84 WMC had participated in the drilling of 50 wells, of which 5 encountered gas and 9 oil, or gas and oil.

## **FINANCIAL YEAR 1984-85**

The Annual General Meeting was held in Melbourne.

## **Business Conditions**

After four years of poor results, the devaluation of the Australian dollar improved results in the second half year. The average price received for nickel was 26% higher than in the previous year, representing



mainly the devaluation but also including a modest rise in the US dollar price.

The average price of gold was A\$10 per ounce lower than in 1983-84. World alumina and aluminium markets remained depressed. The inflation rate was 6.7%. The average A\$:US\$ exchange rate was 0.78 (0.91 in 1983-84).

### **Profitability**

Equity accounted profit increased to \$40.4 million (\$30.1 million in 1983-84). Dividends declared increased from 4.0 cents to 6.0 cents per share. Return on shareholders' funds was 4.2% (3.5%).

### **Nickel**

Production and sales were at about the previous year's levels. The unit cost of nickel sold increased by 5.5%. The smelter and the refinery continued to operate well.

### **Gold**

Group gold production increased by 22% to a record 626,000 ounces. Production from the St Ives area and in the Kalgoorlie district, treated in the Kambalda Mill, continued to build up. Production at Lancefield continued. Central Norseman completed 50 years of uninterrupted operation and made a profit of \$12.6 million (\$9.8 million). KLV made a profit of \$12.6 million (\$7.4 million). Hill 50 made a loss of \$0.2 million (\$0.5 million). Construction and commissioning of a 200,000 tpa carbon-in-leach plant at Stawell was completed in August, 1984. A separate Tavua Basin Joint Venture was formed to explore a gold bearing structure near Vatukoula.

### **Aluminium**

Alcoa of Australia was severely affected by depressed prices. Profit for 1984 was \$43.7 million compared with \$58.1 million in 1983. Shareholders received the first cash dividends since 1980. Work on the Portland smelter, which had been suspended in late 1982, was resumed in November, 1984 after Alcoa and the Government of Victoria had formed a joint venture with 45% and 25% interest respectively, the remaining 30% being offered to third parties.

### **Talc**

Three Springs Talc Pty Ltd achieved record sales and record production.

### **Projects**

Following completion of metallurgical pilot plant testing, a technical study and a subsequent economic feasibility study, the joint venturers concluded that the Olympic Dam Project was commercially viable. The initial plans provide for the production of 55,000 tpa copper, 2000 tpa uranium oxide, and 90,000 ounces/annum gold, to start in mid-1988. A decision will be made before the end of 1985. Planning of the Kingston Coal project continued, although the South Australian Government announced that two alternative coal deposits would be investigated in more detail. Investigations continued into the possibility of production of phosphoric acid and/or high analysis fertilizers at Phosphate Hill. The Yellirrie Project remained on care and maintenance.

## **Exploration**

Exploration expenditure was \$59.6 million (\$42.8 million).

Minerals exploration continued in Australia, Fiji, and Brazil for gold, nickel, base metals, and diamonds. On completion of drilling, a programme of underground exploration was evaluated at Bendigo. A copper resource was established at the Nifty Project in the Throssell Range.

Petroleum exploration continued actively. The Bodalla South field was producing oil, the WMC share since the discovery in June 1984 being 37,000 barrels.

## **Board**

Dame Leonie Kramer joined the Board.

## **FINANCIAL YEAR 1985-86**

The Annual General meeting was held in Melbourne.

## **Business Conditions**

World markets and prices for most metals and minerals, with the main exception of gold, remained depressed in 1985-86. There was continued excess production capacity, although world stocks were at normal levels. In Australia, mineral producers were assisted by the devaluation of the Australian dollar, partly offset by cost inflation at a rate twice or more of our main trading partners and higher cost of overseas borrowings.

The price of nickel realised by WMC in US dollars was 14.6% lower. The favourable variation of 9.4% in the average US\$:A\$ exchange rate resulted the price in Australian dollars being 5.7% lower. The average realised gold price was 12.6% higher. The world aluminium industry remained in a depressed state. The average US\$:A\$ exchange rate was 0.7022 (0.7750 in 1984-85).

## **Profitability**

Equity accounted profit was \$28.0 million (\$40.4 million in 1984-85). Several short but disruptive industrial stoppages at Kambalda culminated in a strike of over six weeks' duration just before the end of the year. The consequent lower production and sales of both nickel and gold and the lower profit for Alcoa were the main reasons for the lower profit. Dividends were maintained at 6.0 cents per share.

## **Financial**

Borrowings outstanding at the end of the year were \$319.6 million, equivalent to 33.4% of shareholders' equity.

## **Nickel**

It became necessary to suspend production from five of the eleven mining operations at Kambalda and the opencut at Windarra, which had become unprofitable. This resulted in the strikes mentioned under

*Profitability* (see above). Sales declined by 9.9% and production by 12.2%. The smelter and the refinery continued to perform well.

From the Chairman's speech on 7th November, 1986:

'We do not intend to produce nickel at a loss. Ways of reducing production costs, not only at the mines and processing plants but in the whole chain of events from the mine face to the customer, are under continual review. Any additional operating units which become uneconomic will be suspended.

We hope to make any such adjustments without retrenchments, through natural attrition and by placing the surplus personnel elsewhere in the Group. Conditions in the nickel industry will not improve until the excess capacity has been taken up through a combination of growth in demand and closure of high cost production.'

## **Gold**

Gold production was again a record 632,000 ounces, notwithstanding the loss of production during the Kambalda strike. This reflected the continuation of the policy of building up gold production, adopted five years ago. Central Norseman's profit was \$24.9 million (\$12.6 million). KLV made a profit of \$12.0 million (\$12.6 million). Hill 50 made a profit of \$1.5 million (loss \$0.2 million). Kambalda Gold Operations, Lancefield, Stawell Joint Venture, and Vatukoula Joint Venture continued.

## **Aluminium**

Alcoa of Australia profit in 1985 was \$46.6 million (\$43.7 million in 1984). Production at the Kwinana Refinery was reduced, while Pinjarra and Wagerup refineries and the Point Henry Smelter operated at near record levels. Construction of the Portland Smelter continued.

## **Talc**

During the year WMC acquired 88% of the shares in KSGM Ltd, its 50% partner in the Talc Joint Venture, and thus increased its ownership of the talc joint venture to 94%. KSGM was placed in liquidation. Talc sales were a record.

## **Projects**

In December 1985, the Joint Venturers announced their decision to proceed with the Olympic Dam Project. An alternative proposal was made to the South Australian government regarding the development of the Kingston Coal Project. Studies and research continued into the possibilities of producing phosphoric acid and/or high analysis fertilisers at Phosphate Hill. The company purchased Hi-Fert Pty Ltd, an importer, blender, and distributor of high analysis fertilisers. An exploratory development project was commenced at Bendigo. The Yeelirrie Uranium Project remained on care and maintenance.

## **Exploration**

Expenditure was \$32.5 million (\$59.6 million).

Minerals exploration continued in Australia, Fiji, Brazil, and USA. Projects included Throssell Range and Stuart Shelf. At Benambra an agreement was entered into with Roche Bros Pty Ltd to sell the discovery. In Brazil, the joint venture with Alcoa was terminated and WMC gained 100% ownership of all properties.

WMC participated in 22 petroleum exploration wells in 1985-86 (26 in 1984-85), including three offshore wells (7). Eight wells discovered measurable hydrocarbons (six oil and two gas), of which three produced commercial oil. A total of 11 delineation and development wells were drilled, of which 8 were successful. The Company's share of oil production was 201,000 barrels.

## **Board**

Keith Parry, Director of Operations, died suddenly at the age of 60 on 10 May 1986. Sir Lindesay Clark, who had retired from the Board in 1979, died on 3 January 1986, four days short of his 90th birthday.

## **FINANCIAL YEAR 1986-87**

The Annual General Meeting was held in Adelaide.

## **Business Conditions**

Markets and prices for most metals and minerals, with the main exception of gold, continued to be depressed in the first half of the 1986-87 year. In the second half, however, prices improved and reached the highest levels for some years.

The nickel price fell steadily during the first seven months of the year to a low of US\$1.52 per pound but recovered to US\$2.02 per pound by year end. The average realised price of nickel in Australian dollars was 11.3% lower than in the previous year. The gold price fluctuated between a low of A\$518 and a high of A\$695 per ounce, closing for the year at A\$618 per ounce which was also the average realised price. Nickel and aluminium demand at the end of the year was strong, supply was tight, and world stocks were below normal levels.

Corporate tax increased from 46% to 49%.

## **Profitability**

Equity accounted profit for the year before abnormal and extraordinary items was a record \$83.5 million (\$28.0 million in 1985-86). There were also an abnormal profit of \$28.5 million (nil in previous year) arising from sale of gold mining interests, offset by charges related to changes in accounting policies and by the probable future cost of restructuring mining activities, and an extraordinary profit of \$121.4 million (nil) arising from the sale of shares in Australian Consolidated Minerals Limited and Gold Mines of Kalgoorlie Limited. The total profit for the year was \$232.7 million (\$28.0 million). Dividends declared increased from 6.0 cents per share to 9.0 cents per share. The return on shareholders' equity was 7.6%.

## **Financial**

Borrowings at year end were \$345.9 million, or 27.9% on shareholders' equity.

## **Nickel**

Production returned to the levels before the strike in the previous year. Sales were in balance with production, and at about the level of the previous year. Cessation of operations by Agnew Mining Company resulted in a significant reduction in smelter throughput, which had been toll treating Agnew concentrate. Refinery production increased, but the plant was operated on a campaign basis at about 70% capacity.

## **Gold**

The year saw a major reorganisation of the Company's gold activities. WMC's 10.9% interest in Kalgoorlie Mining Associates, held through Gold Mines of Kalgoorlie and Kalgoorlie Lake View Pty Ltd, was sold. Also sold were WMC's interests in the Lady Bountiful and Davyhurst mines, as a part of which WMC acquired a 23% equity in Consolidated Exploration Ltd. A takeover offer was made for the balance of Hill 50 Gold Mine NL.

Group gold production increased to 757,000 ounces and WMC's equity in this to 358,000 ounces, both a record. Five new gold mines commenced production. Construction of a gold treatment plant at St Ives, to replace the gold milling section of the Kambalda Plant, commenced, with an expected initial throughput rate of 2 million tonnes per year. Mining operations in the St Ives area continued to expand. Gold production at Lancefield continued and an opencut position was indicated at Beasley Creek. Mining and milling continued at Emu near Agnew. Central Norseman profit was \$19.6 million (\$24.9 million). KLV profit was \$37.9 million (\$12.0 million). Hill 50 made a profit of \$7.6 million (\$1.5 million). Vatukoula Joint Venture and the Tavua Basin Mining Joint Venture in Fiji, and the Stawell Joint Venture in Victoria continued.

## **Aluminium**

Alcoa of Australia made in 1986 a profit of 40.2 million (\$46.6 million in 1985). The first potline at the Portland Smelter reached the rated capacity of 150,000 tonnes per annum.

## **Talc**

WMC became 100% owner during the year. Talc sales decreased by 9%.

## **Projects**

Construction at Olympic Dam continued. Engineering design and negotiations with the Queensland Government continued at Phosphate Hill. The future of the Kingston Coal Project remained unresolved. Work on a 60% owned new gold mining project near Adelaide River in the Northern Territory, named the Goodall Gold Project, commenced. Exploratory development and bulk sampling proceeded in Bendigo. Development of the offshore Airlie oil project commenced.

## **Exploration**

Exploration expenditure was \$40.2 million (\$32.5 million).

Minerals exploration, with emphasis on gold, continued in Australia, Brazil, and the United States where the Camp Bird Mine in Colorado was under option and work commenced at Tintic in Utah.

Petroleum exploration activity was reduced. The Company participated in 10 exploration wells (one

offshore), compared with 22 in 1985-86 (three offshore). WMC participated in 28 joint ventures but sold its interests in six properties. Two small onshore oil discoveries were made in the Eromanga Basin. Both were brought into production.

### **Board**

D J (David) Brydon joined the Board in August 1987, after the end of the year.

### **WORLD RANKING OF WMC 1986-87**

The following tabulation compares the major metals mining companies of the world in 1986-87.



## **FINANCIAL YEAR 1987-88**

The Annual General Meeting was held in Melbourne.

### **Business Conditions**

Favourable conditions in world markets continued in 1987-88. The price of nickel increased from US\$2.01 per lb at the beginning of the year to a peak of US\$10.84 in March and to US\$5.50 at the end of the year, up from US\$4.46 per lb in 1986-87. The price of gold fluctuated between US\$424 and US\$502 per ounce. The average price received was A\$629 per ounce.

The aluminium industry experienced a solid recovery in 1987, with world demand for primary metal setting a new record. Prices for both aluminium and alumina were higher than in 1986 - significantly so for metal.

The Australian exchange rate appreciated against the US dollar from 0.7203 to 0.7892.

### **Financial**

A 1 for 4 rights issue at \$5.00 per share raised \$838.8 million. At the end of the year some \$677 million remained available for future investment. Borrowings at year end increased from \$345.9 million to \$532.2 million.

### **Profitability**

The financial result in 1987-88 was the best ever in the 55-year history of WMC. The profit before abnormal and extraordinary items was also a record \$359 million, up from \$83.5 million. There was an abnormal loss of \$85.4 million (profit \$28.5 million) and an extraordinary loss of \$40.9 million (profit \$121.4 million) due mainly to writing off goodwill, diminution in the value of shares held in other companies, and a part of the cost of the Canadian acquisitions. Dividends declared increased from 10.0 cents to 23.0 cents per share. Return on shareholders' equity was 18.6%.

### **Nickel**

Production was slightly lower due mainly to lower grade at Kambalda, while sales were marginally higher. World supply was hard put to meet demand due to large increases in stainless steel production in Europe, United States, and Japan. Smelter and refinery production were lower because of limitations in the availability of Kambalda concentrate and smelter matte respectively.

### **Gold**

Group production fell to 645,000 ounces, but WMC equity in production was a record 457,000 ounces.

The new gold plant at St Ives, capable of treating up to 3 million tpa, was commissioned and the 60% owned Goodall Gold Project started production. The 25% interest in the Emu South Joint Venture owned by others was purchased and the takeover offer of Hill 50 Gold Mine NL was finalised. Lancefield Gold Operations, Emu Gold Operations (at Agnew), Vatukoula Joint Venture, Tavua Basin Mining Joint Venture, and Stawell Joint Venture continued. Central Norseman made a profit of \$16.4 million (\$19.6 million).

Four gold mining operations were acquired in North America; Western Hog Ranch, Chibougamau



Mines and Seabright Operations in Canada, and Carson Hill in California. At Seabright Operations the ore reserves at the Beaver Dam property were not substantiated. At the AGM the Chairman said:

The rationale for the acquisitions in North America was that we believed there was scope for increasing the ore reserves and the output from these operations. With the exception of Seabright, examination of the properties since acquisition confirms this assessment. We expect the production to increase over the next several years, with corresponding improvement in the financial results.'

Profits from gold mining and dividends paid from gold mining profits had been since 1944 exempt from income tax in Australia. The exemption was phased out over three years beginning in 1988. Normal taxation applied from 1 January 1991.

### **Aluminium**

Alcoa of Australia in 1987 made a profit of \$150.1 million (\$40.2 million in 1986). WMC increased its shareholding to 43.69%. The second stage of the Portland Smelter was completed and partially commissioned. An expansion of alumina production capacity by 320,000 tpa to 5.5 million tpa was announced, and development of a gold mine at Hedges began.

### **Talc**

Sales increased, but production was lower.

### **Petroleum**

Production was 750,000 barrels (223,000 barrels) from the Airlie and Bodalla projects. Development of the Saladin Project near Airlie Island proceeded.

### **Projects**

Construction of the Olympic Dam Project was nearing completion. Studies and negotiations continued regarding Phosphate Hill. The future of the Kingston Coal Project remained unresolved. The Yeelirrie Uranium Project remained on care and maintenance. Exploration of the Yandan Gold and Tarnagulla Gold projects proceeded.

### **Exploration**

The emphasis of minerals exploration remained on gold, in Australia, Brazil and United States. Plans to develop the Jenipapo gold discovery in Brazil were completed. Base metal exploration continued in the Throssell Range in Western Australia.

Petroleum exploration was at a reduced level, involving 5 wells which were all dry. Exploration for petroleum began in the USA.

### **Board**

Sir Kenneth Townsing and John Greig retired after 12 and 9 years as directors respectively. J C (John) Anderson and D H (Don) Aitken joined the Board.

## **FINANCIAL YEAR 1988-89**

The Annual General Meeting was held in Sydney.

### **Business Conditions**

Markets and prices for metals and minerals remained strong. The average LME price for nickel was US\$6.70 per lb, compared with US\$4.46 for the previous year. The price reached a high of US\$9.39 during December 1988. The price of gold fluctuated between US\$361 and US\$445. The average price received in Australian dollars was \$494 per ounce (\$629 per ounce). Alumina and aluminium prices were a record.

The Australian dollar appreciated strongly for several months, but fell by year end. The average US/Aust exchange rate was 0.8123, compared with 0.7325 during the previous year.

The corporate tax rate decreased from 49% to 39%.

### **Profitability**

Equity accounted profit before extraordinary items was \$455.6 million. A net write down of the Carson Hill and Hog Ranch properties amounting to \$110.6 million resulted in a profit after extraordinary items of \$345.0 million. Dividends declared increased from 23.0 cents to 30.0 cents per share. The return on shareholders' equity was 19.3%.

### **Financial**

Borrowings were reduced from \$532 million to \$521 million of which \$315 million was secured against Olympic Dam assets, without recourse to other WMC assets. The debt to equity ratio was 22.1% (24.7%). Cash and liquid investments at year end totalled \$461 million (\$677 million).

### **Employee Share Issue**

An offer of shares was made to certain staff in accordance with the plan approved by shareholders at the 1987 AGM. A total of 58% of eligible employees accepted the offer.

### **Nickel**

Mining difficulties caused a lower output of nickel than in the previous year. Leinster Nickel Operations near Agnew were purchased for \$175 million plus royalties and production commenced at the Rocky's Reward orebody. Lower production contributed to increased unit costs. The smelter was under-utilised because of shortage of feed. The refinery continued to operate below capacity for the same reason.

### **Gold**

The Company's equity in Group gold production increased from 456,783 ounces in the previous year to a record 816,435 ounces in 1988-89. This was somewhat below expectations, partly because of the downturn in the gold price which caused deferment or curtailment of several projects and partly because of production difficulties in United States and in Australia.

Hill 50 became fully owned. The Kambalda Mill continued to treat some gold ore while production increased at the new St Ives gold mill. Production increased at Leinster Gold Operations<sup>2)</sup> (formerly Emu Gold Operations), at Lancefield, at Kalgoorlie Gold Operations, at Vatukoula Joint Venture, at Tavua Basin Mining Joint Venture, and at Chibougamau Mines in Canada. Hill 50 and Stawell Joint Venture maintained production, while the Goodall Gold Project had its first full year of production. Commissioning commenced at Jenipapo in Brazil. Central Norseman made a loss of \$5.5 million (profit \$16.4 million). Closure of the Ajax Mine involved an extraordinary loss of \$15.0 million, making the loss after extraordinary items \$20.5 million. Some gold was produced at Olympic Dam and from residues at the Kwinana Nickel Refinery.

Development at Seabright Operations' Forest Hill Mine and mining at Beaver Dam was discontinued. Ore reserves at Hog Ranch were severely downgraded and recoveries were lower at Carson Hill because of the increasing sulphide content.

### **Aluminium**

Alcoa of Australia made in 1988 a profit of \$357.9 million, compared with \$150.1 million in 1987. As a result of the change in the corporate tax rate there was an additional extraordinary profit of \$63.4 million, resulting in a profit after extraordinary items of \$421.3 million. Alumina output was a record 5.1 million tonnes. Work to increase the capacity to 5.5 million tpa continued and it was announced that a further increase of the Wagerup capacity by 630,000 tpa was under consideration. Point Henry smelter output was a record 180,000 tonnes. The second stage of the Portland Smelter was completed and the plant produced 232,000 tonnes.

The Hedges Gold Project came into operation.

### **Copper and Uranium**

Construction and commissioning of the Olympic Dam Project was completed. Production was 16,868 tonnes of copper, 912 tonnes of uranium oxide, and 2103 ounces of gold.

### **Talc**

Production increased, while sales were lower because of the scheduling of shipments and variations in spot sales.

### **Petroleum**

Production at Airlie, and construction at the Saladin Project, commenced. Production of oil and gas also commenced in Louisiana.

### **Projects**

The Phosphate Hill Project was awaiting the results of negotiations for natural gas supply and the possibility of producing sulphuric acid from smelter gas at Mt Isa. The Bendigo Gold Project was suspended, and the Yeelirrie Uranium Project remained on care and maintenance. Exploratory

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<sup>2)</sup> Later named Agnew Gold Operations.

development proceeded at Tarnagulla Gold Project. The Y andan Gold Project was deferred.

## **Exploration**

Exploration expenditure was \$98.0 million (\$87.0 million).

Minerals exploration continued throughout Australia. Evaluation drilling recommenced at Nifty. The assets of Benambra Joint Venture were sold. Overseas, minerals exploration commenced in Canada, Liberia, and Chile and continued in USA.

Petroleum exploration in Australasia involved participation in 8 onshore and 7 offshore exploration wells, three of which encountered oil and/or gas. A production sharing contract was signed in Malaysia. In USA petroleum exploration continued in West Texas, New Mexico, and Louisiana.

## **Board**

Sir Geoffrey Badger retired after nine years as a director. D H (Don) Laidlaw joined the Board.

## **FINANCIAL YEAR 1989-90**

The Annual General Meeting was held in Melbourne.

## **Business Conditions**

Good demand for the Company's products on the world markets continued. Prices retreated from the levels of the previous year, but remained generally satisfactory. The average LME price of nickel was US\$4.35 per lb. (\$6.70 last year). At the end of the year it was US\$3.95 per lb.

The price of gold fluctuated between US\$346 and US\$422 per ounce. The price realised by WMC, including hedging, was A\$548 per ounce (A\$560 in 1988-89).

In 1989 the demand and output of both primary aluminium and alumina surpassed the record levels achieved in the previous year. Most Western world refineries operated at maximum effective capacity. Although market prices in US dollars declined, the annual average was still the highest on record. The copper market remained firm. The uranium market remained weak as a result of continued inventory redistribution, although by year end the price had risen by 32%.

The average US\$:A\$ exchange rate was 0.7693 (down from 0.8123 in the previous year).

## **Profitability**

Equity accounted profit was \$422.6 million. Last year's profit, reported as \$455.6 million, was adjusted due to changes in accounting standards to \$345.0 million. Dividends declared were steady at 30.0 cents per share. Return on shareholders' equity was 16.2 % (14.6%).

## **Financial**

Borrowings increased by \$377.7 million to \$558.4 million, which included \$338.3 million secured on Olympic Dam assets, without recourse to other WMC assets. Debt to equity ratio was 24.2% (24.3%). Cash and liquid investments at year end increased by \$114.5 million to \$593.4 million.

## **Nickel**

Production was 24.5% higher and sales increased by 20.4%. Output at Leinster Nickel Operations at 14,000 tonnes contained nickel was higher. Windarra underground production ceased and the mine closed. Mining under the South Windarra opencut continued. The production of both the smelter and the refinery increased.

## **Gold**

WMC was Australia's largest gold producer. Group gold output of 1,047,792 ounces and WMC equity share of 938,894 ounces were a record. Gold production of Hill 50 at Mt Magnet more than doubled. A throughput rate of 2.7 million tpa was reached at St Ives. Production at Agnew, Goodall, Stawell, and Kalgoorlie Gold Operations continued. Central Norseman incurred a loss of \$10.3 million. It was decided to close the Regent Shaft and scale down some other operations. Operations at Chibougamau were affected by repairs to the shaft and contract negotiations. Jenipapo in Brazil produced for the whole year, and WMC purchased the Mara Rosa Project.

## **Aluminium**

WMC increased its shareholding in Alcoa of Australia from 43.7% to 44.7%. Alcoa profit for 1989 was \$742.9 million (\$421.3 million in 1988). Refinery capacity reached 5.5 million tonnes per annum. Improvements at Point Henry and Portland increased the capacity of these smelters.

## **Copper and Uranium**

Olympic Dam performed well, particularly in the latter part of the year.

## **Petroleum**

Production of oil from the Airlie, Saladin, and Bodalla fields continued and increased by 85% over the previous year. Greenhill Petroleum increased production of oil and gas in Louisiana, New Mexico, and West Texas.

## **Talc**

Production and sales increased.

## **Lead and Zinc**

Test mining at the Gays River lead - zinc mine in Nova Scotia commenced.

## **Projects**

It was decided to defer the Phosphate Hill development. Exploratory diamond drilling was carried out on the Bendigo and Tarnagulla gold projects. Yeelirrie Uranium Project remained on care and maintenance.

## **Exploration**

Expenditure was \$101 million.

Minerals exploration continued throughout Australia, in the Philippines, Canada, USA, Brazil, and Liberia.

In petroleum exploration WMC participated in the drilling of seven onshore and five offshore exploration wells. Three wells discovered hydrocarbons. Petroleum exploration continued in the USA.

## **Board**

There were no changes.

## **FINANCIAL YEAR 1990-91**

The Annual General Meeting was held in Perth.

### **Business Conditions**

The world markets weakened and prices declined. World demand for nickel was steady and remained well balanced at the end of the year. LME prices averaged US\$4.32 per lb in the first half and US\$3.91 per lb in the second half, the average for the year being US\$4.12 compared with US\$4.35 for the previous year. The price of gold varied between US\$352 and US\$413 per ounce. The realised Australian gold price, including hedging, was A\$542 per ounce.

World production and consumption of alumina and aluminium was again a record in 1990, although growth was much less than in 1989. Prices for aluminium and alumina were erratic, although generally lower. The copper market lost some of its strength and the uranium market remained weak as a result of continued inventory reductions and the increasing availability of uranium from the USSR and other former Comecon countries.

The average A\$:US\$ exchange rate was 0.7853, 2.1% higher than in the previous year.

### **Profitability**

The equity accounted profit of \$361.9 million, while 14.3% lower than in the previous year, was the second highest in the Company's history. Dividends declared were 24 cents per share (30 cents in previous year). Return on shareholders' equity was 12.0%.

### **Financial**

Borrowings at year end were \$460 million (\$558 million), of which \$361 million was non-recourse Olympic Dam borrowings. Cash and liquid investments at year end were \$475 million, down \$118 million from the previous year.

### **Nickel**

Nickel production was an all time record, 145% higher than the previous record production in 1983-84. The increase was at both Leinster Operations and at Kambalda. Sales of nickel increased by 12.7%. Plans were announced to increase nickel production from 47,000 tpa to 65,000 tpa within 2 years, subject to satisfactory resolution of a number of issues under discussion with the Western Australian

government. The Nickel Smelter processed a record quantity of concentrates and refinery production increased.

## **Gold**

WMC remained Australia's largest gold producer. Both Group gold production, at 1,351,535 ounces and WMC equity in this of 1,042,097 ounces were records. Gold production at Kambalda Operations (St Ives) increased by 45%. The capacity of Mt Magnet Gold Operations (Hill 50) was significantly increased through the acquisition of Metana Minerals. Production continued at Agnew, Lancefield, Stawell, Goodall, Chibougamau, Hog Ranch, Jenipapo, and Mara Rosa. The Carson Hill Operation was decommissioned and WMC interests in Fiji were sold. At Kalgoorlie gold operations ceased except for small scale leaching at Mount Dimer. Central Norseman made a profit of \$4.4 million (loss \$2.0 million).

## **Aluminium**

WMC's interest in Alcoa of Australia was increased from 44.7% to 48.08%. Alcoa made a record profit in 1990 of \$783 million. All operations, including Hedges Gold, performed well.

## **Copper and Uranium**

WMC share of the operating profit of Olympic Dam was \$24.6 million (\$17.8 million). Production was 48,249 tonnes copper (up 28%), 1482 tonnes uranium oxide (up 48%) and 31,880 ounces gold (up 76%).

## **Petroleum**

Production continued and increased from the Airlie, Saladin, and Bodalla fields in Australia and in West Texas, New Mexico, and Louisiana in the USA.

## **Talc**

Sales and profit were lower. A talc milling facility in Amsterdam was purchased and upgraded.

## **Lead and Zinc**

Production at Gays River was suspended.

## **Projects**

The Phosphate Hill Project and the Yeelirrie Project remained inactive. The Bendigo and Tarnagulla projects were re-classified as exploration projects. Feasibility studies of the Nifty Copper and Bulong Nickel projects were in progress. The copper operations of KGHM in Poland were under review regarding establishing a possible relationship.

## **Exploration**

Expenditure was slightly lower at \$96.4 million.

Mineral exploration continued in Australia, Philippines, Canada, USA, Brazil, and Chile. Work in Liberia remained suspended due to civil unrest and political uncertainty.

## **Board**

There were no changes to the Board of Western Mining Corporation Holdings Ltd. K H (Keith) Hulley, Executive General Manager - Operations, joined the Board of Western Mining Corporation Limited.

## **FINANCIAL YEAR 1991-92**

The Annual General meeting was held in Melbourne.

## **Business Conditions**

Major world economies remained subdued in 1991-92, with higher than usual deliveries of several metals to Western markets from the Commonwealth of Independent States (CIS). Generally depressed metal and mineral prices, which were evident in the previous year, continued. World demand for nickel was lower than in the previous year. The LME price of nickel averaged US\$3.50 per lb during the first half year and US\$3.38 during the second half, an average of US\$3.44 for the year (US\$4.12 in previous year).

The average realised price of gold was A\$537 per ounce (A\$542 in previous year). Aluminium and alumina markets were depressed, and prices lower. The average LME price of copper remained above US\$1.00 per lb during the year. The uranium market remained under the influence of inventory sales and increased supplies from several republics in the CIS.

The average A\$:US\$ exchange rate was 2.1% lower at 0.7691.

## **Profitability**

Equity accounted profit before abnormal items was \$160.8 million (\$361.9 million in previous year). Abnormal charges were \$180 million for reduced value of certain properties in accordance with new accounting standards and a provision of \$20 million for environmental rehabilitation, giving a loss after abnormal items of \$21.2 million. Dividends declared were 11.0 cents per share (24.0 cents in previous year). Return on shareholders' equity was 5.4% (12.0%).

## **Financial**

Total debt at year end was \$451 million, including \$387 million of non-recourse borrowings. Cash and liquid investments increased to \$468 million (\$435 million).

## **Nickel**

Production was lower because of industrial disruptions at Kambalda related to piecework rates and introduction of continuous work rosters. Sales were 6.4% higher. Expansion of nickel operations at Leinster, Kalgoorlie and Kwinana proceeded. Commencement of work at Kambalda was awaiting changes to the industrial legislation by the WA Government. The Mt Keith nickel deposit was acquired from Australian Consolidated Minerals Ltd and 50% sold to Outokumpu. A 50:50 joint venture with



Outokumpu was formed to develop the project.

## **Gold**

Production declined to 726,384 ounces for the Group, of which WMC equity was 667,034 ounces. Production continued at St Ives, Hill 50, Agnew, Lancefield, Goodall, Chibougamau, Hog Ranch, and Mara Rosa. Central Norseman made a profit of \$3.5 million (\$4.4 million). Stawell Joint Venture was offered for sale. Sale of the assets in Fiji was completed. The Jenipapo Project was completed.

## **Aluminium**

The shareholding in Alcoa of Australia was increased to 48.25%. Alcoa made in 1991 a profit of \$380.9 million (\$782.7 million). Production was at record levels.

## **Copper and Uranium**

Olympic Dam made a profit of \$19.1 million (\$23.7 million). Copper production increased 28.7% to 62,082 tonnes, while uranium production was 7.6% lower and gold production decreased by 28.3%.

## **Petroleum**

Production continued from the Airlie, Saladin, and Bodalla fields in Australia and by Greenhill Petroleum in USA.

## **Talc**

The new milling facility in Amsterdam was commissioned. Lump talc production increased, while total sales decreased.

## **Lead and Zinc**

The Gays River Mine was offered for sale.

## **Projects**

The High-Analysis Fertilizer Project at Phosphate Hill remained under consideration. The Board visited the KGHM copper operations in Poland. Yeelirrie remained on care and maintenance. The Yandan Gold Project was sold. A feasibility study of the Nifty Copper Project was completed.

## **Exploration**

Expenditure was \$23 million on mineral exploration in Australia and \$17 million in Canada, the USA, Brazil, Chile, and the Philippines. Petroleum exploration expenditure was \$15 million in Australasia and \$10 million in USA. A copper-gold deposit was discovered at Ernest Henry, 40 km north of Cloncurry in Queensland.

## **Board**

Sir Harold Knight retired from the Board. Keith Hulley joined the Board as Director of Operations.

## **FINANCIAL YEAR 1992-93**

The year 1993 marked the 60th anniversary of the establishment of Western Mining, and was also the 100th anniversary of the discovery of gold in Kalgoorlie by Paddy Hannan. It had been intended to hold the Annual General Meeting in Kalgoorlie, but because of the adverse publicity following the loss of the Ernest Henry copper-gold discovery and the adverse Court decision in Canada, it was held in Melbourne.

### **Business Conditions**

Depressed markets and prices for minerals persisted, except for gold for which the price revived near the year end. Demand for primary nickel increased slightly but LME inventories increased substantially because of excess production. The LME price averaged US\$2.97 per lb during the first half year and US\$2.66 per lb during the second half, an average of US\$2.82 per lb for the year. Previous year's average had been US\$3.44 per lb.

The realised average Australian dollar gold price, including hedging, was \$511 per ounce (\$537 per ounce in 1991-92). The US dollar price fluctuated between US\$327 and US\$381 per ounce. Conditions in the aluminium industry were the worst since the formation of Alcoa of Australia in 1961. The average LME price of copper was US\$1.04 per lb for the first three quarters, but dropped to US\$0.84 per lb in the final quarter. The uranium market remained under pressure from stockpile sales and increased supplies from the CIS.

The average \$A:\$US exchange rate was 0.7040 (0.7691 for 1991-92).

### **Profitability**

Equity profit after tax and before abnormals was \$165.9 million (\$158.4 million in previous year). Net abnormal items were a charge of \$77.6 million (\$179.6 million in 1991-92). Consolidated profit after tax and abnormal items was \$64.0 million (loss of \$8.5 million in previous year). Dividends declared were 10.0 cents per share (11 cents in 1991-92).

### **Financial**

Borrowings were \$344 million. The non-recourse BP loan was repaid at a discount of \$118.1 million as a part of WMC purchasing BP's interest in Olympic Dam. Cash on hand and liquid investments decreased from \$467.8 million to \$181.9 million.

### **Nickel**

Production increased by 8%, while sales volume fell by 7.3%. Lower prices resulted in an operating loss of \$12.4 million (profit \$47.1 million in previous year). Unit production costs were steady. Expansion at Leinster was completed. Upgrading of the Kalgoorlie Smelter and Kwinana Refinery began. The Mt Keith nickel deposit became fully owned by purchasing the Outokumpu 50% interest. Development commenced.

## **Gold**

WMC equity in Group gold production fell 7% to 801,850 ounces. The Stawell Joint Venture and Chibougamau Mines were sold. Mining ceased at Goodall and Hog Ranch. Mara Rosa in Brazil became fully owned. Production increased at St Ives, Agnew, and Norseman. Central Norseman made a profit of \$1.2 million (\$3.5 million in 1991-92).

The Supreme Court of Nova Scotia awarded former Seabright directors damages, plus interest and costs against WMC. WMC appealed the decision.

## **Aluminium**

Alcoa of Australia profit in 1992 was \$258.9 million (\$380.9 million in 1991). Alcoa was the best performer in the world aluminium industry. Expansion of the Wagerup Refinery was commissioned ahead of schedule.

## **Copper and Uranium**

WMC exercised its pre-emptive right to purchase the 49% interest in Olympic Dam, held by the BP Group. The price was \$315 million. Loans from BP were repaid at a discount of \$118.1 million. Copper production increased by 12%, while uranium production was stable. Expansion of copper production capacity to 84,000 tpa and a study into a future major expansion commenced. Construction of the Nifty Copper Project in Western Australia to produce 16,500 tpa copper was well advanced.

## **Petroleum**

Oil production and sales in Australia declined by 17%. In USA, production of oil increased by 5% and gas by 12%.

## **Talc**

Production was reduced to better match sales. The financial result was depressed by slightly lower revenues and higher than expected costs of the expansion of milling facilities in Amsterdam.

## **Projects**

Expenditure on minerals was \$72 million: \$29 million at operations, \$25 million on regional exploration in Australia, and \$18 million overseas in the Philippines, Canada, USA, Brazil and Chile.

About \$22 million was spent on petroleum exploration: \$8 million in Australia, \$8 million in USA, \$5 million in New Zealand on the Kupe South Project and \$1 million in Malaysia.

## **Board**

I G R (Ian) Burgess joined the Board in July, just after the end of the year.

## **FINANCIAL YEAR 1993-94**

The Annual General Meeting was held in Kalgoorlie.

### **Business Conditions**

Prices, which were poor at the beginning of the year, started to improve in the second half of the year. The LME price for nickel fell to a low of US\$1.82 per lb in September 1993, but then recovered. The average for the first half was US\$2.14 and in the second half US\$2.62 per lb. The average for the year was \$2.38 per lb (US\$2.82).

The gold price averaged US\$378 per ounce for the year, the high being US\$407 and the low US\$342. Prices for alumina and aluminium were lower, the market suffering from excess production capacity, particularly in the CIS. Governments of the main producing countries reached a Memorandum of Understanding regarding voluntary reduction of production and integration of the Russian industry into the world market.

The price of copper declined in the first half, but rallied in the last quarter to average US\$0.86 per lb. The uranium market continued under the influence of inventories and sale of enriched Russian uranium to the USA.

The strengthening of the Australian dollar against the US dollar reduced the benefits from this. The average exchange rate was 0.6906 (0.7040 in previous year).

### **Profitability**

Equity profit before abnormal items was \$119.7 million (\$165.9 million). Consolidated profit was \$126.7 million (\$170.4 million).

Equity profit after abnormals was \$125.0 million (\$94.8 million) and consolidated profit after abnormals \$132.0 million (\$64.0 million). Dividends declared were 8.0 cents per share (10.0 cents).

### **Financial**

The debt to equity ratio was 19.8%. Cash on hand at end of the year was \$188.1 million (\$220.8 million). To maintain the conservative financial structure, having in mind the transaction with Aluminum Company of America (see below) and other capital expenditure, a rights issue of 1:8 at \$5.80 to raise \$720 million was announced on 6 July 1994.

### **Nickel**

Nickel operations were interrupted by the expansion programme. Production increased by 10.9%. Sales revenue increased and unit costs were lower, but there was an operating loss of \$23.2 million (\$28.4 million). Continuous work roster was introduced at some Kambalda mines. The Kalgoorlie Smelter was rebuilt and the Kwinana Refinery was expanded and upgraded. Expansion of Leinster Concentrator was completed. Development at Mt Keith progressed on schedule.

### **Gold**

WMC equity in Group gold production increased 11.7% to 895,829 ounces. Hill 50 and St Ives achieved record production. Leinster Gold Operations were separated from nickel operations and re-

named Agnew Gold Operations. Production continued at Lancefield and Mara Rosa. Central Norseman made a profit of \$10.2 million (\$1.2 million). Decline into the Harlequin orebody under Lake Dundas commenced.

### **Aluminium**

Alcoa of Australia made a profit of \$389.4 million (\$258.9 million). In July, 1994, agreement was reached for Aluminum Company of America and WMC to form a joint alumina and alumina chemicals enterprise, to be known as 'AWAC', from 1 January 1995, in which WMC will have a 40% interest in return for transferring to Alcoa a 9% interest in Alcoa of Australia and making a payment of US\$348.5 million.

### **Copper and Uranium**

Copper production at Olympic Dam was 71,312 tonnes and uranium oxide 1289 tonnes. Profit increased to \$60.2 million (\$47.4 million). Sinking of the Robinson Shaft commenced. Production began at Nifty.

### **Petroleum**

Oil production at Airlie and Saladin declined as expected. Production began from the Roller field. In USA, oil production declined but gas production increased. Profit was \$4.7 million (\$43.7 million). An agreement was signed with WA Government to assess the feasibility of a 1400 km gas pipeline from the North West to the Goldfields.

### **Talc**

Sales of milled talc in Europe increased. The financial result was a loss of \$1.8 million (loss \$3.5 million).

### **Projects**

The High-Analysis Fertilizer Project remained under review.

### **Exploration**

Expenditure on minerals exploration was \$83 million, up 15%. \$33 million was spent on exploration near existing operations, \$2 million on projects, \$24 million on regional exploration in Australia and \$24 million on regional exploration in the Philippines, Canada, USA, Brazil and Chile.

Petroleum exploration expenditure was \$22 million, including \$9 million on exploration for new fields, \$4 million on extensions of known fields and \$9 million on project evaluations.

### **Ernest Henry**

A Court case between WMC and Savage Exploration Pty Ltd (Savage) regarding the Ernest Henry copper-gold discovery in Queensland was settled out of Court in July 1993 when evidence given by a member of WMC staff indicated that WMC may have misled Savage. WMC relinquished all claims to the discovery in favour of Savage, agreed to pay legal costs, and \$17.5 million to its partner Hunter Resources Ltd.

Following the settlement the Board appointed a three-member Committee, headed by Ian Burgess, to conduct an enquiry into the affair. The Committee reported on 27 August, concluding there had been shortcomings but no conscious dishonesty by WMC staff.

The Board approved a letter from the Chairman to the shareholders on 31 August, informing them of what had happened and advising a number of actions taken by the Board.

## **Board**

There were no changes in Board membership.

## **FINANCIAL YEAR 1994-95**

The Annual General Meeting was held in Melbourne. In a departure from previous practice, the Chairman introduced and concluded the presentation while the Managing Director reviewed the operations.

## **Business Conditions**

From the Chairman's speech:

'Business conditions improved in 1994-95. While the price of gold remained essentially stable, base metal prices continued to increase and reached satisfactory levels during the year. The higher exchange rate of the Australian dollar to the US dollar reduced the benefits from the price increases, while currency hedging offset some of this.'

From the Chairman's statement in the Annual Report:

'Western world supply and demand (*of minerals*) have been in good balance in recent years, but large quantities of metals released to the Western markets following the break-up of the Soviet Union gave rise to excessive stockpiles and depressed prices to very low levels. This has been of particular importance to the Company as its products were very similar to those of the CIS producers which had such an impact on Western markets. Continued strong demand and some adjustments to supply, by agreement between governments in the case of aluminium and in the natural course of events in other metals, have reduced the stockpiles greatly in the last twelve months. The recent easing of the US economy has not markedly affected the demand for metals so far. World stocks of nickel continue to be drawn down.'

The LME cash price of nickel averaged US\$3.39 per lb, compared with US\$2.38 per lb in 1993-94.

At the middle of 1994, LME aluminium stocks were 2,600,000 tonnes. By the second half of 1995, production curtailments and increase in demand reduced the stocks to 600,000 tonnes. The curtailment of aluminium production caused a cutback in global alumina production. Prices of smelter grade alumina in 1992 declined by 16%, dropped again slightly in 1993, and declined an additional 12% in 1994. As inventories of aluminium declined and demand improved, some smelters were re-started. The increased demand for alumina led to a price increase of 12% in the first half of 1995 over the first half of 1994.

The average gold price was US\$384 per ounce, a 7% increase over 1993 (US\$359) and 12% higher than in 1992 (US\$343). The copper market recovered strongly. The average LME cash price was US\$1.25

per lb (US\$ 0.86 in 1993-94). The spot market for uranium strengthened and the price was the highest for five years.

The average A\$:US\$ exchange rate was 0.7410 (0.6909). Currency hedging generated gains of \$65.3 million (\$5.4 million).

### **Profitability**

Consolidated profit after tax but before abnormals was \$316.8 million (\$126.7 million) and after abnormal items \$320.8 million (\$132.0 million). Equity profit after tax and before abnormals was \$351.6 million (\$119.7 million) and after abnormal items \$320.8 million (\$125.0 million). Dividends declared were 20.0 cents per share (8.0 cents). The equity return on net assets was 7.9% (3.9%). The final dividend of 12 cents per share was fully franked at 39%.

From the Chairman's speech:

'An important aspect of the improved results was that these did not arise from boom conditions. Demand for the products was strong, but the run-down of excess world stockpiles accumulated during previous years maintained adequate supply. The price levels reached were satisfactory for efficient established producers but by no means excessive'.

### **Financial**

The gross debt to equity ratio was 20.3%. Cash on hand increased from \$188.1 million to \$441.2 million after the 1:8 rights issue.

### **Nickel**

The Mt Keith Operation was commissioned. The upgrading of the Kwinana refinery was completed and construction of an acid plant began at the Kalgoorlie smelter. The original intention to increase nickel production to 65,000 tpa was increased by the Mt Keith acquisition to 93,000 tpa. Production in 1994-95 was 83,505 tonnes while sales were 77,722 tonnes. The operating profit from nickel was \$249.2 million (loss before abnormals of \$23.2 million).

### **Aluminium**

Alcoa World Alumina and Chemicals (AWAC), in which WMC has a 40% interest, was formed on 1 January 1995. Facilities operated at high production rates. The combined contribution of Alcoa of Australia and Alcoa World Alumina to WMC net profit after tax during the year was \$143.5 million (\$147.3 million).

### **Gold**

WMC equity in Group gold production decreased 2.9% to 808,211 ounces, mainly due to the closure of the Lancefield Mine and lower production at Hill 50. St Ives produced a record 371,710 ounces. The Crusader decline at Agnew commenced production, Central Norseman made a profit of \$10.4 million (10.7 million) on its highest output for six years. Profit from Australian gold operations increased 37.6% to \$102.1 million.

## **Copper and Uranium**

At Olympic Dam, Optimisation No. 2 was completed, lifting capacity to 84,000 tonnes copper per annum. Profit was \$98.2 million and at Nifty \$3.8 million. Total production of copper was 76,646 tonnes. Uranium production was lower at 1084 tonnes.

## **Petroleum**

Oil production in WA increased 36.2 %. In the USA, production was lower. Profit was \$14.9 million (\$4.7 million). Preparatory work commenced on the building of the Goldfields Gas Transmission pipeline. WMC committed to the development of the East Spar gas field.

## **Talc**

The result for the year was a loss of \$9.1 million due to the restructuring of the Amsterdam milling operations.

## **Projects**

Negotiations regarding the Fertilizer Project continued.

## **Exploration**

In 1994-94 \$91 million was spent on mineral exploration: \$22 in the Americas, \$63 million in Australia and \$6 million in the Philippines. A joint venture was formed to explore for gold at Meliadine, near Rankin Inlet in the Nunavut Territory of Canada. An agreement was concluded for exploration of the Tampakan copper-gold deposit in Mindanao. A new Africa-Eurasia group was established within the Exploration Division with emphasis on gold in Africa and gold and copper in the Central Asian Republics.

Expenditure on petroleum exploration was \$5.8 million in Australia and \$34.9 million overseas.

## **Board**

There were no changes.

## **FINANCIAL YEAR 1995-96**

The Annual General meeting was held in Adelaide.

## **Business Conditions**

From the Chairman's speech:

'In 1995-96 the terms of trade in the world metals and minerals markets improved for the second consecutive year. Although the higher average metal prices were somewhat offset by a higher exchange rate of the Australian dollar, there was a substantial net benefit in terms of revenue per unit.'

The average LME cash price for the first half year was US\$3.83 per lb. Demand by stainless steel



producers was strong and LME stocks fell. In the second half build-up of stainless steel stocks led to the price weakening to US\$3.63 per lb, an average of US\$3.73 for the year compared with US\$3.39 per lb in 1994-95.

There was a significant decline in the aluminium and alumina markets. The first half saw good demand for both aluminium and alumina and metal prices were approx US\$1800 per tonne. In the second half demand for aluminium decreased and some idle smelting capacity was recommissioned. The metal price fell to approx US\$1500 per tonne.

The gold price averaged US\$390 for the year (US\$385 in previous year). The LME average cash price of copper was US\$1.25 per lb, the same as in the previous year. The spot price of uranium moved from US\$12.00 per lb to US\$16.50 per lb.

The average A\$:US\$ exchange rate was 0.7592 (0.7410 in previous year). Foreign exchange hedging gains before tax were \$117.9 million (\$65.3 million).

### **Profitability**

Consolidated profit after tax and was \$392.0 million (\$298.0 million). Equity profit after tax and abnormals was \$386.2 million (\$320.8 million). Dividends declared were 22 cents per share (20 cents). The final dividend of 11 cents per share was fully franked at the 36% tax rate.

### **Financial**

Cash on hand net of overdrafts decreased from \$441.2 million to \$310.4 million.

### **Nickel**

Production increased to a record 94,805 tonnes. Operating profit increased to \$314.9 million. Unit costs were 3.5% higher. Construction of the acid plant at the Kalgoorlie smelter and the installation of four gas turbines at WMC operations along the new gas line neared completion. Mt Keith expansion to 42,000 tpa commenced.

### **Aluminium**

WMC equity in AWAC's production was 4 million tonnes of alumina. In June AWAC announced a 350,000 tpa curtailment of production due to the weakness of the alumina market. AWAC acquired a 600,000 tpa alumina refinery in St Croix and an additional 6% of the Halco bauxite mining consortium in Guinea, taking AWAC's share to 33%. A 620,000 tpa expansion of refinery capacity in Sao Luis, Brazil and Point Comfort, Texas was announced, of which AWAC's share is 500,000 tpa.

### **Gold**

WMC's equity in group production decreased 7.9% to 744,552 ounces due to closure of the Lancefield and Mara Rosa operations and lower production at Hill 50. Profit decreased 34.1% to \$67.3 million. There was record production at St Ives and Central Norseman.

### **Copper and Uranium**

Copper production was 93,142 tonnes and uranium oxide production 1652 tonnes, both a record. Profit increased to \$123.1 million, reflecting increased production and lower costs at both Olympic Dam and

Nifty.

### **Petroleum**

Oil production in Australia was lower, but USA production was higher. Operating profit was \$14.2 million (\$14.9 million). After the end of the year, in August 1996, it was announced that the Company's petroleum operations were for sale.

### **Industrial Minerals**

WMC formed a 50:50 joint venture with Plüss-Stauffer of Switzerland, which acquired the Finnish talc producer, Finnminerals OY. The division made a loss of \$2.7 million, largely due to the closure of its cosmetic talc operations in USA (last year loss of \$9.1 million).

### **Projects**

A validation study of the High-Analysis Fertiliser Project was in progress. Negotiations proceeded.

### **Exploration**

Expenditure on mineral exploration was \$105.0 million, of which \$17 million was on advanced projects (including Tampakan in the Philippines), \$26.1 million was spent by business units on exploration on their leases, and \$61.9 million was spent on grassroots exploration around the world. WMC was active in exploration in 15 countries. Drilling at Meliadine in Canada continued to discover gold.

### **Board**

Don Laidlaw retired after seven years as a director. Mr M J (John) Phillips joined the Board after the end of the year, in July. Keith Hulley resigned after the end of the year, in September.

## **FINANCIAL YEAR 1996-97**

The Annual General Meeting was held in Melbourne.

### **Business Conditions**

The weakening of the prices of all products, which began in the second half of the previous year, continued. Nickel decreased by 12.3% to US\$3.27 per lb, gold by 6.7% to US\$364 per ounce, and copper by 18.4% to US\$1.02 per lb.

Aluminium metal prices fell in the second half of 1996. LME prices fell to a low of US\$0.58 per lb, while stocks reached a high of around 1,000,000 tonnes. By June 1997, stocks had fallen to around 700,000 tonnes and prices rose to around US\$0.73 per lb. In the second half of 1996 the alumina market also weakened.

The Australian dollar appreciated against the US dollar by 3.1% to 0.7830. The impact was partially offset by commodity and currency hedging.

## **Profitability**

Equity profit after tax and before abnormals was \$228.2 million (\$297.2 million after abnormals). Equity accounting is now the accounting standard. Dividends declared were 13.0 cents per share (22 cents). Return on shareholders' equity was 5.1% (9.3%).

## **Financial**

Total borrowing increased to \$1160 million, offset by short term deposits and investments of \$862 million. The net debt to equity ratio was 6% (15.6%).

## **Nickel**

Production was 10% higher at 104,667 tonnes. Unit costs rose by 12%, because of restructuring costs at Kambalda, lower production at Kalgoorlie smelter due to partial collapse of the roof, ground subsidence at Leinster, and reduction in intermediate product credits. Labour productivity increased 23% to 37 tonnes of metal per employee. Operating profit declined 58% to \$130.6 million.

## **Aluminium**

AWAC's contribution to pre-tax profit decreased by 14% to \$258.5 million. In response to improving market the 350,000 tpa alumina production cutback was lifted in March 1997.

## **Gold**

WMC equity in gold production increased by 3.5% to 770,305 ounces. Profit decreased by 35% to \$41.6 million. Hill 50 was sold for \$17.5 million. Production at St Ives was a record 433,265 ounces. Production at Agnew increased by 4% to a record 140,931 ounces. Central Norseman had record production of 124,602 ounces.

## **Copper and Uranium**

Profit decreased by 32% to \$83.5 million. Olympic Dam production fell to 75,444 tonnes. Uranium oxide production increased by 6% to a record 1758 tonnes. Copper production at Nifty increased to 11,438 tonnes. The major expansion at Olympic Dam commenced.

## **Petroleum**

The petroleum assets, other than the equity in the Goldfields Gas Transmission Pipeline, were sold for \$603.5 million, giving an abnormal profit of \$188.2 million after tax.

## **Industrial Minerals**

Profit was \$4.6 million (loss \$2.7 million). Production and sales increased.

## **Projects**

The Queensland Fertilizer Project was approved in December, 1996. Tampakan copper-gold project in the Philippines continued drilling and metallurgical testing. Negotiations for a gold joint venture at Zarmitan in Uzbekistan were in progress. Drilling continued at the Meliadine gold joint venture in

Canada. A joint venture with the Government of Cuba was established for a Cuban Nickel Laterite Project.

### **Exploration**

Mineral exploration expenditure was \$107.5 million (\$65.5 million on greenfield exploration, \$17.5 million on advanced projects, and \$24.5 on mine site exploration). An additional \$4.5 million was spent on petroleum exploration.

### **Board**

Dame Leonie Kramer retired after 13 years on the Board (Nov 1996). Prof Adrienne Clarke joined the Board in July 1996, and Mr I E (Ian) Webber in June 1997.

## **FINANCIAL YEAR 1997-98**

The 1997-98 financial year was of 18 months' duration, from 1st July 1997 to 31st December 1998, to bring the WMC financial year in line with the financial year of a number of associated companies and activities such as Alcoa World Alumina and Chemicals.

### **Business Conditions**

Metal prices across WMC's product line declined and by year end were at historically low levels. Although the fall in the value of the Australian dollar offset in part the lower US\$ metal prices, the Company's currency hedging position reduced this benefit. The average price of nickel fell by 33% to US\$2.09 per lb. Nickel market was over-supplied due to continued high level of Russian exports, increased world production and lower stainless steel production.

Global aluminium supply increased 2.8% while demand decreased 0.9%. Alumina supply increased 3.1% and demand increased 2.7%. The average copper price fell 27% to US\$0.75 per lb. The price of gold fell 11% to US\$294 per ounce.

The average A\$:US\$ exchange rate was \$0.6300 (\$0.7440 in 1997).

### **Profitability**

Profit after tax and abnormals was \$268.1 million for the 18 months. For calendar 1998 it was \$169.2 million, down 42.7% on 1997. An abnormal after tax gain of \$2.7 million was made in 1998, being the net of profits from the sale of the Goldfields Gas Transmission pipeline less write-downs at Kambalda and at Nifty Copper Operation. Dividends declared for 1998 totalled 10 cents per share (12 cents in 1997).

### **Hedging**

From the Chairman's speech:

'WMC hedges a proportion of its output for both product prices and exchange rate in an effort to minimise the effect of market downturns and exchange rate changes on revenue. All hedging is for a proportion of future exposures in accordance with policies approved by the Board; no trading is permitted.

In the 18 month period under review WMC benefited from price hedging by \$117.2 million, but incurred losses of \$182.9 million on exchange rate hedging, a net reported loss of \$65.7 million on all hedging. However, in accordance with accounting standards, price hedging gains of \$251.1 million realised during the period remain to be brought into account in future years so that the actual overall result was a cash gain of \$185.4 million. It is in the very nature of hedging that we cannot expect to make gains all the time. The merits or otherwise of hedging are decided by the cumulative result over a period of time. In the last ten years this has amounted to a gain of more than \$500 million.'

## **Borrowings**

Total borrowings increased to \$2294 million in 1998 from \$1659 million in 1997. The net debt to capital ratio was 32.1%.

## **Nickel**

The result before interest, tax, and abnormals was a loss of \$109.1 million for the 18 months and \$149.1 million for 1998 (profit \$97.2 million in 1997). Three high cost mines at Kambalda (Otter/Juan, Blair and Wannaway) were placed on care and maintenance. Production for the 18 months was 175,400 tonnes of nickel in concentrate. Record production was achieved in 1998 (119,700 tonnes in concentrate, 100,100 tonnes in matte, and 53,700 tonnes in refined metal). Unit costs declined by 14.3%.

## **Aluminium**

Profit contribution from AWAC, on a pre-tax equity accounted basis, was \$468.2 million. The contribution for 1998 was \$320.4 million, up 8.8% from 1997. Production for 1998 was a record 12.2 million tonnes of alumina, up 17.6% on 1997. Aluminium production in 1998 was 326,200 tonnes.

## **Gold**

Profit in 1998 was up 43.8% to \$87.3 million. Production was down 8.1% to 695,843 ounces. Unit costs were 10.4% lower. The gold hedge book was closed, with \$59.7 million included in 1998 profit and an additional \$251.1 million to be included in profit over the next nine years.

## **Copper and Uranium**

Profit for 1998 was down 95.6% to \$2.5 million, partly because of lower production (down 9.6% to 81,656 tonnes copper) due to interruptions caused by the expansion programme at Olympic Dam, which was largely completed. Unit costs were up 16.8%. The Nifty Copper Operation was sold for \$50 million.

## **Industrial Minerals**

Profit in 1998 was up 22.2% to \$7.7 million. Production of milled talc increased, while lump talc production was lower. A new company, Mondo Minerals Oy, was formed with Plüss-Stauffer.

**Projects**

Construction of the Queensland Fertilizer Project continued. An ore resource of 23.7 million tonnes at 8.5 grams per tonne (at 3.0 grams per tonne cut-off grade) was calculated at the Meliadine Project in Canada. Work at the Tampakan copper-gold project in the Philippines was slowed down pending joint venture discussion and re-assessment. Negotiations with the Uzbekistan Government regarding the Zarmitan Gold Project and evaluation of the Pinares Nickel Project in Cuba continued.

**Exploration**

Expenditure in 1998 was \$52.4 million. An additional \$38.1 million was spent on mine site and advanced project exploration. WMC withdrew from regional exploration in West Africa, Central Asia, and the Philippines. A gold exploration joint venture was commenced at Tulasi in Xinjiang Province in China. Exploration for gold continued at Goias Velho in Brazil.

**Board**

Don Aitken retired after 10 years as a director in November 1997. Mr P J (Peter) Knight was appointed a director in August 1997.

## WMC LIMITED AT DECEMBER 1998

During 1997-98 it was decided to change the Company's financial and reporting year from 1 July - 30 June to the calendar year. The report for the 1998 year was therefore for an 18 month period. The following information is for the 12 months ended December 1998, so as to be comparable with the figures previously given for the 1973-74 financial year.

At 31 December 1998, WMC was the seventeenth largest company by market value (\$5725 million) listed on the Australian Stock Exchange. The average market value during 1998 was \$6550 million.

There were 1145 million shares issued to 111,000 shareholders. Total assets were \$9049 million, shareholders' funds \$4644 million and borrowings \$2294 million. The financial figures cannot be compared directly with those for 1973-74 because of substantial change in money values during the 24 years (see *Overview of 1974 to 1999, Financial*).

The equity profit was \$169 million, down 43% on the previous year. The return on shareholder's funds was 3.6%. Dividends of \$114 million were declared.

At the Annual General Meeting I commented:

The rate of profitability and dividends declined, particularly in the last six months of the 18 month period when the very low price of nickel, together with adverse currency hedging, resulted in substantial losses by the nickel division.'

In calendar year 1998 WMC produced 120,000 tonnes nickel, 754,000 ounces gold (WMC equity 696,000 ounces), 82,000 tonnes copper, 1740 tonnes uranium oxide, and 381,000 tonnes talc (WMC equity). Through its 40% equity in Alcoa World Alumina and Chemicals (AWAC), WMC also had in effect a production of 4.9 million tonnes of alumina and 130,000 tonnes of aluminium.

WMC at December 1998 had four major businesses: copper-uranium, alumina, nickel, and gold. While the Company's income in 1998 came mainly from alumina, with support from gold, copper-uranium and nickel would become substantial contributors when circumstances normalised. A major fertilizer plant under construction in Queensland would become the fifth major business from the year 2000 onwards.

Capital expenditure in the 18 month period was \$1912 million and exploration expenditure was \$90.5 million. At year end there were 5541 employees (including contractors).

Nickel production was the highest ever. WMC was the third largest nickel producer in the world, accounting for 11% of world production.

Nickel was mined and concentrated at three locations - Kambalda, Leinster and Mt Keith in Western Australia. Because of the low price of nickel, two of the highest cost mines in the Kambalda-Widgiemooltha area were placed on care and maintenance. The smelter at Kalgoorlie produced 100,000 tonnes of nickel in matte and the refinery at Kwinana 54,000 tonnes nickel metal. A nickel laterite project was being investigated in Cuba in a joint venture with the Cuban Government.

Gold was produced at St Ives, Agnew and Norseman. WMC was Australia's third largest gold producer.

Copper and uranium were produced at Olympic Dam in South Australia. An expansion of the project to more than double capacity was nearing completion. The Nifty Copper Operation in Western Australia's Great Sandy Desert was sold in June 1998.

WMC continued as a 40% partner in AWAC, the world's largest alumina producer. Production of AWAC in 1998 was 12.2 million tonnes of alumina, up 17.6% on 1997. AWAC also produced 326,200 tonnes of aluminium metal.

In talc WMC owned 100% of the mine at Three Springs in Western Australia and 50% of Mondo Minerals OY, a talc mining and milling company in Europe.

A fully owned fertilizer plant was under construction at Phosphate Hill and a sulphuric acid plant at Mt Isa in Queensland. Hi-Fert continued blending and marketing imported high analysis fertilizers in Australia.

In addition to nickel in Cuba, gold projects were pursued at Meliadine in Northern Canada (56% owned) and Zarmitan in Uzbekistan (50% owned) and a copper-gold project at Tampakan in the Philippines (fully owned).

The Head Office was at 60 City Road, Southbank, Victoria, the Western Australian office in Perth, and the Exploration Division offices at Denver in Colorado and at Belmont in WA. The nickel sales office was in Toronto, Canada.

The Board consisted of 12 directors:

Chairman	Sir Arvi Parbo
Deputy Chairman	I G R Burgess
Managing Director & CEO	H M Morgan
	J C Anderson
	D J Brydon
	A E Clarke
	P J Knight
Director of Finance	D M Morley
	M J Phillips
	I E Webber
	R Woodall
Company Secretary	A R Knights

The senior management consisted of:

Exec General Manager - Copper and Uranium	P M Bowman
Exec General Manager - Nickel and Gold	P B Johnston
Exec General Manager - Projects	R P McCann
Exec General Manager - Industrial Minerals & Fertilizers	A G Michelmore
Exec General Manager - Exploration	J R Parry
Exec General Manager - Corporate Human Resources & Development	G J Travers



## UPDATE TO APRIL 1999

Several significant events occurred between the end of 1998 and the WMC Annual General Meeting on 15 April, 1999.

On 2 January 1999, a leak occurred in the flash furnace of the Kalgoorlie Nickel Smelter, which resulted in the bringing forward of the periodical reline of the furnace. The smelter was shut down for 55 days while the reline was completed in record time. Nickel production was curtailed during this period and sales were affected.

On 8 February R A G (Roger) Vines was appointed a director of WMC Limited.

The continuing very low price of nickel and the consequent continuing losses of the nickel division led to a decision in March to place a further mine at Kambalda on care and maintenance in March, followed by suspending the production at two more mines in April.

The price of nickel recovered somewhat towards the end of the period, partly because of the announced restrictions of production by WMC.

The Olympic Dam expansion project was officially opened by the Prime Minister, the Hon John Howard, on 26 March. Build-up of smelter production, which had been progressing above expectations since January, was interrupted for 27 days by a major failure in the equipment conveying smelter gas to the acid plant.

As for the outlook, I said at the Annual General Meeting:

There are some signs that the worst of the present downturn may be over, but it is not possible to be certain of that. One reason for guarded optimism is that stocks of most metals are relatively low, compared with annual consumption. This offers some hope of a quick recovery once the markets begin to improve.'

In fact, metal prices, including nickel, did improve substantially almost immediately after the meeting. The WMC share price, which opened at \$5.05 on 15 April, increased to \$6.20 by 16 April.

At the end of the Annual General Meeting on 15 April John Anderson and I retired from the Board.



## PRODUCTIVE OPERATIONS 1932 - 2002

### Total Production from GMA/WMC Group Operations, 1932-2002

Compiled by Gilbert M Ralph (revised and updated on 31/7/03)

#### 1. GOLD OPERATIONS

Name	Location	Years	Production	Notes
Mt Coolon GM	Mt Coolon Qld	1932-39	137,724 oz	Closed 1939
Western GM	Cue WA	1935	413 oz	Closed 1936
Cosmopolitan GM	Kookynie WA	1936-38	3,959 oz	Closed 1939
Triton GM	Cue WA	1936-49	245,277 oz	Closed 1949
Carshalton GM	Bendigo Vic	1936-37	5,322 oz	Closed 1937
Morning Star GM	Woods Point Vic	1936-61	243,171 oz	Closed 1961
GMK/KLV/KMA	Kalgoorlie WA	1936-87	5,516,375 oz	LHD u/g. Sold
Central Norseman GC	Norseman WA	1937-2001	4,882,392 oz	Merged Croesus
Cox's Find	Erlistoun WA	1937-1943	75,682 oz	Closed 1943
Napoleon GM	Bendigo Vic	1937	409 oz	Closed 1937
Nell Gwynne GM	Bendigo Vic	1937	1,616 oz	Closed 1937
Three Eighths GM	Waverley WA	1938-40	4,718 oz	Closed 1940
Lake View South	Kalgoorlie WA	1938-44	18,299 oz	Closed 1944
Vic Gold Dredging	Newstead Vic	1939-48	117,221 oz	Closed 1948
Mistletoe GM	Waverley WA	1940	1,730 oz	Closed 1940
Yilgangee Queen	Yarri WA	1942-65	30,649 oz	Closed 1965
New Coolgardie GM	Coolgardie WA	1950-56	180,076 oz	Closed 1956
Central Vic Dredging	Newstead Vic	1950-58	57,354 oz	Closed 1958
Great Western Cons	Bullfinch WA	1953-64	685,502 oz	Gig rising, r/train
St Ives GM	Kambalda/St Ives WA	1980-2001	5,266,241 oz	CIL plant. Sold
Hill 50 GM	Mt Magnet WA	1981-1997	1,618,973 oz	Sold
Kalgoorlie Gold Ops	Eastern Goldfields WA	1981-91	130,588 oz	Back hoes Closed
Great Boulder/KGO	Kalgoorlie WA	1982-86	76,376 oz	Closed
Lady Bountiful GM	Eastern Goldfields WA	1987	15,140 oz	Sold
Kwinana Ni Refinery	Kwinana WA	1988-92	12,810 oz	Discontinued
Lancefield Gold Ops	Lancefield WA	1982-95	714,884 oz	Closed
Vatukoula JV	Fiji	1983-91	565,640 oz	Withdrew
Stawell JV	Stawell Vic	1985-93	333,580 oz	Sold to MPI
Tavua Basin JV	Fiji	1987-91	177,908 oz	Withdrew
Agnew Gold Ops	Agnew WA	1987-2001	1,989,356 oz	Sold
Goodall Gold JV	Adelaide River NT	1988-93	229,498 oz	Closed
Chibougamau Mines	Canada	1988-93	272,977 oz	Sold
Seabright Ops	Canada	1988-90	17,266 oz	Closed
Carson Hill Ops	USA	1988-91	70,841 oz	Closed
Hog Ranch Ops	USA	1988-96	142,935 oz	Closed
Camp Bird JV	USA	1988-89	3,417 oz	Withdrew
Seabright Explns	Canada	1989-90	4,166 oz	Closed
Mara Rosa Gold Proj	Brazil	1989-96	90,364 oz	Closed
Jenipapo Gold Proj	Brazil	1990-92	97,512 oz	Sold
Olympic Dam Ops	Olympic Dam SA	1989-2002	550,992oz	
TOTAL GOLD			24,589,352 oz	Gold Bullion

Note; In addition to the gold produced above several operations produced appreciable quantities of silver. To Dec 2002, CNGC and ODO (only ones recorded) had produced a total of 8,075,268 ounces of silver. For more detail on operations refer to Group Historical Information Collection – Entities.

**2. TALC OPERATIONS**

<b>Name</b>	<b>Location</b>	<b>Years</b>	<b>Production</b>	<b>Notes</b>
Three Springs Talc P/L	Three Springs WA	1961-2000	3,486,294 t	Sold
Finn Minerals	Finland	1996-2000	2,146,726 t	Sold
TOTAL TALC			5,741,940 t	Mined talc

**3. NICKEL OPERATIONS**

<b>Name</b>	<b>Location</b>	<b>Years</b>	<b>Production</b>	<b>Notes</b>
Kambalda Nickel Ops	Kambalda WA	1967-2002	1,070,804 t	First Declines in WA
Windarra Nickel Proj	Windarra WA	1975-92	93,443 t	Closed
Great Boulder Ni Ops	Scotia/Carr Boyd WA	1975-77	3,451 t	Closed
Leinster Nickel Ops	Leinster WA	1989-2002	412,659 t	
Mount Keith Ops	Mt Keith	1995-2002	329,522 t	
TOTAL NICKEL			1,945,620 t	Contained Nickel

**4. IRON ORE OPERATIONS**

<b>Name</b>	<b>Location</b>	<b>Years</b>	<b>Production</b>	<b>Notes</b>
Geraldton Ops JV	Koolanooka WA	1966-74	5,408,136 t	Rope shovels. Closed
TOTAL IRON ORE			5,408,136 t	Iron Ore

**5. MINERAL SANDS OPERATIONS**

<b>Name</b>	<b>Location</b>	<b>Years</b>	<b>Production</b>	<b>Notes</b>
WMC Mineral Sands	Jurien Bay WA	1976-77	2,661,200 t	Closed and sold
TOTAL SANDS			16,346 t 6,607 t	Rutile Zircon

**6. COPPER PRODUCTION**

<b>Name</b>	<b>Location</b>	<b>Years</b>	<b>Production</b>	<b>Notes</b>
Warburton Ranges JV	Warburton Ranges WA	1966	66 t	In Aboriginal Res
Chibougama Mines	Canada	1988-93	30,278 t	Sold
Olympic Dam Ops	Olympic Dam SA	1988-2002	1,360,287 t	
Nifty Copper Ops	Nifty WA	1994-98	48,903 t	Sold
TOTAL COPPER			1,439,534 t	Contained copper

**7. URANIUM PRODUCTION**

<b>Name</b>	<b>Location</b>	<b>Years</b>	<b>Production</b>	<b>Notes</b>
Olympic Dam Ops	Olympic Dam SA	1988-2002	29,495 t	
TOTAL URANIUM			29,495 t	Uranium Oxide

**8. LEAD PRODUCTION**

<b>Name</b>	<b>L ocation</b>	<b>Y ears</b>	<b>Production</b>	<b>Notes</b>
Gays River Ops	Canada	1990-92	6,079 t	Sold
TOTAL LEAD			6,079 t	Contained Pb

**9. ZINC PRODUCTION**

<b>Name</b>	<b>L ocation</b>	<b>Y ears</b>	<b>Production</b>	<b>Notes</b>
Gays River Ops	Canada	1990-92	12,622 t	Sold
TOTAL ZINC			12,622 t	Contained Zn

**10. ALUMINA PRODUCTION**

<b>Name</b>	<b>L ocation</b>	<b>Y ears</b>	<b>Production</b>	<b>Notes</b>
Alcoa World Alumina	World wide	1995-2002	76,898,000 t	To Sept 2002 only
TOTAL ALUMINA			76,898,000 t	Alumina

**11. ALUMINIUM PRODUCTION**

<b>Name</b>	<b>L ocation</b>	<b>Y ears</b>	<b>Production</b>	<b>Notes</b>
Alcoa World Alumina	World wide	1995-2002	2,198,000 t	To Sept 2002 only
TOTAL ALUMINIUM			2,198,000 t	Aluminium metal

**12. PETROLEUM PRODUCTION**

<b>Name</b>	<b>L ocation</b>	<b>Y ears</b>	<b>Production</b>	<b>Notes</b>
Australasia	Western Australia	1985-97	20,900,000 bbl	Horiz drilling. Sold
Greenhill Petroleum	USA	1989-97	21,008,000 bbl	Sold 1997
TOTAL PETROLEUM			42,908,000 bbl	Crude Petroleum

**13. NATURAL GAS**

<b>Name</b>	<b>L ocation</b>	<b>Y ears</b>	<b>Production</b>	<b>Notes</b>
Australasia	Western Australia	1997	377 mcft	Sold 1997
Greenhill Petroleum	USA	1989-97	61,728 mcft	Sold 1997
TOTAL NAT GAS			62, 105 mcft	Natural Gas

**14. FERTILIZER PRODUCTION**

<b>Name</b>	<b>L ocation</b>	<b>Y ears</b>	<b>Production</b>	<b>Notes</b>
Di-ammonium Phos	Phosphate Hill	1999-2002	1,701,190 t	
Mono-ammonium Phos	Phosphate Hill	1999-2002	160,660 t	
TOTAL FERTILIZER			1,861,850 t	Fertilizer

## **STATISTICS**

### **METAL PRICES**

**1950 - 2001**







**PRODUCTION AND FINANCIAL  
STATISTICS  
1969 - 1998**

(From WMC Annual Reports)







## **AUSTRALIAN SHARE PRICE MOVEMENTS**

**1900 – 2000**



## **WMC SHARE HISTORY**

**1933 - 2002**

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**BUSINESSES AT APRIL 1999**

**VOLUME ONE**

***THE GOLDEN THREAD***



# ***THE GOLDEN THREAD***

## **CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>1</b>
<b>On The Golden Mile</b> Gold In Kalgoorlie	<b>7</b>
<b>Hidden Gold At Norseman</b> Central Norseman Gold Corporation, WA	<b>17</b>
<b>The Magnetic Mountain</b> Hill 50, WA	<b>27</b>
<b>The China Episode</b> Attempts At Gold Mining In China	<b>33</b>
<b>Rebirth of St Ives</b> Gold At St Ives, WA	<b>37</b>
<b>Rewards On The Eastern Goldfields</b> Kalgoorlie Gold Operations, WA	<b>43</b>
<b>Lancefield's Landmark Mine</b> Gold Mining at Lancefield, WA	<b>47</b>
<b>WMC's Stawell Gift</b> Joint Venture with Central Norseman, VIC	<b>49</b>
<b>The Boys In Brazil</b> Gold Exploration And Mining In Brazil	<b>55</b>
<b>Gold In The Volcano</b> Joint Venture With Emperor Mines, Vatukoula, Fiji	<b>61</b>
<b>Gold From Tarnagulla</b> Gold Exploration, VIC	<b>69</b>
<b>Agnew's Golden Charm</b> Agnew (Leinster) Gold Operations, WA	<b>71</b>
<b>Gold in Texas Tar</b> Gold Exploration With A Difference, USA	<b>75</b>
<b>Yandan Gold</b> Gold Exploration, QLD	<b>79</b>

## ***The Golden Thread***

<b>Contents</b>	<b>contd.</b>	<b>Page</b>
	<b>Bendigo Revisited</b>	<b>81</b>
	Gold Exploration, VIC	
	<b>Liberian Adventures</b>	<b>85</b>
	Gold And Diamond Exploration In Liberia	
	<b>Consolidated Gold Fields</b>	<b>91</b>
	Possible Acquisition	
	<b>The Northern Venture</b>	<b>93</b>
	Goodall Gold Operation, NT	
	<b>North American Fiasco</b>	<b>95</b>
	Unsuccessful Operations In Canada & USA	
	<b>Olympic Gold</b>	<b>101</b>
	By-Product Gold, SA	
	<b>Gold In Frozen North</b>	<b>103</b>
	Meliadine, Canada	
	<b>Gold That Can't Be Detected</b>	<b>107</b>
	Haoma Mining NL, WA	
	<b>Great Central Mines</b>	<b>111</b>
	Possible Acquisition, WA	
	<b>Gold On The Silk Road</b>	<b>113</b>
	Gold Project In Zarmitan, Uzbekistan	

# ***THE GOLDEN THREAD***

## **OVERVIEW**

Western Mining Corporation was, as Sir Lindesay Clark so aptly put it in his recollections, *Built on Gold*. It was established in Melbourne in 1933 as an associated company of Gold Mines of Australia Limited to explore for and produce gold in Western Australia. In 1949 it took over its English parent company, Gold Exploration and Finance Company of Australia Limited and became the principal company in the Group, domiciled in Melbourne.

The corporate interest was widened to minerals other than gold in 1953 and numerous projects in other minerals were pursued thereafter, but the Company's income was solely from gold operations until the 1960s when revenue started to be received from talc and iron ore.

After the discovery of nickel at Kambalda in January 1966 and the commencement and subsequent rapid growth of nickel production from mid-1967 onwards, the role of gold diminished in the minds of most people in the Company until a severe downturn in the nickel industry caused a renewal of interest in the early 1980s. The major exception was L C (later Sir Laurence) Brodie-Hall, who remained the champion of gold operations throughout their darkest times.

Group gold production continued without interruption throughout the sixty-six years to 1999, although it came very close to being interrupted in the mid-1970s. The thickness and strength of the golden thread varied considerably, but it was never broken.

Until President Nixon discontinued the gold backing of the US dollar in 1972, one of the difficulties was the price of gold which was fixed by governments (see Book Three, *Appendix XX*). The initially partial, and then complete, freeing of the price resulted in gold thereafter starting to behave like any commodity.

In the very difficult times of the late 1960s and early 1970s when the price of gold remained fixed and costs in Australia escalated rapidly, many mines continued only with assistance of the Commonwealth Government under the *Gold Mining Industry Assistance Act*, introduced in 1954 by the Prime Minister, Robert Menzies, personally. Under the Act a subsidy related to the cost of production was paid, and subsequently a payment to assist with development was introduced. It was intended to last two years but finally ended 18 years later after the price of gold was freed at the end of 1972.

Beginning in 1994, profits from gold mining and dividends paid from gold mining profits were exempt from income tax in Australia. The exemption was phased out over three years beginning in 1988. Normal taxation applied from 1 January 1991.

WMC's golden thread doubled in strength from 1974 to the end of 1998 when Group production was 14,617,700 ounces, compared with 7,472,640 ounces from 1933 to 1973.

There were many changes in Western Mining's gold operations in these later years.

1. WMC had been involved in gold production on the Golden Mile in Kalgoorlie since 1934, when Gold Mines of Kalgoorlie Ltd (GMK) was incorporated. Following amalgamation with Lake View and Star Limited in 1973 and participation in a partnership with Homestake Mining Company (Kalgoorlie Mining Associates) in 1976, WMC's involvement continued until 1987 when all its interests on the Golden Mile were sold for \$268 million.

2. In the sixty four years since its establishment on 27 March 1935 Central Norseman Gold Corporation NL, a significant WMC gold interest, had been through many ups and downs but there had been no interruption to production. There was no end in sight in April 1999.
3. In 1974 WMC acquired a 37.9% interest in Hill 50 Gold Mine NL at Mt Magnet which was dormant and in need of cash. WMC subsequently took over the management of Hill 50 and resumed production in 1981. In 1988 a new treatment plant was built and in the following year Hill 50 became wholly owned by WMC, leading to further expansion of operations in the area to become the second largest gold producer in the Group. In June 1997 the operation was sold and WMC retired from the Mt Magnet area.

In 1976 WMC's gold interests were reviewed by a Committee consisting of Sir Laurence Brodie-Hall, Sir Kenneth Townsing, and G M (Gilbert) Ralph. The outcome is recorded in the Attachment at the end of this Overview.

4. The discovery of several rich pockets of gold ore in the nickel mines at Kambalda in the latter part of the 1970s during a periodical downturn in the nickel industry, and a rise in the price of gold prompted the installation of a gold plant at Kambalda in 1980. Discoveries followed in the old gold mining area of Paris - St Ives south of Kambalda. Production steadily climbed as several opencuts and underground mines were developed and in 1988 a new treatment plant began operating south of Lake Lefroy. Management of the gold operations was in June 1992 separated from Kambalda Nickel Operations to become St Ives Gold Mines - in 1999 the largest gold producer in the WMC Group.
5. A number of small gold mines were developed in the 1980s in the Eastern Goldfields at Sand King, Lady Bountiful, Great Boulder, Siberia and Thiel Well and these were managed together under the name of Kalgoorlie Gold Operations. By 1989 they were either worked out or sold and Kalgoorlie Gold Operations was wound up. The economic working of these and many other oxidised gold ores was made possible by improvements in the cost of opencut mining and the development of the Carbon-In-Leach (CIL) and Carbon-In-Pulp (CIP) gold recovery processes (see Attachment). These processes replaced the earlier Merrill-Crowe de-aeration and zinc dust precipitation method of gold recovery.
6. The downturn in the nickel industry in the late 1970s prompted the management at Windarra Nickel Operations (WNP), north of Laverton, to search for gold in the vicinity of its temporarily closed nickel mine. This led to the reopening of the old Lancefield gold mine. It utilised some of the nickel treatment facilities at Windarra and remained in production until 1994.
7. WMC and Central Norseman Gold Corporation formed a 50/50 joint venture in 1979 to explore and later develop a gold mine at Stawell in Victoria. The Stawell Joint Venture came into production in August 1984. It was sold in 1992.
8. The Company's first overseas operating venture was in 1983 when WMC took an interest in, and management responsibility for, Emperor's Vatukoula mine in Fiji. The interest in the Vatukoula Joint Venture was sold in 1991.
9. The strong increase in the price of gold in the early 1980s prompted considerable enthusiasm within WMC for floating its gold interests into a separate company. I was against this having experienced the many ups and downs of metal prices, and the proposal did not proceed.

10. The Windarra Nickel Project also initiated the reopening of the Emu (short for East Murchison United) gold mine near Agnew, which came into production in August 1986 after development of an opencut and building of a treatment plant. When WMC acquired the Agnew Nickel Mine and established Leinster Nickel Operations in January 1989, the nearby Emu Mine was absorbed and it became known as Leinster Gold Operations. Following a management re-arrangement in April 1994, it was renamed Agnew Gold Operations.
11. Another small opencut gold mine, named Goodall, was established near Adelaide River in Northern Territory in 1986-87 and began production in mid-1988 as a joint venture with W R Grace Australia Pty Ltd. It operated successfully until worked out in 1992.
12. In 1988 several gold mines were acquired in Canada and the United States of America. These were all unsuccessful and were either sold or shut down by 1996.
13. In Brazil small opencut mines at Jenipapo (discovered by WMC) and Mara Rosa (purchased) came into production in 1989. Jenipapo was mined out by 1992 and Mara Rosa by 1996. Exploration for gold in Brazil continued; by 1999 a small but high grade orebody had been discovered at Goias Velho in the State of Goias.
14. Gold was also won as a by-product of the nickel refining operations at Kwinana between 1988 and 1992 and from Olympic Dam Operations at Roxby Downs in South Australia since 1988.
15. In addition to gold production, numerous gold exploration projects were pursued between 1974 and April 1999. Some of these projects are described in this chapter; others are mentioned later in Volume Four, *THE TREASURE HUNT*.
16. A gold discovery of 23.7 million tonnes at 8.5 grams per tonne (at 3 grams/tonne cut-off grade) at the Wesmeg Project was being evaluated in April 1999 at Meliadine, near Rankin Inlet in northern Canada. WMC had a 56% interest.
17. An agreement to develop a known gold orebody of 20 million tonnes at 10 grams/tonne at Zarmitan in Uzbekistan in a 50:50 joint venture with the Uzbekistan Government was nearing completion in April 1999.

### **Group Gold Production**

The graph at the end of this section shows Group gold production from 1932 to 2001.

From the first production in 1932 until cessation in 2001 the WMC Group produced 24.5 million ounces (763 tonnes) of gold from all sources, including Fiji and North and South America. I believe that this is more than produced by any other Australian enterprise until that time. WMC's equity in that production amounted to 16.3 million ounces (507 tonnes).

Annual Group gold production reached a peak in 1990-91 when 1,083,402 ounces were produced by companies and joint ventures owned or managed by WMC. This was the highest production rate by any Australian producer up to that time. The WMC equity in Group gold production also peaked at 940,341 ounces in 1990-91.

Book Three, *Appendix V* contains detailed gold production information:

WMC Group Cumulative Gold Production (tabulation GHI-WMC-78 by G M. Ralph)

WMC Equity In Cumulative Gold Production (tabulation GHI-WMC-079 by G M Ralph)

WMC Percentage Interest in Group Gold Operations (tabulation GHI-WMC-80 by G M Ralph)

### **Subsequent Events**

In 2001 WMC decided to sell all its gold assets and exit gold mining. The enclosed announcement in September 2001 deals with the sale of the Agnew and St Ives Gold Operations to Gold Fields of South Africa. Central Norseman was merged with Croesus Mining NL in January 2002. The golden thread, which had remained intact for nearly seventy years, was finally broken.

The Meliadine Project was sold in July 2003.

## **Attachment to Overview**

### **CIL And CIP Processes**

In late 1800s it was found that carbon absorbed gold from a cyanide solution. The practical application of this to recovery of gold in milling plants was developed in the 1970s in USA, South Africa, and Australia.

In the Carbon-In-Leach (CIL) process hard, porous activated carbon, made from burnt coconut shells, is added to the last cyanide leach tank and moved counter-current until it reaches the first tank. By this time the carbon, "fully loaded" with gold, is removed from the slurry and washed with diluted hydrochloric acid before being passed to what is known as the elution column.

Hot caustic soda and sodium cyanide circulated through the column strip the gold from the carbon surface. Fresh water is added and the gold-rich solution is circulated through a series of electro-winning cells where the gold is deposited on steel wool cathodes. The cathodes are removed and dissolved in hydrochloric acid, leaving a gold-silver sludge. The sludge is filtered and smelted and poured into moulds as doré (unrefined) bullion.

The carbon is cleaned, reactivated by heating in a rotary kiln, and re-used.

The difference between CIL and Carbon-In-Pulp (CIP) is that in the former the gold is first leached from the ore before the carbon is added. In the CIP process the carbon is present during the leaching process and gold dissolution and recovery from the pulp proceed simultaneously.

### **Review of WMC Gold Interests in 1976**

In April 1976 when WMC's gold operations were struggling to survive, I appointed a Committee to review the Company's gold interests and to recommend what action, if any, WMC should take. The Committee consisted of Sir Laurence Brodie Hall, Chairman of Group gold companies, Sir Kenneth Townsing, a WMC director and Gilbert Ralph, Executive Officer Gold Operations.

At that time, WMC's gold interests included a 50.5% interest in Central Norseman Gold Corporation (CNGC), a 31.7% interest in Gold Mines of Kalgoorlie Ltd (GMK), a 37.9% holding in Hill 50 Gold Mine NL (H50), a 39.4% interest in Kalgoorlie Southern Gold Mines NL (KSGM) and a 20.9% interest in Kalgoorlie Lake View Pty Ltd (KLV). CNGC was making a modest profit, GMK was a holding company in KLV, Hill 50 had just suspended development work but were continuing exploration, KSGM were engaged in a modest drilling programme and KLV had just entered into partnership with Homestake Ltd to form Kalgoorlie Mining Associates (KMA) as a last ditch effort to rescue the gold operations in Kalgoorlie. Production at Fimiston had been discontinued in December 1975 and the mines placed on care and maintenance. Operations at Mt Charlotte were continuing at a modest cash surplus, some gold was being produced from Fimiston opencuts and the clean-up of the old Lake View and Star (LV&S) plant at Fimiston was yielding a surprising amount of gold. Homestake committed themselves to spend up to \$3 million to cover immediate needs of KLV and a further \$5 million if necessary towards a new treatment plant.

The gold price fell from US\$186.50 per ounce at the beginning of 1975 to US\$140.25 in December and continued falling steadily in the early part of 1976. At the time of the study it was about US\$125 per ounce. With increasing sales of gold from stockpiles by the International Monetary Fund, the prospects for the gold price in the short term were not good.

The Committee's report was submitted at the end of June 1976. Among other things they considered trends in the price of gold, changing patterns in the gold market, ore reserves, cost of production, exploration, practicalities of maintaining operations, financing, inflation, employment and community aspects. They looked at a number of proposals in relation to GMK, KLV and KMA ranging from the acquisition of GMK and Poseidon (to gain a 52% interest in KMA for an estimated \$3 million) to a total withdrawal from GMK, KLV and KMA for an estimated cash return of about \$600,000. The Committee was of the view that the longer term prospects for gold were favourable.

The Committee recommended that, unless WMC was prepared to increase its equity in KMA, it should dispose of its interest as soon as possible. In the case of CNGC it thought the short term future was secure and that further exploration was justified. For the remaining interests the Committee recommended that the Hill 50 exploration joint venture be carried through to completion, the exploration programme proposed for KSGM be implemented and that the 75% Homestake 25% WMC funded exploration effort in Victoria be continued.

The Board accepted most of the recommendations. The major exception was that, because of the difficult cash flow outlook for WMC and the still deteriorating outlook for gold, the suggestion of purchasing Poseidon Ltd was not pursued. This appeared the correct decision in the short term; KLV announced in August that it would suspend operations at Mt Charlotte in November 1976 and notices were issued to the majority of employees advising that the operations would cease on 10 December. In the longer term it was not a good decision; in 1987 WMC sold its 10.9% interest in KMA for \$268 million. The additional interest through the purchase of Poseidon would have been worth a fortune.



## **ON THE GOLDEN MILE**

For a concise history of events affecting WMC on the Golden Mile until 1984, see G M Ralph: *A Brief History of Gold Mines of Kalgoorlie Limited*, in that company's 1984 Annual Report.

### **The Early Years**

Among the assets acquired by the London syndicate which led to the formation of Gold Mines of Australia and, later, Western Mining Corporation and Gold Exploration and Finance Company of Australia Limited (GEFCA), were titles and options to properties on the Golden Mile in Kalgoorlie. These were incorporated in a London based company, Gold Mines of Kalgoorlie Ltd (GMK) in 1934.

The more favourable taxation regime in Australia in 1949 prompted the British principals to have its Australian registered subsidiary, Western Mining Corporation Limited (WMC), take over GEFCA and thus transfer the control and management of GMK to Australia. In 1951 Gold Mines of Kalgoorlie (Australia) Ltd was formed to acquire the entire undertakings of GMK. Western Mining became a 30% shareholder and General Managers and Consultants to the new company, for simplicity referred to in the following also as GMK.

In the 1950s GMK took over a number of smaller companies operating nearby mines and acquired additional leases on the Golden Mile. In 1962 it bought the Mt Charlotte leases from WMC. Mt Charlotte was brought into operation in 1963 as a large scale mechanised mining operation, using diesel-powered equipment underground. This was the first such application in Western Australia, and its introduction required changes in the Mines Regulation Act. L C (later Sir Laurence) Brodie-Hall, with the aid of J B (John) Oliver, was instrumental in getting the agreement of the government and the unions to these changes.

### **Early 1970s: Facing Closure**

By the early 1970s the continuation of GMK as a gold producer was in doubt because of the fixed price of gold and rising costs through inflation. Despite Commonwealth Government assistance to the gold mining industry and the small benefit accruing from the two tier price system introduced in 1968 (see Book Three, *Appendix XX*), GMK incurred a loss of \$1,513,248 in 1970-71. Announcing the loss, directors of GMK said:

'Unless there is a substantial increase in the price of gold, the Board has decided that in view of the loss on operations in 1970-71 and the decision by the Commonwealth Government not to increase gold subsidy, advance development work will cease after completion of the development above the 1090' level at Mt Charlotte. It is expected that under these conditions operations will result in a cash surplus for a limited period.

Gold mining operations will be suspended when all developed ore which is economically extractable has been treated. Under present conditions operations could extend into the first half of 1973. If costs, including wages, escalate sharply during this period, the termination date would be earlier.'

The headlines in the Western Australian newspapers the next day were: 'It's The End Of Paddy's Golden Era' (a reference to Paddy Hannan, the discoverer of Kalgoorlie), and 'WA's Gold Mining Industry In Its Death Throes'. In the Melbourne *Age* the situation was summarised as 'Once it was the richest piece of dirt in the world; now it isn't worth mining'.

The intention to cease operations was confirmed by the Chairman of WMC at the Annual General Meeting in October 1971.

In *Built on Gold* Sir Lindesay recalls the events which prompted a change of mind:

Then in December 1971 the US revalued gold to US\$38.00 per ounce, and in January 1972 they revalued the US dollar by 8.6 %. Soon after this an appreciable rise in the free market gold price prompted GMK to review its future on the Golden Mile.'

In the Chairman's Speech at the 1972 AGM of WMC in November 1972, Sir Lindesay said:

'Since the increase in the free market price of gold, and the liberalisation of the Federal Government's Gold Subsidy Scheme both Gold Mines of Kalgoorlie (Aust.) Limited and Central Norseman Gold Corporation NL have resumed development ..... there is sufficient encouragement in current economic circumstances to begin exploration for additional ore reserves. The main potential for further ore is at Mt Charlotte although some additions can be expected at Fimiston.'

### **Kalgoorlie Lake View**

In an endeavour to improve the viability of gold production on the Kalgoorlie field, Brodie-Hall initiated the amalgamation of GMK and its neighbour Lake View and Star Limited (LV&S).

LV&S had been one of the major gold producers on the Golden Mile since 1910. In 1971 LV&S had been taken over by Poseidon Ltd who intended to use the treatment plant, water entitlement, and the workforce to process ore from its nickel deposit at Mt Windarra. In the event a new nickel plant was constructed at Windarra and LV&S continued to produce gold at a loss for several years.

Following discussions which started in mid-1972, GMK and LV&S merged in May 1973 to form Kalgoorlie Lake View Pty Ltd (KLV). GMK and LV&S each had a 47% interest in the new company, with WMC contributing \$1 million cash for the remaining 6%. The purpose of the amalgamation was to obtain economies of scale, and thus put the Kalgoorlie field into the best position to continue in operation. It was also thought that intensive exploration of the upper levels of the LV&S workings, using methods developed at GMK over the years, could turn up additional ore and enable an increase in the production rate. WMC was appointed General Managers and Consultants to KLV.

Brodie-Hall was instrumental in bringing about the amalgamation and became the first Chairman of KLV. The merged properties covered the greater part of the field, the remaining leases belonging to Great Boulder Mines Ltd (which became a fully owned WMC subsidiary in February 1976), and to North Kalgoorlie (1912) Ltd.

At the time of the merger the gold price was about US\$60 per ounce. It had been steadily increasing after a two tier price system was introduced in 1968 and gold was allowed to find a free market price with a modest premium over the official price of US\$42.22 per ounce. There was some optimism that the price would continue to increase, and indeed it did until the end of 1974 when it reached about US\$190 (A\$140) per ounce. By that time the US Treasury had started gold sales and subsequently convinced the International Monetary Fund to dispose of one third of its gold by returning a half to depositors and auctioning the other half. By September 1975 the price had fallen to A\$103 per ounce.

## Rationalisation

The rationalisation of the operations following amalgamation in May 1973 was a very considerable challenge. To accomplish this task, J B (John) Oliver was appointed the first General Manager of KLV.

During the first few months the two staff groups were amalgamated under selected departmental heads. Stores were centralised at Lake View's Chaffers Plant, and services and workshops were set up in the most suitable buildings. GMK's Oroya Treatment Plant was modified to treat free milling ore only and LV&S's Chaffers Treatment Plant remained on refractory ore. The LV&S mining and milling records and measurements were converted to metric units to match GMK's.

Mine development was resumed and plans made to increase production at Mt Charlotte to 57,000 tonnes per four-weekly period and at Fimiston East and West to 50,000 tonnes per period. This required considerable expenditure in underground development which had been allowed to fall behind over the previous year or two.

Within the first two years significant improvements were implemented at Mt Charlotte. New and bigger diesel powered trucks and loaders were put underground, haulage capacity was increased, and ventilation improved. Operating cost increases were held to less than the inflation rate.

At Fimiston things did not go so well. There was a shortage of skilled miners and underground workers and production actually fell to less than 30,000 tonnes per period. Rehabilitation of the underground workings and development work necessary to connect the GMK and LV&S leases, improve ventilation, and provide access and communications was hampered by the shortage of experienced development miners and timbermen.

The amalgamation did, however, prompt the development of a number of low grade opencuts, particularly on the former LV&S leases. Production was 8000 tonnes per period.

Both the Oroya and Chaffers Treatment plants were in need of significant rehabilitation. Over the first two years major work brought the Oroya Mill up to a reasonable standard to treat the free milling ore from Mt Charlotte and the opencuts.

At the Chaffers Plant things were much worse than expected. Much of the plant and most of the buildings were of 1930s vintage and very run down. The rate of repair barely matched the rate of failure. It became obvious that the plant would need to be replaced.

Services such as power, water, compressed air, transport, housing and maintenance were rationalised by combining the two groups where possible. In the case of the two power stations, whilst both were in a reasonable state of repair despite their age, they were not compatible. GMK's Oroya Station generated at 50 Hertz whereas LV&S Station generated at 40 Hertz, making interconnection impossible. Over a period of some years the 40 Hertz plant and equipment (including large winders) were converted to 50 Hertz and the LV&S power plant closed.

All administrative functions, including accounting, financial, costing, payroll, stores, purchasing and personnel were standardised and centralised where possible. GMK's old Perseverance Office was used as the main administration centre even though the LV&S Office was probably better; the latter was in an area destined to become an opencut.

Additional housing and single men's quarters were established over a period to allow for an additional 400 employees.

Operating costs escalated significantly, mainly due to wage rises. Cash surpluses were spent replacing worn out mining equipment and rehabilitating the almost beyond repair treatment plants. There was no return to the shareholders. GMK and LV &S had either incurred losses or made inadequate profits in the previous five years. WMC had made a further \$500,000 available on loan to KLV during 1973, but was not able or prepared to put more money into KLV.

Poseidon had borrowed heavily from the Australian Industries Development Corporation (AIDC) to finance the development of the Windarra Nickel Project and was in financial difficulties. On the brink of being forced into receivership, it was not able to make any contributions to LV &S.

Brodie-Hall's best efforts at obtaining additional assistance from the Federal Government did not succeed. The Industries Assistance Commission, to which the Prime Minister had referred the matter, on 6 June 1975 recommended repealing the *Gold Mining Industry Assistance Act* and phasing in a tax on gold.

## The Crisis

In June 1975 KLV announced that mining at Fimiston would be restricted to higher grade areas and to development. Some 200 employees were retrenched. On 31 August 1975 Brodie sent a letter describing the Company's circumstances in detail to the Secretary of the Commonwealth Department of Minerals and Energy. In his memoirs Brodie tells of his last ditch effort with the Minister of Minerals and Energy, R F X (Rex) Connor in Canberra. After listening to him, Connor's comment was 'Fold it up. If you can't make it pay, fold it up.'

In July 1975 Poseidon offered its 47% share in KLV for sale to WMC. WMC declined.

It was decided to make another effort to ensure that the Federal Government was fully aware of the seriousness of the situation. In Brodie's absence overseas (he was in San Francisco negotiating with Homestake), I sent on 3 October a confidential telex to the Prime Minister, Treasurer, Minister for Minerals and Energy and Minister for Labour and Immigration, advising them that

'there appears to be no option but to close down further sections of the mine ... . The result would be a further reduction in workforce from approximately 1,000 to approximately 450.'

Discussions in progress to introduce further equity capital would, if successful, enable continuation at the reduced level. A decision and a public announcement were likely to be made by 14 October, the day of GMK Annual General Meeting.

Following my telex, Rex Connor called a meeting in Canberra to discuss the situation further.

The *Kalgoorlie Miner* of Thursday, 9 October 1975 reported that:

'An urgent top level meeting will be held in Canberra today to discuss the slump in world gold prices which has threatened the jobs of gold mining employees in Kalgoorlie and Norseman.

The Minister for Minerals and Energy, Mr Connor, the Chairman of Western Mining Corporation, Mr A.H. Parbo, the MHR for Kalgoorlie, Mr F.W. Collard and a senior official of the Department of Minerals and Energy will attend.

The meeting was called after a report that the slump in gold prices had jeopardised the future of

WMC's goldmining operations in Kalgoorlie and Norseman.

It will attempt to determine methods of improving the state of the industry.

The Secretary of the mining division of the Australian Workers' Union Mr A.J. Barwick, said that 1500 men would lose their jobs if the mines closed and there would be no alternative work available in the Goldfields.'

I did attend a meeting with Rex Connor and Sir Lenox Hewitt at Rex Connor's home in Canberra. Also present were Fred Collard, Buzz Myers, Jim Scully and departmental officers. I explained the situation and said that the best the Company could hope to do was to maintain operations at Mt Charlotte. If Government funds of \$3 million could be made available by way of long term low interest or no interest loans, repayable from future profits, a two year development programme employing an additional 150 people could be carried out on higher grade Fimiston ore. If further finance was available, construction of a new milling plant for Mt Charlotte ore costing \$9 million over two to three years would provide employment in construction. Sir Charles Court had telephoned me, advising that, in the interests of the people of Kalgoorlie, the State Government would like to participate in any discussions on a non-political basis.

In a telex to Brodie in San Francisco on 10 October, I informed him:

'Mr Connor said that he was very sympathetic and would like to assist. He asked that the possible avenues for government assistance which I had explained to him verbally should be submitted in writing.

He stressed that he was only one of the ministers involved and the final decision would have to be made by the Cabinet. However, he indicated that he would be in favour of doing something.'

Incredibly, the Secretary of WA Trades and Labour Council, Jim Coleman, made a statement in the Perth *Daily News* virtually at the time we were talking to Mr Connor, accusing WMC of playing politics and 'undertaking a campaign of threats, rumours and arrogance'. I knew Jim personally quite well and sent him a telex, leaving him in no doubt about what I thought of his comment.

Events moved unpredictably and fast. Almost immediately after our meeting Rex Connor was fired as the Minister for Minerals and Energy because of his prominent part in the Khehlani loan affair. No-one else followed up the proposal I had put to him. On 6 November there was a public meeting in Boulder Town Hall to explain the inevitability of closure of the Fimiston underground Mine. On 11 November 1975, the Governor General Sir John Kerr dismissed the Whitlam Government and appointed Malcolm Fraser interim Prime Minister pending a Federal election. In the circumstances, there was no further response from Canberra.

Later in November 116 workers were dismissed and ore production ceased at Fimiston. On 31 January 1976 the Company was advised the Federal Government would not participate in the loan requested. Development continued through a \$500,000 contribution by the State Government until mid-February 1976 when all Fimiston activity ceased. Between June 1975 and April 1976, when pumping at Fimiston stopped and the workings began to flood, the workforce had been reduced from 1,128 to 470 people.

Only Mt Charlotte remained in production on the Kalgoorlie field.

For a good account of the initial KLV operations refer to 'The First Thirty Months of Operations' in *WMC Group Historical Information Collection GHI-KLV-1*. There is a more comprehensive history of

Kalgoorlie Lake View in the *WMC Group Historical Information Collection* GHI-KLV-6.

### **The Homestake Partnership** (Kalgoorlie Mining Associates)

Sir Laurence Brodie-Hall, who was in the middle of these events, writes in his Memoirs:

'Neither of the major shareholders was able to put in more capital and, although WMC made funds available to keep the company afloat, it was not prepared to put in more funds by way of purchasing more equity as it was sensed that these were circumstances in which the corporation would be seen not only as Big Brother but as taking advantage of the other smaller companies' misfortune. I was forced to seek a new partner.

At this time KLV was very much a hand-to-mouth operation. The Company had \$3 million of debt and no cash other than that generated on a day-to-day basis. As long as production could be maintained the debt could be kept rolling over. If it ceased we would be in dire trouble. As we paid the bills thirty days in arrears, the current period's gold paid debts incurred two periods previously. I was very anxious to find a partner with some money. Negotiating terms favourable to KLV under which the new partner would buy in was very difficult as the gold price had been plummeting and the other party knew our plight.'

Agreement with the Homestake Mining Company in the USA was reached in December 1975 and formally signed on 10 March 1976. Homestake acquired a 48% interest in Kalgoorlie Mining Associates (KMA) for \$3 million irrevocably committed, and a further \$5 million contingent on the Associates being unable to fund essential development out of cash flow. KLV, in which WMC had a 20.9% interest (6% direct and 14.9% through GMK), had a 52% interest. The WMC interest in KMA was thus 10.9%.

On the day of signing the Agreement the gold price was \$107 per ounce. By late August the price had fallen to \$83 per ounce and 'the mine was losing money at an alarming rate'. The partnership decided to mine all recoverable ore and then suspend operations. The date of closure was set at 10 December 1976. Retrenchment notices (known locally as 'pink slips') had been prepared and handed out to employees other than those who were needed to stay and effect the closure.

Meanwhile, surprisingly in the face of the massive US sales, the price of gold had started to rise, helped in Australia by the devaluation of the Australian dollar by 17½% on 29 November. On 9 December the Management Committee of KMA met and decided to continue in operation. Retrenchment notices were withdrawn but many employees had made other arrangements and in mid-January 1977 the workforce had fallen to 93.

Sir Laurence continues the story:

Then began a most exciting time. Quite a decent surplus had been made from the recovery of the ore stocks but there was no developed ore remaining. There was however a significant quantity of broken ore which had been left in the stopes when it became too heavily diluted with the sand fill. The gold price was rising and showed good signs (to the optimistic) that the rise would continue. A rapid calculation indicated that it would be feasible to draw the diluted ore and screen out the sand fraction. A screening plant was hurriedly designed, fabricated and erected adjacent to the main shaft ore bin to which the lump ore, after screening, was directed. A conveyor was built to take the sand fraction from the screen to a nearby winze connecting to an empty stope on the Reward ore body and we were back in business. As Wellington said at Waterloo "It was a near run thing".'

Kalgoorlie Mining Associates operating loss of \$5,462,000 in 1975-76 was turned into a profit of \$410,000 in 1976-77.

The LV&S Chaffers Treatment Plant at Fimiston was demolished and, to everyone's pleasant surprise, yielded 33,800 ounces of gold from clean-up operations over six years. Over the next few years the price of gold continued to rise and KMA was able to finance all capital works, including a new treatment plant at Oroya and a new crushing plant at Mt Charlotte, from internal cash flows. The profits of KMA rose to a peak of \$44 million in 1982-83. This reflected the gold price which rose from an average of \$102 per ounce in 1976 to \$538 per ounce in 1980, reaching an all-time high of US\$850 per ounce on 12 January 1980. The price fell to US\$409 per ounce in 1984. The first half of the 1980s were exceptionally good years for Australian gold producers.

Work on re-opening the Fimiston underground mines began in May 1979 and ore production, treated in the new modernised Oroya Plant, resumed in mid-1981. The opening ceremony of the new plant was performed by the Premier, Sir Charles Court, on 10 July. I attended, but was concerned that my presence should not downgrade Keith Parry's role, who had been responsible for the work. Brodie's role as the Chairman of the gold companies also caused some tension with Keith.

Sir Charles praised all concerned, including the Unions who, he said, had been very co-operative. There had not been a major strike on the Golden Mile for 46 years.

A new 1200 m deep shaft at Mt Charlotte, the Cassidy Shaft, was also begun in 1981 to gain access to the ore under the Flanagan Fault.

The Western Deeps exploration project, initiated in the 1960s in partnership between GMK and Anglo-American to test for a recurrence of high grade mineralisation at depth in Fimiston, was resumed with KMA participation.

In 1982 KMA became Australia's then largest gold producer, with 150,550 ounces for the year.

In 1986 WMC reviewed its gold mining activities and came to the conclusion that its interest of only 10.9% in KMA did not warrant the management time and effort devoted to it. In 1985-86 the WMC equity in gold produced by KMA was only 24,180 ounces.

On 11 June 1987 WMC sold 19.9% of its interest in GMK to North Kalgurlu Mines Ltd for \$114 million and in August the balance (11.9%) for \$68 million. At about the same time WMC sold its 6% interest in KLV to GMK and Poseidon Investments Pty Ltd for \$86 million. Thus WMC received \$268 million for its 10.9% interest in KMA.

WMC's role as Manager of KMA continued until 30 June 1988, when all the Company's connections with the operations ceased.

The sale of Western Mining's gold mining interests in Kalgoorlie brought to a close an association of 54 years with the world famous Golden Mile. Western Mining's nickel interests in the Goldfields remained the mainstay of its business and a number of small gold mines in the Kalgoorlie area continued to be operated through what became known as Kalgoorlie Gold Operations, but since then the Company did not have an operating interest in the Kalgoorlie field itself.

The sentimental wrench was very considerable, but in the cold hard light of the day the judgement was made that the total of \$268 million received from the sale, and the management resources, could be better employed elsewhere. Calculations indicated that the discounted likely future returns would only

equal the \$268 million if the price of gold would average close to \$1,000 per ounce for a lengthy period. This was considered unlikely.

There is a comprehensive account of the first eight years of the KMA joint venture by N R (Dick) Hooker in the *Group Historical Collection* GHI-KMA-3.

## **The People**

I have already mentioned Sir Laurence Brodie-Hall, and John Oliver, the first General Manager of KLV (1973-1974). John was succeeded by J E L (Jack) Manners (1974-1976). On formation of KMA the General Managers were Dick Hooker (1976-1978), J C (Jack) McDermott (1978-1983), R A (Dick) Tastula (1983-1984), and I R (Ian) Letts (1984-1988). All had a long prior association with Kalgoorlie and all were graduates in mining from the WA School of Mines in Kalgoorlie.

## **Production**

During the time the various Kalgoorlie leases (except Great Boulder) were under the management of WMC (1936-1987 incl.) the total production from GMK/KLV/KMA was 5.52 million ounces. Annual production is shown by the attached extract from Appendix V.

## **Life After WMC**

The WMC Golden Mile properties were bought by Alan Bond's North Kalgoorlie Mines Ltd. He was endeavouring to build a worldwide gold empire (to be called, I think, World Gold). In Kalgoorlie, his idea was to establish a Super Pit on the Golden Mile to extract the remnants and pillars left by earlier underground mining.

WMC began mining the upper 60 metres of the Great Boulder leases in 1983. KMA began to open cut the adjacent Horseshoe and Morrison leases soon after and the Eastern lode system at the Judd Open cut in 1985. North Kalgoorlie Mines and CSR Ltd had been open cutting on their leases.

The initial stages of the Big Pit at Fimiston began in 1987. By April 1989 Alan Bond had bought the various companies and established Kalgoorlie Consolidated Gold Mines Pty Ltd to manage the Super Pit on behalf of the now 50:50 owners GMK (owned by him) and Homestake, and to operate the Mt Charlotte underground mine.

Bond's financial crash and subsequent bankruptcy saw Poseidon, now owned by Normandy Mining, headed by Robert Champion de Crespigny, buying 20% of GMK in August 1989 and subsequently acquiring all Bond's interests in the Golden Mile.

The Super Pit came into successful production as the largest gold producer in Australia and continued in this role at the time I retired in April 1999.

## **Subsequent Events**

In 2001 Homestake was acquired by Barrick Gold. In December 2001 two thirds of the employees at Mt Charlotte Mine were retrenched. Production continued on remnant ore, employing about 70 people.

In early 2002 Newmont took over Normandy. The new owners announced in August 2002 details of a \$20 million drilling programme to explore the Super Pit orebody at depth.



In August 2002 it was also announced that re-treatment of material used for fill in the 1970s would keep the Mt Charlotte Mine open for an indefinite period.

### **Reflections**

Now that considerable time has passed since the Super Pit came into production it would be informative to review the judgment made by WMC in 1987, that cash in hand of \$268 million was worth considerably more than the (discounted) value of future income from the properties. Perhaps it may be a suitable subject for a student researching a thesis for a degree?

## ***HIDDEN GOLD AT NORSEMAN***

### **An Early Venture**

One of the earliest of Western Mining's gold ventures in Western Australia was at Norseman, some 185 km south of Kalgoorlie, where gold had been first discovered in 1892, a year before the discovery of gold at Kalgoorlie.

Sir Lindesay Clark in *Built on Gold* describes the events from the time Gold Mines of Australia in 1933 first obtained options on leases at Norseman, which were transferred to Western Mining Corporation in 1934. Central Norseman Gold Corporation NL was formed to work the properties in 1935. Cedric E Gregory in *All Around the World in Eighty Years* describes events in 1934-37, when he followed Frank Betheras as the Officer in Charge for Western Mining at Norseman. J D (Don) Campbell, a geologist at Norseman in the early days and later Chief Geologist of Western Mining from 1945 to 1967, gives in his book *Hidden Gold* a detailed account of the outstandingly successful search for gold at Norseman over the years. The successes were interspersed with extremely lean periods when the very existence of Central Norseman was in question, making the history of the Company an exciting chapter in the annals of not only Western Mining, but the Australian and the world minerals industry.

### **The Grade Too High**

As Deputy General Superintendent of WMC in Western Australia, based in Kalgoorlie in the mid-1960s, I visited Central Norseman from time to time. On several occasions the Superintendent at Norseman, R (Bob) Sainsbury, answered my enquiry about how things were by saying: 'The grade is too high'. The reason for this, on the face of it, extraordinary comment was that when the grade exceeded a certain level, the gold losses in tailings became unacceptably high.

It was the only experience in my time in the industry when a manager complained about the grade being too high. It was not a permanent, nor a frequent problem.

### **End of Norseman?**

In the early 1970s Central Norseman, like Gold Mines of Kalgoorlie, was going through a serious downturn. In 1971 it made its first loss since 1939.

In August 1971 the Board announced that:

'In view of the decision of the Commonwealth Government not to increase gold subsidy, the Board has decided that, unless there is a substantial increase in the price of gold in the meantime, gold mining operations will be suspended when all developed ore which is economically extractable has been treated. Development work has already ceased. On present indications, operations are expected to be suspended by the end of 1972.'

It was also decided to maintain the properties on a 'care and maintenance' basis after operations were suspended, 'to provide for the possibility that if a future change of circumstances will allow, the mines can be re-opened on a profitable basis'.

As with Mt Charlotte, the increase in the free market price of gold and the liberalisation of the Gold Subsidy scheme reversed the decision to suspend operation, but pessimism about the future remained. At the Annual General Meeting of WMC in November 1972 the Chairman, Sir Lindesay Clark, had the

following to say:

'Central Norseman Gold Corporation NL has resumed limited development work to bring into production ore blocks of slightly lower grade which are economic at present gold prices. The Company has actively prospected both the mine area and the surrounding district for many years and since there are few prospects for further discoveries the life of the mine appears to be limited.'

This was the considered opinion of all concerned. I well remember attending meetings at Norseman in the second half of the 1960s where the unanimous view, including R (Roy) Woodall's, was that there were no major exploration targets left. Production from North Royal, the high grade mine, dwindled and died. The shaft was closed in April 1972, but was re-opened in late 1973 for some exploratory development. At the Regent Mine blocks of quartz left in previous years as barren because sampling on the boundaries had shown no gold or low grade were drilled and driven, with some success in locating payable ore within. Chip sampling had not, of course, given any information about what was inside the blocks.

The operation continued to struggle for several years, with production falling from 49,138 ounces in 1972 to 28,222 in 1975. The backlog of underground development and the need to replace worn out plant and equipment could only be financed from the cash flow from operations. I recall sitting early in 1975 with K F (Keith) Parry in the Board room in Western Mining's Belmont Office, looking at the monthly losses at Central Norseman and questioning how long we should let this continue. Fortunately we agreed not to do anything for a while, because at just about that time improved drilling techniques were being employed to test the oxidised ground above the North Royal orebody.

## **Revival of The Royals**

Sir Laurence Brodie-Hall recalls in his memoirs:

'A young geologist named Jeff Fradd had drilled a pattern of holes down hill from the Princess Royal Reef and had got some encouragement in what appeared to be an alluvial horizon about thirty-five metres below the surface. To define the limits and grade of this material required an allocation of money to fund a moderately sized shallow drilling programme. This the Board reluctantly agreed to. Progressively the tonnage built up to an amount at which the grade justified, but only just, commencing a small open pit. The ore had some bad aspects. It contained a high proportion of colloidal clay which, had it been introduced into the Phoenix treatment plant which was still operating on the quartz ore remnants from the Crown and Princess Royal Reefs, would have seriously reduced its throughput. In addition the gold was very fine and flaky and defied wet gravity concentration, preferring to float on the colloidal clay and was lost to the residue dam. Water, an essential commodity in any form of gold recovery, was only available in limited quantities from the Goldfields Water Supply system and there was no surplus from that source to treat the low grade. There was however an unlimited quantity of very saline water available from Lake Cowan which under some circumstances could be used. I had a vague recollection that salt water and finely divided clay froths vigorously under agitation so I sent samples of the salt water and the alluvium for flotation tests. The result from the laboratory was most gratifying indicating that, without the addition of the proprietary reagents normally used as frothers and collectors, but relying solely on the salt water and the colloidal clay to perform these functions, eighty per cent of the gold content was recovered in a thin muddy flotation concentrate.'

Opencut mining of the alluvial commenced in March 1975.

A treatment plant, commissioned in June 1975, built at North Royal from second-hand equipment was, as Brodie-Hall says, '... not a pretty sight, but it was built in the minimum of time and importantly it worked successfully ...'.

In the course of mining the alluvial further exploration encountered unmined extensions of the Princess Royal Reef, as well as a previously unknown shallow high grade reef north of the shaft. Further opencuts, ultimately five in all, were developed and more ore discovered. Brodie-Hall describes the results as follows:

The effect of this exciting succession of events is illustrated by the record of annual gold recovery. In 1975 gold production slumped to twenty eight thousand ounces. In 1976 it rose to seventy five thousand ounces, 1977 to a peak of one hundred and one thousand ounces and thereafter settled down to a steady annual production of around eighty thousand ounces.

During 1977 Central Norseman shares rose to \$12.50 a share from the low of forty six cents in 1974. In 1979 each 50¢ fully paid share was split into five 10¢ fully paid shares which then also rose to a peak of \$12 a share.

The steady increase in the gold price, which rose from a high of \$70 an ounce in 1972 to \$715 an ounce in September 1980, was a very significant factor in the high level of profitability which funded subsequent successful development, but a high gold price is not much help if there is no gold to sell.'

The original wash plant was redesigned and relocated in 1980. North Royal surface installations fell within the outline of the expanding opencut and were dismantled.

Sir Laurence gives credit for the exploration success to J F (Jeff) Fradd's dogged persistence and Roy Woodall's support. He himself had become the non-executive Chairman of Central Norseman in 1975 and deserves at least an equal share of the credit for giving the Company a new lease of life.

### **New Life at Ajax**

In 1977 Central Norseman acquired from the inactive Norseman Gold Mines NL 32 mining leases in the southern end of the field, in which exploration discovered gold mineralisation distant from the existing shafts. To follow up these indications the Ajax Shaft was re-opened in 1982. It had been sunk to a depth of 610 metres beginning in January 1939 in what was said to be then the world record time of 24 months, but never used for production. The shaft had closed in 1943 when the diamond drill intersection which it opened up proved to be of very limited extent.

Stopping off the Ajax Shaft continued until 1989.

Further indications of gold in the southern leases were opened up by the OK, Viking, and Bullen declines from the surface.

### **A Tribute To Eric Bullen**

E (Eric) Bullen joined Central Norseman on its formation and was still with the Company when it celebrated its fiftieth anniversary in 1985. Except for four and a half years with the AIF in New Guinea during the Second World War, he spent most of that time as an underground fitter and continued in this capacity well into his 70th year. In response to a question about housing in the early days Eric said, 'I

had my own house but a lot of them used to come here and pitch a tent - they had to, there was no accommodation and they had no money. They pitched a tent and built a bit of a shack on that out in the bush. Later, when they got a block they'd build a room with a stove in it and a bed. When they got married they used to put on another room and then of course when the children come along more rooms were added on'.

Eric was recognised as being one of the most self sufficient and reliable fitters in the history of Norseman. When a new decline was being sunk in the south of the field, it was named the *Bullen Decline* in his honour. It was begun in 1991, production from the 3 Level commenced in 1993, and continued on good grade ore for several years.

The simplicity of the housing in the early days was emphasised in a letter Lindesay Clark wrote to F N (Frank) Betheras, a mining engineer based in Norseman in 1934: 'If you could make your present rooms a little more comfortable for Mrs Betheras by building on kitchen or getting some more furniture I would be quite agreeable to you doing so'. The standard of housing provided for employees has improved over the years, especially during periods of prosperity such as in the early 80s.

### **Robbing The Pillars**

The quartz reefs in which gold occurs at Norseman dip mainly at 45 degrees and mining was by open stoping, leaving pillars of unbroken ore for roof support. In the high grade orebodies these pillars represented substantial value, particularly as the price of gold increased.

In 1989 a method was developed for extracting the pillars - 'robbing' in miners' language - by building artificial pillars using gypsum from the nearby salt lake, mixed with sand and cement.

### **Rockburst**

While this happened before the period covered by this manuscript, the only rockburst of which I am aware during my time with WMC occurred at Central Norseman.

In the late 1960s a long exploration drive was being driven north on the 22 level off the North Royal Shaft, to investigate some surface diamond drilling intersections well below the lowest stoping level (11 level) on the Princess Royal Reef. Driven on day shift only, it was about a mile long when the miners one morning found a good length of it virtually filled with broken rock. During the time when, fortunately, there was no-one working, there had been a rockburst which had caused the back and sides of the drive to cave in and even the floor to burst upwards. The driving was discontinued.

### **Success At Scotia**

Regional exploration some 30 km south of Norseman discovered gold in 1986 in an area known as Scotia. A trial opencut commenced in 1987 and a second opencut was undertaken in the following year. In 1990 a decline was commenced from which approximately 50,000 tonnes per annum ore was produced from the 4 to 11 levels until 1995, when the orebody was mined out. Some lower grade ore from stockpiles was treated over the next two years after which the site was rehabilitated and closed.

### **The Downturn**

On 28 February 1989 the Board of Central Norseman announced that the fall in the Australian dollar price of gold from A\$672 per ounce in January 1988 to A\$464 per ounce in January 1989 had made the ore reserves of the Ajax Mine and a substantial portion of the reserves at the Regent Mine uneconomic.

Operations at Ajax would cease and would be concentrated at higher grade areas at Regent. As a consequence employees would be reduced by about 70 to a total of about 310.

Early 1990s saw a further downturn in the availability of ore. In 1990 the production rate was decreased from 560,000 to 150,000 tonnes and the workforce reduced from 370 to about 200. The Regent Shaft was closed in December 1990.

### **Exploration Under the Lakes**

About a third of Central Norseman's leases are covered by the salt lakes Lake Cowan and Lake Dundas. These are typical of the salt pans in the region - dry salt-crustured surface and a soggy silt base. They are usually inaccessible to heavy vehicles, although the Norseman airstrip is established on a particularly hard part of Lake Cowan. For the most part, however, it had not been practical to explore under the lakes.

In 1991 a new drill, mounted on a Swedish Army-developed all-terrain vehicle, was successfully tested and adapted for use on the lake. Exploration for gold under the lake commenced.

### **The Hidden Harlequin**

In 1993 the Harlequin Prospect was delineated and drilling established an ore reserve. In 1994 a decline was commenced to gain access to this ore and in early 1995 production began. The Harlequin Mine became the main source of higher grade underground ore. The year 1995-96 saw near-record production of 119,622 ounces, to be topped in the following year. An extension of the orebody was discovered 500 metres to the west and an access decline to this commenced in September 1998.

### **The Phoenix Plant**

The Phoenix Treatment Plant, which had been built in the mid-1930s and maintained with minimum expenditure, was showing obvious signs of dilapidation by the 1970s. With an improved cash flow in 1979 it became feasible to rebuild and rehabilitate some parts of the treatment plant. W R (Bill) Lethlean was the Mill Superintendent during much of the time and contributed to the upgrading of the technology up to the time he was transferred to Kalgoorlie Mining Associates in 1984, when A J (Allan) Quadrio assumed the role. Allan supervised the next phase of expansion and modernisation of the plant. Allan was transferred to Hill 50 Gold Mine in May 1992 to become Resident Manager - the first metallurgist to achieve this status in WMC.

In 1983, nearly fifty years after the formation of the Company, the mill had produced 3 million ounces of gold making it one of the significant gold producing areas in Western Australia. It had also shown that the accounting rules for depreciation do not necessarily have anything to do with the useful life of the equipment!

By 1984 the prosperity resulting from the revival of the Royals, and an encouraging future, prompted the building of a new crushing plant and semi-autogenous grinding (SAG) mill. The new plant eliminated the need for the North Royal Wash Plant, which was shut down. In the following year the extraction process was converted to the more efficient Carbon-In-Leach (CIL) process (see Overview). This included the building of a new gold room and associated facilities, which were commissioned in March 1986. The clean up of the old plant realised over 7,000 ounces.

In 1989 a tailings re-treatment plant was built specifically to reprocess the large accumulation of residues from the Phoenix and Butterfly plants. It began treating some low-grade stockpiles, but the

returns were so poor that the plant was later closed and the tailings remained untreated.

By 1990 it was recognised that the extent of the ore reserves could not sustain the then rate of production and it was decided to reduce the scale of operations and thus prolong the life of the mine, allowing more time for exploration to discover new ore. From July 1990 the scale of operations was reduced over a six month period. Throughput was reduced by running the treatment plant on a five- day roster for three weeks each month, except for any plant which had to run continuously.

Further exploration in the region was successful in delineating additional reserves in a number of areas and the rate of production was gradually increased from 1995 when seven-day-week operations were resumed. Higher water charges added unexpectedly to operating costs.

In the first half of 1997 the old ball mill was recommissioned, effectively doubling plant capacity. This enabled economical treatment of lower grade opencut and stockpiled ores. In the 12 months to 31 December 1998 the largest throughput ever was achieved - 610,727 tonnes. On a proportional basis, the gold output was also the highest ever at approx 129,000 ounces. Nearly 65% of this was from the Lady Miller opencut, with small amounts from the Iron King, Hit and Miss and North Royal areas. The Bullen and Harlequin underground operations contributed 24% of the ore feed. The plant was now operating on a full time basis with circuit utilisation of 92.55% and a gold recovery of 95.99%.

### **Central Norseman and the Community**

After Norseman Gold Mines closed, Central Norseman became the major source of employment in the Norseman community and in this role the company contributed generously in funds, and in kind, to the improvement of the Norseman community. The Company continued to maintain the swimming pool which it had built earlier - a popular facility in the region. In 1980 Central Norseman donated funds to build a new Recreation Centre at the Norseman Oval and subsidised the establishment of a second television station in Norseman.

Away from Norseman, the Company provided technical expertise and equipment to rehabilitate the sunken and unsafe shaft collar and surface works at the Standard Gold Mine north of Albany, Western Australia. This mine, established in the 1850s, is recognised to be one of the earliest in WA.

Central Norseman in the 1980s also devoted considerable effort and expenditure on rehabilitation and restoration work in the region. Mullock dumps were contoured, covered with soil, and seeded with local species of plants. The site of the old Norseman Gold Mines Butterfly Plant was cleared and revegetated.

Over the years there was also increasing effort put into safety and training programmes. The lost time injury frequency rate fell and the work environment noticeably improved. The scaling down of operations necessitated some retrenchments but these were achieved with the minimum of disruption to the community. There are those who enjoy life in small mining centres and Norseman has an appeal to many because of its proximity to Esperance.

When the town of Norseman celebrated its Centenary in August 1995, Central Norseman's production passed four million ounces - a notable achievement.

### **The Financial Results**

After the depressed period of the early 1970s, CNGC's profit recovered in 1976 to a modest \$1.5 million. This was the beginning of significantly improved results, which in subsequent years went on to reach a maximum of \$24.9 million in 1985-86. By 1998, in its 63rd year, Central Norseman had

generated a total net profit of over \$209.1 million from which it had paid \$204.8 million in dividends.

The periods of extraordinary profitability from 1978 to 1988, and the sensible retention of a significant part of those profits for the inevitable downturn and a further exploration, saved the company from almost certain liquidation in the early 1990s. WMC over the years benefited substantially from its 50.48% interest in CNGC.

The history of Central Norseman is one of extraordinary variability. There have been periods of frustration and disappointment and others of good fortune and prosperity. The fact that the company (now owned by Croesus) is still mining gold at the same location in 2003, some 68 years later, is a tribute to all those concerned. It is currently the longest continuously operating gold mine still in production in Australia.

## Management

### Resident Managers

In its 64 year life to April 1999 there had only been nine managers at Norseman. Five of these covered the period from 1974-1999.

(Resident Manager)	L E (Laurie) Quan	2.07.68	-	28.01.75	
	E J (John) Lea	28.01.75	-	1.01.85	
	P C (Peter) Teasdale	2.01.85	-	31.01.95	
	P J (Peter) McIntyre	1.02.95	-	13.01.97	
	A I (Andrew) McIlwain	3.03.97	-	31.10.98	.... title change
(Gen Manager)	" "	1.11.98	-	31.07.99	
Subsequent:					
(Ops Manager)	G D (Geoff) Pedemont	1.09.99	-	1.07.00	
(Gen Manager)	W (Wojciech) Ozga	10.07.00		18.01.02	

### Directors

When Sir Laurence Brodie-Hall retired in 1982, Keith Parry, WMC's Director of Operations, became Chairman - the fifth in the Company's then 47 years.

Three other directors retired about the same time - Sir Wilfred Brookes, who had held the position for 30 years, H O (Hugh) Clark, a former WMC Executive Director and Sir Henry Somerset who was a prominent director of several Collins House companies. Sir Kenneth Townsing, a former Under Secretary to Treasury of WA and a WMC director since 1975, joined the Board in 1982 and D M (Don) Morley, Director of Finance and Administration for WMC was appointed in 1983.

When Keith Parry died of a heart attack in 1986 H M (Hugh) Morgan became Chairman. Two West Australians, J C (John) Anderson, a Solicitor and WMC Director, and W H (Henry) Crawford, former Secretary and director of Hill 50 Gold Mine NL, both joined the Board in October 1987. K R (Keith) Hulley, WMC's Director of Operations was appointed in 1991 and J C (John) McDermott and L E (Lloyd) Crystal in 1993.

The Board was given a more Western Australian character on 12 July 1994, when Perth residents D H (Don) Aitken, A G (Andrew) Michelmores and D (Deming) Whitman were appointed and Messrs Morgan, Morley and Hulley stood aside. John Anderson became Chairman in place of Hugh Morgan.



Andrew Michelmore resigned on 11 June 1996. Don Aitken retired on 10 November 1997 and P J (Peter) Knight of Perth was appointed on 2 February 1998.

## **Financial, Production and Reserves**

John Anderson retired on 15 April 1999 and Peter Knight became the Chairman.

The following compilations by G M Ralph are appended to this chapter:

Central Norseman Gold Corporation - Record of Production and Reserves  
Central Norseman Gold Corporation - Record of Financial Data

## **Reflections**

The longevity of Central Norseman is attributable to a number of factors, not the least of which has been persistence in exploration. During its whole life the Company has never had more than 5 years' proven ore reserves ahead of it. Successive Chief Geologists have taken a new look at the area and initiated new programmes of exploration, leading to the discovery of additional reserves.

Mining operations became more highly mechanised in line with technological developments in the industry, opencut operations were introduced in 1975, and decline developments in 1978. The cost of ore treatment was greatly reduced by improvements in the treatment process and the modernisation of the plant, including the SAG mill and the CIP gold recovery process.

## **WMC and Central Norseman**

Initially owning 83% of the Central Norseman Gold Corporation (CNGC), after 1948 WMC owned 50.48% of the company. From 1980 to 1992 WMC and CNGC were also 50:50 Joint Venturers operating the gold mine at Stawell in Victoria.

In the 1990s there was from time to time a view within the WMC senior management that WMC should either acquire all of CNGC or sell its shareholding. This was again reviewed in March 1991.

The sale of WMC's holding in CNGC was difficult because the perception in the market place would be that, if Western Mining is selling, the outlook for the company must be poor. Thus, the price likely to be obtained would not be attractive.

The acquisition of the remainder of CNGC would yield some administrative savings and there would be a taxation benefit, offset by acquisition cost. There would not be a substantial net benefit, other than the neatness of having all WMC's interests in the Eastern Goldfields 100% owned. As there had never been a problem with conflict of interests between WMC and CNGC, this 'neatness' did not have a quantifiable value.

The decision was to continue with the existing ownership, and this was still the situation in April 1999. I personally could never see the need to own Norseman 100% and was content with the outcome.

In my view, the problem was that the success of Central Norseman had throughout its life depended on meticulous attention to exploration. With changes in senior management in Melbourne and the perception that modern management success depended on financial and marketing expertise, WMC became disinterested in an essentially operational type approach. There were no longer any Lindesay Clarks, Brodie-Halls, or Keith Parrys to take a close interest in Norseman.

**Subsequent Events**

Negotiations subsequent to the WMC decision in 2001 to divest its gold mining interests led to a merger of Central Norseman with Croesus Mining NL. The enclosed announcement describes this merger, which was subsequently approved by shareholders and concluded on 18 January 2002. WMC received \$21.3 million cash and sold its shares in Croesus for \$12.2 million - too early, as it happened, because the shares a short time later nearly doubled in market value.

I was glad to see the takeover, because Croesus Mining - a small Western Australian gold company determined to make a success of the merger - is much more likely than a large company to focus on what is necessary to ensure the continuation of Central Norseman's long and successful life.

Record annual production of 137,023 ounces was achieved in 2002. The 5 millionth ounce of gold produced from the Central Norseman leases was poured on 19 November 2002.



## ***THE MAGNETIC MOUNTAIN***

### **Early History**

The name *Mount Magnet* for the region some 550 km north of Perth comes from an ironstone hill about 100 km west of the present Mount Magnet, so named in 1854 because of its effect on the surveyor's compass. When gold was found on Boogardie Station in 1888, the nearby hill was mistakenly thought to be Mount Magnet and the town which grew up close to the find took its name.

Small scale gold mining commenced in 1891, but the field was almost abandoned by the time of the First World War.

The resurgence of gold mining in Australia in the 1930s, due to the devaluation of the Australian pound which increased the price of gold in Australia, also caused a revival of interest in this area. Among the new companies formed was Hill 50 Gold Mine No Liability on 20 May 1934 in Perth, for the purpose of acquiring the Sirdar lease at Mount Magnet. The name *Hill 50* for the company was chosen because of its geological resemblance to the Hill 60 Mine, some five km away, and followed the practice of the Engineer Corps in World War I of identifying hills by numbers instead of their French or Belgian names. Hill 50, incidentally, was a strategic hill in the Battle of Messines in 1917.

After a difficult start, the annual production reached 10,000 ounces per annum in 1940 and was maintained at that rate during the War. A new treatment plant built in 1940-41 increased milling capacity to 36,000 tons per annum.

In 1950 a major new high grade ore shoot was discovered in the Hill 50 Mine; a new Main Shaft was sunk and a new crushing plant constructed. Production increased to nearly 25,000 ounces in 1953 and to more than 88,000 ounces in 1963. The operations were very prosperous and high dividends were paid from 1955 to 1965.

By 1966 the richer ore had been mined, costs had risen appreciably, and Hill 50 applied for assistance under the *Gold Mining Industry Assistance Act*. Although a vigorous programme of exploration and development was maintained, by 1972 production had fallen to 20,000 ounces per annum.

The freeing of the price of gold at the end of 1972 had given new hope, but a renounceable rights issue by Hill 50 in 1974 to raise more capital was substantially under-subscribed.

### **Western Mining's Early Involvement**

Sir Lindesay Clark in *Built on Gold* recalls some experiences in this area in the 1930s.

'One particularly unpleasant place to fly out of was Mt. Magnet. To get sufficient runway the plane had to be backed into an opening in the mulga from which it would emerge attempting to acquire as much speed as possible before reaching the mulga on the other side of the field. This often took two or three trial runs, a practice that would not have been countenanced by the aviation authorities. It was done in various places on many occasions and, such was the skill and judgement of the pilots, without mishap.'

Western Mining did some underground exploration at the old Morning Star Mine at Mt Magnet in 1934, driving and sampling off an old prospecting shaft at a depth of 150 ft. C E (Cedric) Gregory, who was in charge of the work, describes it in his memoirs *All Around the World in Eighty Years*. However, the Company did not actually become involved in the Mt Magnet district until forty years later.

## **WMC A Shareholder**

L C (Lou) Checker, who had become the General Manager of Hill 50 in August 1957 had previously worked, together with L C Brodie-Hall, as a machine miner for Western Mining at its Triton Gold Mine in the Murchison District. Subsequently Checker became a Shift Boss, Underground Foreman, Underground Manager, and Superintendent of a group of small mines operated by New Coolgardie Gold Mines NL. When Great Western Consolidated NL, of which Brodie-Hall was then General Superintendent, decided to reopen the Nevoria Mine south of Southern Cross in 1956, Lou was seconded to oversee this project. (Incidentally, when Lou left in August 1957 to become General Manager of Hill 50, I succeeded him at Nevoria).

In 1974 Hill 50 was re-developing and re-equipping to resume mining of the estimated ore reserve of 590,000 tons at 9.38 grams per ton at the rate of 150,000 tons per annum during the second half of 1975/76. The estimated capital cost was \$2.4 million, of which \$1.8 million was to be raised by a rights issue in June 1974.

When the rights issue was only 22% subscribed, Lou suggested to Brodie Hall, who by then was WMC's Executive Director-WA, that Western Mining should take up the shortfall. If WMC were not interested they should advise the Government so that Homestake could do so. Western Mining took up the unsubscribed shares at a cost of \$1.4 million in November 1974, becoming a 37.9% shareholder in Hill 50. Brodie joined the Hill 50 Board, and G M (Gilbert) Ralph became a Director in 1978.

The Chairman of Hill 50 was W H (Howard) Wheatley and the Secretary was W H (Henry) Crawford.

Lou Checker, who lived at Mount Magnet, continued as General Manager and was also appointed to the Board. Born in Yugoslavia and migrating to Australia in the 1920s, he was a jovial man who liked a good story and could himself spin a good yarn. He was a down to earth practical miner, with much experience in working in bad ground. He was a very methodical person and had installed at eye level around the walls of his office a continuous bookshelf filled with foolscap binders, each dealing with a particular aspect of the operation. Henry Crawford says that 'Lou Checker rarely lost an argument. He was usually able to verify his claim by quickly producing documentary evidence to support his impressive memory'.

Lou was widely known for his special variety of Cornish pasty which he produced in large numbers, particularly when there were official visitors to the mine. After consuming many of these at lunch with liberal doses of tomato sauce, visitors were also given a parcel of pasties to take home.

Being the General Manager of the major employer in the area, Lou was also eminent in local activities. He was a Justice of the Peace, a role he fulfilled with what he described as 'native cunning'.

## **A Tough Time**

Initially the new investment by WMC appeared to have been based more on sentiment than good sense. The gold price fell, costs increased, and Hill 50 was making losses. The capital which had been raised was inadequate to effect any significant improvement to the plant. From 1974 to 1976 production was 3,473 ounces. In 1976 it was decided to suspend operations and concentrate on exploration.

Brodie-Hall, a gold optimist and a strong supporter of exploration, suggested searching for shallow gold deposits suitable for opencut mining. In 1976-77 Hill 50 entered into a joint exploration venture with WMC (WMC 73%, Hill 50 27%) to explore the region, which located a number of areas of economic interest. WMC's share in the joint venture was bought back by Hill 50 after a new share issue in 1978.

## **A New Start**

In March 1980 Western Mining was appointed General Managers and Consultants to Hill 50 and A C (Colin) Cruickshank was appointed Resident Manager. Lou Checker, who was 69, retired but remained a Director. The gold price reached its all time high in 1980 and it was decided to resume production. Reassessment of the ore potential led to a proposal for a 160,000 tonnes per annum operation requiring rehabilitation and upgrading of the plant, upgrading of the housing, and provision of additional housing. N R (Dick) Hooker, WMC's General Manager of Gold Operations, succeeded Gilbert Ralph as a Director in 1980 and K F (Keith) Parry, Director of Operations, succeeded Brodie Hall in 1982.

Production resumed in 1981 from Saturn Opencut and a new shaft at Water Tank Hill, called the Lou-Anne Shaft after one of Lou Checker's daughters. The Premier of Western Australia, Sir Charles Court, officially re-opened the operations on 7 August 1981.

Colin Cruickshank recalls that it was decided to erect a marquee adjacent to the office for the ceremony. Two sites were considered, one between the mill and the laboratory and another between the mill and the engineering office. Fortunately the latter was chosen, because during the night before the ceremony a sudden collapse of some old underground workings created a crater at the first site.

Subsequently some production was resumed at the Morning Star Mine.

Hill 50, like many other Australian gold producers, benefited from the lower cost of opencut mining, better price of gold, and the introduction of Carbon-In-Leach (CIL) technology, which made previously uneconomic lower grade ore economic. Further opencuts were developed at Mars, Morning Star, and Evening Star. Using the names of heavenly bodies was continued later in the Star, Neptune, and Galaxy opencuts.

In March 1987 Colin Cruickshank was succeeded as Resident Manager by C A (Colin) McIntyre, who was in turn succeeded in December 1987 by A J (Allan) Quadrio. Allan was the first metallurgist to become the Resident Manager of a WMC mining operation.

Mining at the Lou-Anne Shaft ceased during 1987-88.

In June 1988 it was decided to construct a new mill of 1.2 million tonnes annual capacity, which was officially opened on 12 June 1989 in the presence of a number of directors, community representatives, and senior staff. The new mill was capable of treating the increasing tonnages of opencut ore and was named *The Checker Treatment Plant* in honour of Lou Checker. Lou was invited to perform the opening.

## **The Takeover Of Hill 50**

WMC had increased its ownership of Hill 50 to 41.5% when, on 30 June 1987, it made a takeover offer of \$1.90 cash or alternatively three WMC shares for ten Hill 50 shares. By October WMC ownership stood at 91.4% and the remainder of the shares was acquired compulsorily. Hill 50 became a fully owned subsidiary in April 1989.

While at 30 June 1987 WMC shares were \$5.45, on 1 October the market price was \$8.65. The cost to WMC therefore appeared to increase above the initial expectation. However, in April 1989, when the takeover had been completed, the shares were back to \$5.40.

The rationale for the takeover was that there remained considerable prospectivity for further discoveries on the Hill 50 leases and in the region, and the flexibility of a fully owned subsidiary would assist the investigation of this potential. The sale of WMC's gold mining interests in Kalgoorlie and the Lady Bountiful-Davyhurst mines had provided substantial amounts of cash and the Company's preference was for fully owned operations.

The operation was re-named Mount Magnet Gold Operations, but this was not generally accepted and four years later the name reverted to Hill 50 Gold Mine.

### **Acquisition of Other Properties**

In October 1990 the Company acquired the adjacent leases and the Black Cat Treatment Plant of Metana Minerals NL.

In August 1991 the nearby leases held by Renison Goldfields Consolidated Limited were acquired. Western Mining now held virtually all the leases in the Mount Magnet area, as well as the Western Queen property about 100 km north-west where exploration had outlined extensions to the previously mined orebody.

### **Re-Siting Of Surface Facilities**

The vicinity of the Hill 50 Main Shaft, which had been closed in 1990, was found to be an economic opencut site, and the main office, old mill, power station, and stores and other buildings were removed. The main office was re-sited near the Black Cat Plant. A decline was commenced to gain access to the Hill 50 underground position.

I R (Ian) Letts temporarily became the Resident Manager in June 1992 and was replaced by D W (David) Sheffield in December. He was succeeded by C J (Chris) Wilson in 1994, the last WMC Resident Manager of Hill 50.

Numerous near-surface occurrences of oxidised ore were discovered and mined such as Baxter, Eastern Jaspilite, Boomer, Hesperus, and Parkinson. A record 211,451 ounces were produced in 1993-94. Attempts to resume underground production were only moderately successful.

Intensive exploration of the district resulted in the outlining of a small but high grade orebody at Western Queen, 110 km west of Mt Magnet. Overall, however, exploration successes were insufficient to maintain the ore reserves and the production of gold declined, resulting in increasing costs.

Following a review in 1996-97 it was decided to sell the Hill 50 operation and the sale was concluded to Wattle Gully Gold Mines NL on 1 July 1997 for \$15 million plus an adjustment for the net current assets, a total of \$17.5 million.

### **Production**

Up to the time WMC sold Hill 50 it had produced 2.97 million ounces of gold. Details of production and reserves are attached.

## Profits

Hill 50 contributions to WMC profit were:

	\$ 000's
1987-88	7,584
1988-89	8,358
1989-90	32,066
1990-91	39,240
1991-92	17,381
1992-93	16,634
1993-94	16,717
1994-95	3,022
1995-96	(467)

## Reasons For WMC Interest

Western Mining's interest in the Mount Magnet area was based on this being one of the highly mineralised regions with a history of substantial gold production in Western Australia. Of the recorded production of 2,972,977 ounces from the discovery to 30 June 1997, more than half was produced since operations resumed under WMC management in 1981.

Other attractions were that there was a history of very high grade ore shoots (such as mined in the Hill 50 Mine from the mid-1950s to the mid-1960s), the prospective area for ore discovery was large, the production rate was substantial (of the order of 200,000 ounces per year), and the operation became wholly owned by WMC. While joint ventures and partly-owned operations are appropriate in certain circumstances, a wholly-owned activity demands appreciably less senior management time and is in many ways simpler and less costly to run.

However, intensive exploration during more than 20 years of WMC's involvement in the district did not result in a major discovery. Such a discovery may yet be made, but in the judgement of WMC management it was appropriate for WMC to withdraw and employ its people and financial resources elsewhere.

## Subsequent Events

Following the acquisition of Hill 50, Wattle Gully Gold Mines NL changed its name to Hill 50 Gold NL, which owned Mount Magnet Gold NL (formerly Hill 50 Gold Mine NL), Vadessa Pty Ltd, and Wattle Gully Mining (Vanuatu) Ltd. It reported a profit of \$12,680,462 to June 1998 and \$10,769,572 to June 1999.

A news report in May 1998 quoted the Managing Director, Peter Cook, as saying that the Hill 50 Mine was producing at a rate of 120,000 ounces per annum with cash costs around \$300/oz compared with 100,000 ounces per annum at a cash cost of \$430/oz in the last quarter of WMC's ownership.

In financial year 1999 the company reported extensive gold prospecting activity in Vanuatu. At Mt Magnet, gold production increased 32% over the previous year and resources almost doubled to 5.1 million ounces. The Checker Plant was expanded and a hole in the Star deep drilling programme confirmed continuity of mineralisation to vertical depths of more than 1,000 metres.



The company continued to operate profitably, and in December 2001 received a takeover offer from Harmony Gold of South Africa for \$1.35 cash, increased to \$1.40 if acceptance exceeds 90%. This valued Hill 50 at about \$237 million.

**With Hindsight**

The purchasers of Hill 50 increased the market value of their investment some thirteen times after having earned handsome profits for five years.

The Hill 50 experience shows that the operation became unattractive to WMC not because it had no future, but because WMC in the late 1990s was no longer willing and/or able to manage small projects enthusiastically and economically.

## ***THE CHINA EPISODE***

### **Background**

Before the 1970s foreign companies were banned from participating in minerals exploration and production on China mainland. Petroleum companies had been participating in offshore exploration in South China Sea for some time, but were also banned from the mainland.

On 26 July 1973 I attended a dinner in honour of the visiting Chinese Minister of Foreign Trade leading a trade mission to Australia, hosted by the Australian Minister for Trade and Industry, Dr J F Cairns. Speaking through an interpreter, I made contact with the Deputy Director of China National Metals and Minerals Import and Export Corporation Mr Chan Chi-Chuan and told him of our interest in supplying China with nickel and of our plans to exhibit at the Kwangchow Fair towards the end of the year. Mr Chan said 'to do business we have to get to know each other better first' and suggested we should write to Minmetals Corporation in Beijing.

On 24 August I wrote to Dr Cairns, asking him to support our application for WMC representatives to visit China and to commend WMC as a substantial and reliable corporation. On 12 September I wrote officially to Minmetals, sending a copy to Mr Chan.

Dr Cairns did support us, we were asked to submit a quotation to Minmetals and received an order for 600 tonnes of nickel for delivery in December 1973. Our nickel and ammonium sulphate sales people did subsequently visit China, and we had an exhibit at the Beijing Trade Fair in 1974. There were numerous contacts, but the first order was not followed by others.

On 3 February 1978 I met the Chinese Ambassador Mr Chou. He had visited the WMC nickel refinery at Kwinana and said it was most impressive.

On 23 October 1978 a Chinese Metallurgical Mission, some 10 people led by Vice Minister Hsu Chih, visited WMC Melbourne Office. We had an hour's discussion, following which I hosted a lunch at Melbourne Club to which we had also invited Alcoa of Australia representatives. The members of the Club to their credit did not blink an eyelid when some dozen Mao-suited Chinese marched into this bastion of capitalism!

During the visit to WMC I told the Vice Minister that WMC would be interested in applying our long experience and established technology in gold mining to participating in gold mining and exploration in China. A part of the reason for expressing interest in gold was that we regarded China as a large and growing market for nickel and thought that establishing a relationship in gold would assist in becoming a regular supplier of nickel. Mr Hsu expressed particular interest in alluvial gold dredging and we undertook to send him information, which was done through the Chinese Embassy in December.

While I was describing our background and operations the Vice Minister asked how many people worked for WMC. I gave the number (from memory, of the order of 6000) and politely enquired how many employees there were in his Ministry. 'I am not sure', was the reply, 'but I think about 4 million!'

### **WMC Mission To China**

In January 1979 WMC received an oral invitation by the Gold Corporation, a part of China's Ministry of Metallurgy, to send a technical mission to China, with particular emphasis on gold exploration and production. Subsequently I was visited by the Chinese Ambassador Mr Lin Ping, who confirmed their interest in developing technical ties in addition to trade relationships, and reiterated their particular

interest in gold. In a letter to Roy Woodall on 16 February 1979 I said, among other things:

'any involvement ..... in providing technical assistance in gold activities would also be with the ultimate aim of establishing trading relations in nickel,

by co-operating with the Chinese in the technological area we would hope to establish a presence and reputation which would help in becoming a regular supplier (of nickel),

the provision of technological assistance beyond the exchange of general information would have to be on a cost plus fee basis'.

We submitted a programme on 2 March 1979 which included detailed presentations on all aspects of gold production. To show our expertise, it was decided to prepare a comprehensive manual covering gold exploration, mining, and metallurgy. Fifty copies of a copyrighted two-volume 400 page manual were produced; thirty eight of these were left in China. Copies were placed in the National Library.

The delegation consisted of :

R Woodall	Director of Exploration (Leader)
N R Hooker	General Manager Gold Division
J A Haycraft	Consulting Geologist - Projects Division
D J Esdale	Chief Minerals Geophysicist
O A Bavington	Manager - Joint Venture Services

The delegation spent 22 days in China in March 1980, in roughly three parts:

- Visit to Jin Chang gold prospect, Yunnan Province
- Visit to Ertai gold prospect, Shaanxi Province
- Seminars and technical 'exchange' in Beijing.

Owen Bavington, in Report K /2497, summarises the outcome as follows:

The visit was unquestionably well received by the Chinese. Considerable goodwill was generated with a large number of middle and upper ranking technical people in the Gold Corporation .....

It is difficult to judge the exact amount of benefit the Chinese received from our visit. Many of their technical questions were answered, but many of these were only to clarify the seminar material. It was unfortunate that the manuals had not been translated before our arrival as this would have increased their benefit.

We conclude that the visit was of little immediate benefit to WMC but a valuable first step in our contact with and understanding of the Chinese scene.'

The group recommended that WMC should host a visit by a Chinese delegation to Australia and that an early decision should be made regarding whether a WMC delegation would like to visit other locations in China (say May-June 1981). Before another visit efforts should be made to persuade the Chinese to discuss their exploration methods and results, as the so-called 'exchange' during the 1980 visit had been 'essentially one-sided'.

The total cost of the mission, including the preparation of the manuals and all expenses, including salaries, was estimated at \$50,000 - \$60,000.

### **Chinese Mission to WMC**

The Chinese accepted the invitation to send a delegation to visit WMC operations in Australia, which took place in October 1980. They called in Melbourne Office on 10 October and I hosted a dinner for them that night. Ostensibly a delegation from the Gold Bureau, their interest while in Western Australia was, however, focussed on nickel and they particularly went to great lengths to obtain detailed information on our nickel smelter and refinery.

### **Consulting In Nickel Smelting**

It transpired that the China Non Ferrous Metals Import and Export Corporation (CNIEC) had a nickel operation at Jinchuan in Gansu Province in northern China. The Yongchang nickel mine had been discovered in 1958. It consisted of an underground mining operation in very bad ground and a smelter and refinery which they had built using a Canadian textbook *The Winning of Nickel* as their source of technical information! Construction had begun in 1959 and the first electrolytic nickel was produced in 1964. An expansion programme included the construction of a flash smelter. Being very impressed with our Kalgoorlie Nickel Smelter, they wanted WMC to help them design and commission the smelter.

We pointed out to them that we had obtained the know-how for the flash smelting process from Outokumpu and could not do what they wanted without Outokumpu's permission. We also pointed out that we were not consultants, and our relevant staff was fully occupied with running our nickel operations. We advised the Chinese to go to a professional engineering design and consulting firm.

The Chinese insisted that they were particularly impressed with our operation and wanted a smelter 'just like WMC's'.

We then told them that they would have to supply all the manpower for the actual design work, that we would only supervise and advise their team, that we would need all our costs covered and an additional fee of \$1 million, hoping that this would put them off. They accepted without a murmur!

Thus a team of some 20 Chinese draughtsmen and engineers worked in the Belmont Office for some months in 1985 and took their design back to China. There was a delay in constructing the smelter, but some years later we were asked to accept Chinese smelter staff for training in the Kalgoorlie Nickel Smelter and some of our smelter staff went to China to help with their commissioning. As far as we know, the smelter has been a success.

### **Gold Mining in China**

We persisted with our interest in gold mining in China and received an invitation to consider involvement in four existing gold mining operations. The proposal was that we would supply management to increase the output of these operations. We would not have an equity in the projects, but would receive half the net profit from the additional gold produced for an agreed number of years. We were invited to inspect the operations before proceeding further.

Before doing so, we decided to ask for information which would enable us to assess the practicability of achieving additional production and profit. One of the questions asked was: 'What is the price of gold in China?'.

Our interest in the venture disappeared when we were told that the price of gold in China was a State secret! This was the end of this particular episode in China - WMC relationships.

### **Subsequent Events**

WMC did sell nickel to China from time to time, but our attempts at becoming involved in gold mining in China probably had nothing to do with this. In the government bureaucracy in China different matters are dealt with in different compartments and there is probably no spin-off from one compartment to another.

However, when WMC in 1994 again became interested in gold exploration in China (the ban on foreign companies participating in minerals exploration and production in China had been lifted) our people were told that the Mission to China in 1980 was well and favourably remembered. It had been helpful in establishing WMC's reputation in China as a substantial and enterprising minerals company.

Subsequent WMC gold exploration in China is described in *THE TREASURE HUNT, Beyond The Borders*.

A number of spot sales of nickel matte were made to Jinchuan Group Ltd in 2002.

In early 2003 it was announced that WMC Resources Ltd had secured a long term agreement with Jinchuan Group Ltd for the delivery of 30,000 tonnes nickel in matte over a number of years, beginning in 2003. In August this was extended by a further 90,000 tonnes, to be delivered between 2005 and 2010. China had become as important as Japan to WMC as a nickel customer. Thus the contacts made in 1973 finally produced 30 years later the outcome WMC was looking for. On Chinese time scales, this may well be fast progress.

## ***REBIRTH OF ST IVES***

### **Gold at Kambalda**

What is now the nickel mining area of Kambalda first appeared on the minerals map of Western Australia as a gold discovery in 1897. The district was then known as Red Hill and the Red Hill Gold Mine became the main producer. The officially recorded production from the area until 1907, when only a few alluvial workings and prospectors remained, is 31,070 ounces from 40,793 tons of ore, and an additional 1567 ounces of alluvial or specimen gold. J J (Jeff) Gresham, author of *Kambalda - History of a Mining Town*, thinks that gold theft and unrecorded production probably meant a total production in excess of 40,000 ounces over the 10 years.

When nickel mining began there were rumours of occasional specimens of high grade gold, particularly in the Silver Lake Mine where the workings were close to those of the old Red Hill Gold Mine. The first record of rich but limited pockets of gold ore is from the Fisher Mine in 1974, where a one ton parcel of ore yielded over 500 ounces. More extensive gold mineralisation was encountered in the Hunt Mine in 1978.

While the exploration people had started a reassessment of the gold mining potential of the Red Hill area and at St Ives south of Lake Lefroy in the early 1970s, the operators at Kambalda initially regarded gold as a distraction from their real mission which they saw as producing nickel. External circumstances, however, encouraged a change in this attitude.

Towards the end of the 1970s nickel was suffering from one of the periodical downturns. In 1977-78 the Western World demand for nickel was at its lowest since 1972 and most major producers reduced production. Prices fell to uneconomic levels, cost inflation in Australia continued, and the Australian exchange rate to the US dollar moved adversely. On the other hand, the gold price was increasing after the gold miners had gone through one of their worst experiences ever in the mid-1970s. At Kambalda, work began on outlining the extent and grade of the gold mineralisation in the Hunt Mine.

The gold price continued to increase and reached its all time high to date of US\$850 per ounce in January 1980. The Hunt gold mineralisation appeared mineable and in February 1980 spectacular specimen gold was found in the nickel workings of the Silver Lake and Hunt mines. To quote Jeff Gresham:

'One Friday, after the day shift, personnel from the Silver Lake Shaft brought a series of specimens to the main office, some of them containing several ounces of gold and worth thousands of dollars. The group stood in awe, many thinking they could never hope to see such superb examples of free gold again, when suddenly Hunt shoot men came in with even more striking specimens'.

It was decided to add a gravity gold recovery circuit to the Kambalda nickel concentrator. This was commissioned in April 1980 and the first bar of gold was poured shortly thereafter. The main feed for this circuit was gold ore from the Hunt Mine.

All this gave new impetus to gold exploration in the district.

### **Gold At St Ives**

Small gold workings had been started at Victory and Orchin south of Lake Lefroy in 1897. In 1919 Pat

Ives discovered gold further south again and there was a minor gold rush in what was named the St Ives district.

Most of the gold in this district was produced between 1920 and 1926, but there was also some mining between 1940 and 1942. Total production before 1980 was about 19,000 ounces, about a half of that thought to have been produced at Red Hill (J J Gresham).

### **A New Era Begins**

A new era for gold production in the St Ives district started in April 1980 when WMC planned drilling underneath the Ives Reward and Victory mines. The work was led by Dr G D (Geoff) Loftus-Hills, Chief Geologist, and by B J (Barry) Goss, Senior Exploration Geologist.

Early drilling gave indications of over a million tonnes of gold ore in the Victory area and encouraged the development of a gold mining operation in addition to nickel mining at Kambalda. The existing infrastructure and support facilities made this very attractive. As Jeff Gresham puts it: 'The atmosphere was reminiscent of the frenetic early days of the nickel mines'.

It was decided to construct a new Carbon-In-Pulp (CIP) gold plant of 500,000 tonnes per annum capacity adjacent to the Kambalda Nickel Concentrator. This plant began operation on 23 October 1981, sixteen months from establishing the gold potential at the Victory. The people who produced nickel at Kambalda seventeen months after the first drillhole intersection had not lost their touch!

The designation of this new activity was Kambalda Gold Operations.

### **Growth At St Ives**

Production initially started with an opencut at Victory, which complemented underground ore from the Hunt Mine at Kambalda. Exploration in the St Ives district continued and soon the nearby Defiance orebody was discovered.

It is not known who started the practice of naming the orebodies at St Ives after the ships at the battle of Trafalgar in 1805. It must have been a geologist working there, who were traditionally given the privilege of choosing the names of prospects. (There were rare exceptions; for example, once when reports from the Roxby Downs area started to mention the Appendicitis Dam project, I insisted that the name be changed because I could not face the possibility of an Appendicitis Mine!). When the prospects turned into orebodies, the name remained. Whoever it was at St Ives, his or her successors continued with the tradition; for an unknown reason the Junction Mine is the exception.

Until the end of 2000 the names of seventeen of the 70 or so ships involved in the famous battle had been used. Thirteen of these were names of British ships: Victory, Defiance, Leviathan, Conqueror, Britannia, Orion, Minotaur, Revenge and Africa were orebodies (mines), Mars, Minotaur, Agamemnon and Thunderer were resources and Swiftsure and Neptune were prospects, all east of the Kambalda-St Ives road. Four namings west of the road were after French and Spanish ships: Intrepide and Santa Ana were orebodies and Formidable and Bahama were resources. Gilbert Ralph made the comment that, up to that time, the British had been victorious!

There remains ample scope for naming future discoveries. Future developments of large opencuts are likely to engulf some of the previously separately named entities. The rapidly increasing ore potential of the district, with ore reserves at the Victory at 3.4 million tonnes averaging 3.1 grams, prompted the expansion of the gold mill at Kambalda to 750,000 tonnes per annum by December 1982.

## **A Timely Development**

The increasing gold production was very welcome indeed, as the nickel market was again in doldrums. At the Annual General Meeting in November 1982 I informed shareholders that:

'In 1981-82 the world nickel industry suffered its most severe downturn since we became a nickel producer in 1967.'

The price of gold also declined, but gold mining was still profitable.

'While coping with the depressed conditions in the nickel industry we have made use of opportunities to extend our gold interests where the terms of trade have been better. The most important development here has been the gold mining operations established in the Kambalda/Kalgoorlie district.'

## **Continuing Growth**

Ore reserves at St Ives continued to increase. Exploration moved northwards to Delta Island in Lake Lefroy, and also southwards. Opencut mining was in several instances followed by underground mining through a decline from the bottom of the opencut.

A major success in 1986 was the discovery of the Junction orebody which established an extensive mineralised area rivalling the Victory-Defiance area.

## **St Ives Treatment Plant**

As the ore reserves and potential at St Ives grew, it became apparent that there was an economic case for building a gold treatment plant at St Ives rather than transporting the ore to Kambalda. Construction began in 1987, the 2,000,000 tonnes per annum plant was commissioned early in 1988, and the first bar of gold was poured in April 1988. An intensive search for groundwater was successful in establishing an adequate supply of salt water for the plant.

## **Further Growth**

Another ore position, the Revenge, was discovered under Lake Lefroy. It was decided to mine this initially by opencut, which presented engineering challenges because of the considerable thickness of unconsolidated sediments in the lake. Water levels vary seasonally from 0 to 1 m deep. A bund wall 2 m high by 6 m wide was built around a designed open pit of 800 m by 500 m surface dimensions. Plastic liner, mud and clay were placed on the inner side of the wall to a depth of 3 to 4 m to prevent the inflow of surface water before excavation commenced. Production began in 1990.

The change of name from Kambalda Gold Operations to St Ives Gold Operations in July 1992 denoted the establishment of a separate management responsibility, with infrastructure and services continuing to be shared with Kambalda Nickel Operations. On 18 December 1992 the one millionth ounce of gold was produced at St Ives.

In 1992-93 a record 3 million tonnes of ore was treated in the St Ives Mill.

The Junction underground mine shaft haulage system was completed in June 1993. Underground grizzlies, crusher, and loading station with an ultimate capacity of 1.5 million tonnes per annum served



an automatic vertical hoisting shaft. The mining method was 80% room and pillar stoping, with some backfilled open stopes. The Revenge underground mine reached full production in May 1994 with the implementation of a highly mechanised Alimak rising and stoping system.

In 1994-95 mining of the high grade Britannia orebody commenced and the Delta opencut was completed.

Production from the Redoubtable and Intrepide opencuts commenced in July 1996.

Mining contractors were introduced late in 1996.

In 1996 the Company announced the intention to build at a cost of \$157 million a new treatment plant capable of treating 5 million tonnes of ore per annum. Substantial engineering work and some ordering had taken place when the price of gold fell and the work was put on a hold in 1997 after spending some \$30 million. Instead, the enlarged St Ives Plant was upgraded and improved. Production reached a record 433,265 ounces in 1996-97.

In mid-1998 production started at the Santa Ana Mine. Mining of Victory and Revenge was completed in 1998, to be replaced by the new Leviathan opencut in 1999. The Leviathan was to be more than 300 metres deep and would eventually include a number of existing smaller opencuts and underground mines.

In April 1999 plans were approaching completion to establish, in addition to the St Ives Mill, a heap leach operation to treat the lower grade ore and overburden containing some gold which had accumulated and of which there was expected to be a substantial tonnage produced in the future.

## **Managers**

The gold operations were initiated while B S (Barry) Patterson was Resident Manager of Kambalda Nickel Operations. After he left WMC in January 1980, production started under A J (Tony) Palmer. Tony was succeeded in 1984 by B J (Barry) McCahon, and Barry in December 1985 by P J (Phil) Lockyer.

T M (Tim) Moran became Resident Manager at Kambalda in February 1990 followed by W B (Bill) Anderson in June 1992.

On separation of the gold and nickel operations on 1 June 1992 A H (Allan) King was appointed the first Resident Manager of St Ives Gold Operations. He was succeeded by S S (Simon) Solomons in August 1994. S (Seamus) French was Acting Resident Manager from March 1996 until February 1997 when R (Richard) Laufmann was appointed. His title was changed to General Manager in November 1998.

## **Subsequent Events**

In 2001 WMC decided to divest all its gold assets. The St Ives and Agnew Gold Operations were sold to Gold Fields Limited of South Africa in September 2001 for US\$232 million (A\$470 million). Gold Fields benefited from the increase in the gold price in 2002 and the assets were valued by some analysts at A\$1.5 billion in February 2003.

**Production and Reserves**

Total production from the St Ives and Kambalda leases up to the time of sale was 4.26 million ounces.

See the following tabulation (GHI-SIGM-3 by G M Ralph).

**Reflections**

The development of gold mining in the St Ives area is a real success story, an excellent example of how persistent systematic exploration can gradually build up a major ore position. The following graph (drawn in November 1993) shows that, excluding Kalgoorlie, the St Ives area had in thirteen years developed into one of the top gold resources in Western Australia, at least equal to Norseman.

This achievement was not well understood, even in the industry, because it resulted from painstaking work year after year which had not caught the headlines or caused runs on the Stock Exchange. The district will undoubtedly yield further discoveries and continue as a major gold producer long into the future.



## ***REWARDS ON THE EASTERN GOLDFIELDS***

The rise in the price of gold in the early 1980s, together with the introduction of Carbon-In-Pulp treatment (see Overview) which made easily mined surface-near oxidised ore treatable and economic, led to the development of many new opencut gold mines, particularly in Western Australia.

Kalgoorlie Gold Operations (KGO) worked a number of relatively small opencut gold mines between 1980 and 1991 within a 110 km radius of Kalgoorlie (refer map at end of section). KGO was managed initially by A P (Tony) Bartlett and later by W B (Bill) Anderson.

### **Fimiston (Great Boulder Leases)**

The original Great Boulder gold leases on the Golden Mile at Fimiston were gradually cleared of buildings and plant and worked by WMC to a depth of 60 metres between 1981 and 1986 for the recovery of 76,376 ounces of gold from 405,200 tonnes of ore, a recovered grade of 5.86 grams per tonne. The ore was treated in the gold plant at Kambalda. The deeper part of the leases was sold to Kalgoorlie Lake View Pty Ltd.

During the mining the successive benches were intensively sampled at short vertical intervals and the complicated ore outline marked by paint lines sprayed on the ground as a guide to the backhoe operators.

For accounting and taxation purposes it was decided in 1981 to use Great Boulder Holdings Ltd, a company incorporated in Victoria on 27 June 1974, as the financial entity for all WMC's wholly owned gold operations. These included operations at Fimiston, Sand King, Lancefield, and Kambalda. Only the first two were operated as Kalgoorlie Gold Operations.

Initially KGO used the old Great Boulder Mines Office at Fimiston but several years later, when it was demolished to make way for the opencut, a new office was built in Cheetham Street, Kalgoorlie which was completed just before KGO was wound down in 1991. The building was subsequently used by WA Operations and ExDiv, until it was sold to the WA School of Mines in 1996.

### **Sand King, Missouri, and Thiel Well**

A small deposit of some 250,000 tonnes at 4.3 grams per tonne at Sand King near Siberia, 75 km north of Kalgoorlie, was brought into production in October 1980 as an opencut using contractors. Initially the ore was treated at Kambalda but after 1987, ore from Sand King and two other nearby deposits, Missouri and Thiel Well, was treated locally in a 100,000 tonnes per annum CIP plant relocated from the Lady Bountiful Mine. These treatment plants were designed to be transportable; everything except the foundations could be easily dismantled and re-erected. This assisted the economic working of small deposits which could not justify a permanent mill.

Kalgoorlie Gold Operations continued the development of Sand King, Missouri and Thiel Well mines and in 1989 purchased a 400,000 tonne per annum (non-transportable) gold treatment plant at Goongarrie (90 km north of Kalgoorlie) from Julia Mines NL. The ore was transported to Goongarrie for treatment. The purchase was not well considered because the ore reserves at Thiel Well and Sand King were depleted by the end of 1990 and the Goongarrie plant was closed for want of ore. It was later sold.

A small scale batch leaching operation was conducted at Mount Dimer 110 km west of Kalgoorlie in 1990 but this was short lived and closed in 1991, as did the operations on the Siberia leases.

The production from Sand King, Missouri and Thiel Well between 1980-81 and 1990-91 was 1,021,000 tonnes for 130,588 ounces of gold, a recovered grade of 3.98 grams per tonne.

### **Lady Bountiful**

The Lady Bountiful deposit west of Broad Arrow was discovered by Consolidated Exploration NL (ConsEx). WMC acquired a 50% interest in it in 1984 for \$1 million and some development commitments, and was appointed Manager. Between 1984 and 1986 exploration defined an economic openpit resource and underground potential. A transportable 100,000 tonnes per annum CIP plant commenced operating in the latter half of 1986. Initial results were encouraging and a new CIL plant of 350,000 tonnes per annum capacity was installed in 1987; the old plant was transferred to Sand King.

In 1986-87 Lady Bountiful produced 143,000 tonnes of ore for 15,140 ounces, a recovered grade of 3.69 grams per tonne.

The Davyhurst deposit 110 km north-west of Kalgoorlie was acquired by WMC in 1984 and plans were put in hand to develop an openpit operation. A new 250,000 tonnes per annum capacity CIL treatment plant was erected on site and was ready for operation by mid-1987.

In June 1987 Consolidated Exploration, endeavouring to 'transform the company into a gold major with a capitalisation of \$523 million', purchased WMC's 50% interest in the Lady Bountiful operation for \$201 million (\$100 million cash and 27 million shares in ConsEx) and WMC's 100% interest in the Davyhurst Gold Project for \$35 million. To fund the purchases ConsEx placed 27 million shares at \$3.75 each with a number of institutions. The net effect was that WMC received \$135 million in cash, together with 27 million shares (23% interest) in ConsEx. H M (Hugh) Morgan was appointed to the ConsEx Board. WMC continued to manage both operations for ConsEx until October 1988, when ConsEx assumed management responsibility.

By mid-1988 underground development had not given results according to expectations and there had been two failures of the wall of the openpit. By 1991 ConsEx was losing money and the situation was steadily deteriorating, although the Chairman predicted that the company would recover and continue exploration. Despite his optimism the situation worsened and both the Lady Bountiful and Davyhurst operations were closed in 1992.

ConsEx considered that they had been poorly advised by Ord Minnett in relation to the purchase of Lady Bountiful and Davyhurst and in July 1992 ConsEx sought damages of \$170 million from Ord on the basis that their report was produced negligently and that they failed to make proper enquiries. Ord brought Third Party proceedings against several former ConsEx Directors and WMC.

While not admitting liability, the matter was settled out of court on 15 November 1993 with Ord and WMC each agreeing to pay ConsEx \$10 million. In addition, WMC's 27 million shares in ConsEx were cancelled (see Book Two Part B *THE TROUBLES, Lady Not So Bountiful*).

### **The Demise of Kalgoorlie Gold Operations**

The Resident Manager at the time of cessation of gold mining by KGO in 1991 was Bill Anderson, previously Resident Manager at Vatukoula (from 1987-89). Following the cessation of gold mining KGO undertook mining of several nickel deposits in the Widgiemooltha area, supplying ore to the Kambalda Concentrator under contract. KGO was run very lean and could do the work at a lower cost than KNO itself. Bill Anderson was credited with achieving this.

In 1992 Bill Anderson was appointed Resident Manager at Kambalda Nickel Operations, and in 1994 became Resident Manager in Brazil. He was the first geologist in the Group to become a Resident Manager.

**Production**

The production from the various gold projects operated by KGO is shown in the attached tabulation.



## ***LANCEFIELD'S LANDMARK MINE***

### **Background**

The Lancefield gold deposit 8 km north of Laverton was found in 1896 by a group of prospectors amongst whom there was a Mr Lemmon from Lancefield, Victoria - hence the name. Production continued steadily until 1933 when a new company Lancefield (WA) Gold Mine NL was formed to expand operations and erect a new 120,000 tons per annum plant. Operations at Lancefield ceased in November 1934.

Nickel prices were depressed in the late 1970s - early 1980s and Windarra Nickel Project (WNP) discontinued nickel production between June 1978 and May 1981. Underground development continued, but the mine staff had spare time on their hands and, encouraged by Keith Parry, started to look for opportunities other than nickel. While nickel prices were low, the price of gold reached its all time high in 1980.

### **Reopening Lancefield**

Meanwhile, WNP had obtained the leases over the old Lancefield Gold Mine. R A (Dick) Tastula, the Resident Manager of Windarra Nickel Project at the time, recalls:

The actual leases were picked up by Barry Goss. He was looking for nickel near the area and went down to peg a block of nickel and found the Lancefield leases had expired.'

Investigations established the practicability of reopening the mine and work began to develop an opencut and sink a new shaft named the Evers Shaft in memory of S A (Stan) Evers, Deputy General Manager, Nickel Division. Stan, who had joined WMC as Assistant Chief Engineer in 1967, had died of a heart attack on 30 June 1979.

Dick Tastula remembers:

There was no information whatsoever because not only had they shut down the old mine, it shut down under some circumstances where the manager was robbing pillars and the shaft caved in and left it unstable. Questions were asked in Parliament as to why the management allowed the workers to be put under such unsafe conditions. A Royal Commission was mooted. I think it was a Labor Government at the time and immediately that Royal Commission was mooted all plans disappeared. There was no information at all available .....

### **Back In Production**

Production from the opencut and underground commenced in 1981-82. The Lancefield opencut was extended on at least three occasions to supplement ore from the Evers Shaft. For a time ore was also carted from an opencut mine developed by WMC on the old Emu leases near Agnew until they built their own plant, and also from Bindah opencut 90 km south of Laverton.

A Carbon-In-Pulp (CIP) plant to treat oxidised gold ore was commissioned at Windarra late in 1981. It utilised a part of the nickel concentrator to crush and grind and float the ore. In 1982 a second mill became available to treat refractory gold ore from the lower levels of the Lancefield Mine. A refractory circuit including a two stage concentrate roaster was incorporated.



By 1987 the opencut had been completed and all production at Lancefield came from underground. Extensions at depth prompted the development of a decline from the bottom of the opencut to gain access to Lancefield Deeps. The decline which was begun in 1986 was named the Parry Decline in honour of Keith Parry, WMC's Director of Operations, who had died suddenly in May. It advanced to 800 metres below the surface.

Difficulties with long hole stoping led to the introduction of a panel cut and fill technique in the lower levels.

An increase in mining rate in 1987 led to the upgrading of the refractory grinding and flotation circuit, the construction of a 400 tonnes per day single stage roaster, a new CIL circuit and an elution plant capable of treating 500,000 - 600,000 tonnes per annum.

In December 1987 the Beasley Creek opencut, 12 km south-east of Windarra, was developed, brought into production, and continued until 1990.

After the Eysers Shaft closed in 1992, all haulage and access was through the Parry Decline.

### **Exit From Lancefield**

By March 1993 a review of operations resulted in a decision to discontinue development of the Parry Decline. By November 1994, when all developed ore had been mined, operations ceased with ore treatment completed in January 1995.

In March 1995 the mine and the associated exploration leases were sold to Metex Resources NL. Plant not sold to Metex was disposed of by auction and the site rehabilitated and included in a Heritage Trail tracing the history of the area and its contribution to mining in Australia.

### **The Result**

The Lancefield operation from 1982 to 1995 produced 714,884 ounces of gold from 5,147,230 tonnes of ore, a recovered grade of 4.32 grams per tonne. The attached tabulation shows the details. A financial analysis of the Lancefield Gold Operation is not available.

## **WMC'S STAWELL GIFT**

### **Historical**

Gold was discovered in Stawell in 1853. In the 73 years from 1853 to 1926 the field produced 2.7 million ounces out of Victoria's historical gold production of 78.8 million ounces.

### **Early Exploration**

WMC's associated company, Gold Mines of Australia Ltd (GMA), was first offered a lease on the Stawell Goldfield in January 1932 by William Slade of Stawell West. G C (later Sir) Lindesay Clark examined the property and reported on it, but it was not taken up at the time.

In 1943 WMC geologist J D (Don) Campbell wrote a report on the Stawell Goldfield, suggesting that 'The attractive feature of the Stawell field is that it has a substantial production of high grade and that there would be every chance that repetitions would be of worthwhile size and highly payable in grade.'

Another WMC/GMA geologist, R J S (Reg) Clappison began a re-examination of the field in 1950. He resided in Stawell for many years and had an office in Main Street. Reg became a local identity and did much to build up good relations with the townsfolk.

Reg Clappison tested the centre section of the field with drilling which indicated gold bearing material in the southern end. In 1984 he recalled:

'When I went to Stawell I got the idea that the ore in the south end was probably underestimated and that there would be enough foothold ore there to get a mine started. This was in 1950. Re-investigation suggested this was probable and we put in a series of drill traverses to test the position. We drilled a portion of those traverses with a fair rate of success and I hoped to start on the third traverse when Sir Lindesay Clark instructed me to hold off - which at the time I was a little reluctant to do. He later pointed out that we had proved our point, there was ore at the south end and if we went on drilling for a long time beyond our available resources we still would not know the tonnage or grade.'

Reg later explored for a new field to the north and east of the old field with a further 14 diamond drill holes.

In January 1964, just prior to being wound up, GMA transferred all its interests in the Stawell field to WMC.

### **Renewed Interest**

After the gold price started to rise in the mid 1970s the Stawell field was re-examined and between 1976 and 1980 twenty one diamond drill holes were completed to depths of up to 385 metres under the direction of three Exploration Division geologists, D R (David) Quick, R B (Bob) Sloan, and R B (Bob) Watchorn.

### **Stawell Joint Venture**

By 1980 the improved gold price prompted WMC to consider bringing Stawell into production and a 50:50 venture (Stawell Joint Venture, or SJV) was entered into with Central Norseman Gold

Corporation NL to undertake exploratory development of an area on the Magdala lode system below the old Davis and Hampshire opencuts. This work officially commenced on 2 June 1981. Keith Parry, WMC's Director of Operations, officiated at a ceremony at the mine site and the Mayor of Stawell, Councillor Don J Webb, turned the first sod with a gold plated pelican pick. The ornate, but sadly deteriorated, Stawell Amalgamated Miners' Union banner provided an appropriate backdrop to the proceedings. As a matter of interest, the banner was subsequently restored following a promise of equal donations from SJV and the Victorian Branch of the Australian Workers' Union as a gesture to commemorate Victoria's 150th Anniversary Celebrations. D W (David) Sheffield records that

The AWU never contributed to the flag. The flag had an official unveiling, carried out by the Resident Manager and the AWU representative of the Mine. In attendance were the town dignitaries and AWU officials from Melbourne, basking in unpaid for glory, but pledging belated monetary support for the restoration. They left town without ever paying any amount towards the restoration cost of about \$13,000'.

B P (Brian) Micke, an American mining engineer from Idaho who had been involved with development of the Fisher and Carnilya Hill declines at Kambalda, was appointed Development Manager to oversee the excavation of the Magdala Decline. Brian represented the Company well in Stawell. He was appointed the first Resident Manager in 1984.

### **Once Again A Gold Mine**

The comprehensive 1983 submission to the Victorian Government, *Stawell Gold Project - A Report on Proposed Operations* describing the nature of the development, the economic benefits, social implications, environmental impacts and employment opportunities received the necessary approvals.

Construction of the 200,000 tonnes per annum treatment plant and associated facilities began soon after. Work also began on the development of shallow ore on the Wonga lease which was covered by the rubbish tip. The accumulated rubbish had to be completely removed before excavation of the overburden could begin.

Ore treatment began in August 1984 utilising the Carbon-in-Leach (CIL) process. The first gold dorè bullion was poured on 14 August 1984 and Stawell became not only the home of the Stawell Gift, but also of Victoria's largest contemporary gold mine.

### **The Official Opening**

The Official Opening of the Magdala Gold Mine took place on 5 October 1984 when Keith Parry, then Chairman of Central Norseman Gold Corporation, invited the Hon David White, Minister for Minerals and Energy, to declare the Mine open, followed by a gold pour.

### **In Operation**

Brian Micke left in August 1985 to return to North America. D (Deming) Whitman, another American-born but Australian-educated mining engineer, who had been Underground Manager at Hill 50 Gold Mine in WA, was appointed Resident Manager.

### **The Gold Tax**

The proposal by the Hawke Labor Government to introduce a tax on profits from gold mining, which had been tax free since 1944, prompted a strong protest from not only gold mining companies but many

of the communities dependent on the industry. Stawell showed its displeasure by holding a public rally in the main street on 16 May 1986.

Following a parade of mine and contractors' vehicles through the streets a public rally in the mall was addressed by a number of speakers, all strongly opposing the introduction of the tax.

Many supporters carried placards such as: 'Don't kill the golden goose', 'Jobs here - not Canberra' and 'Don't slug Stawell'. However, the battle was lost and the gold tax was introduced from 1 January 1989.

### **Continuing Operations**

In its first 10 months of operation the plant treated in excess of its designed capacity to produce 19,274 ounces of gold. The Wonga Opencut was completed in July 1987 and this was followed by underground development from the floor of the opencut. The rate of gold production steadily increased and other mines were brought into production, including the Wonga underground mine in August 1987 and the Davis Opencut in January 1988.

Being in a settled area the operation had numerous advantages, including an established infrastructure, easy access to services, and ready availability of a workforce. Unemployment in the Stawell region was high and, even though there were no experienced miners and plant operators, these skills were quickly learned by the enthusiastic locals, particularly farmers and shearers who were self-reliant and familiar with the contract system. WMC brought a few key staff from other operations to assist in the training and management of the workforce which grew from about 30 in the early stages to over 180 by 1992.

Being in a settled area, however, also had disadvantages. Special attention had to be given to noise, dust, vibration, pollution, waste rock stockpiling, residue disposal, surplus water disposal, access roads and haulage routes.

### **Regional Exploration**

Efforts to explore in the region were to some extent frustrated by activist objections and bureaucratic restraints. The initial application to carry out exploratory drilling in the Ironbark Forest area within the Deep Lead Flora and Fauna Reserve was refused on the grounds that it contained rare and unique species of orchids and was the unique habitat of several birds. Ironically, the trees, shrubs, and plants in the Reserve area had grown only because early prospectors and miners had left the area in such a mess that subsequent farming had avoided it.

An application to carry out exploratory drilling in the *Iron Bark* Reserve was later approved subject to extraordinarily stringent conditions. The drill sites were decided by agreement of two botanists, one employed by the Department of Mines and the other by the Company. The drills had to be moved using special movable wooden roadways so as to leave no tracks.

After the first season of exploration in the Reserve WMC received a letter from the Director General of Victoria's Department of Conservation and Environment, expressing appreciation for the great care that had been taken and confirming the success of the programme. Nevertheless, there remained opponents who simply did not want any activity.

### **Further Operations**

The Wonga Opencut was completed in the latter half of 1987. The Wonga Decline, begun prior to the completion of the opencut, progressed to a total length of one kilometre which was 110 metres vertically

below the level of the portal in the floor of the opencut. Several levels were developed and brought into production over a number of years.

The third major source of ore was the old Davis Opencut, the mining of which became a major public issue. Because of its proximity to the town there were many who were opposed to its development, even though it had been the site of earlier mining activity. As a result SJV were forced into conducting an Environmental Impact Statement (EIS) which had not been necessary for previous developments.

Ultimately approval was given to undertake the development and the Davis Opencut operated between 1987 and 1989.

### **Sale Of Joint Venture**

Neither the expected scale of operations nor profitability were achieved at Stawell. This led the joint venturers, WMC and CNGC, to decide to dispose of the property and other assets as a going concern to a smaller company which might be able to operate with lower overheads.

Another factor in the decision to sell SJV, announced on 26 May 1992, was that WMC had decided to concentrate on larger scale gold mining operations in Western Australia. Small operations in other States were consuming a disproportionate amount of management time and effort.

Following negotiations with a number of interested parties, WMC and CNGC announced on 12 November 1992, 'That an agreement has been signed today with MPI Gold Pty Ltd and Pittston Mineral Ventures of Australia Pty Ltd for the sale of the assets of the Stawell Joint Venture'. Total consideration for the sale was \$11 million, made up of \$2 million cash on completion of the sale and \$9.0 million over a period of time.

The sale of SJV brought to an end the WMC Group's 60 year interest in the area.

For further information on SVJ refer to *GH1 Collection*, GH1- SJV -1 to 15.

### **Production**

Up to the time of the sale on 1 December 1992 the SJV had treated 3,808,300 tonnes of ore and old residues to produce 333,580 ounces of gold. During this period it was Victoria's largest gold producer and, with about 140 employees and 40 contractors, one of Stawell's largest employers.

### **The Financial Result**

There was a combined loss to WMC and CNGC of \$0.9 million on the sale, in addition to \$10.0 million written off in the previous year. Whilst there was a positive cashflow during some years, the overall investment was unprofitable.

### **The Old Miners**

Deming Whitman later observed that, 'The key feature for me at Stawell was that we had a very optimistic view of the opportunities that existed in the old goldfield'. In my experience, here and elsewhere, the old timers did not miss much and had picked the eyes out of it on many occasions in similar circumstances.

## Subsequent Events

From January 1993 to December 1999 Mining Project Investors Pty Ltd produced 596,000 ounces of gold, bringing the total production from the Stawell field to 3.6 million ounces. Reserves and resources at December 1999 were 1.1 million ounces, mainly on down plunge extensions of the Magdala lode system to a depth of 1250 metres.

A probable repetition of the Magdala lode system beneath the South Fault, named the *Golden Gift* discovery, was made in 1998-99, starting at about 1000 metres below the surface. The surface drill intersections remained to be explored through a proposed exploration decline from the Magdala workings.

In 1999 application was made to the Government for permission to work two opencuts, one at Big Hill and the second south of it, to provide ongoing production and revenue while completing the mining on the Magdala system and exploring and preparing for production from the Golden Gift area. The total production from the two sources, named the Big Hill Project, was expected to be 420,000 ounces.

After assessment by a Panel, the Minister for Planning in November 2000 did not approve the project. His decision was endorsed by the Minister for Energy and Resources.



## ***THE BOYS IN BRAZIL***

In June 1977 H M (Hugh) Morgan and R (Roy) Woodall met Mr A Marins of Brazilian Government Steel and Non-ferrous Metals Council (CONSIDER) in Australia. He invited WMC to explore for copper in Brazil. Roy Woodall and J R H (Jim) Ross visited Brazil in August 1978 to meet government and industry representatives. The matter did not progress further because Exploration Division's budget was fully committed. Suggestions that Brazilian entities fund exploration for copper and nickel, with WMC providing technical expertise and management, or that the Brazilian Government buy WMC nickel in exchange for a WMC commitment to explore in Brazil, were not favourably received.

In the latter part of 1979 discussions between myself and J C (Joe) Bates, Vice President-International of Alcoa, while flying over Brazil on Alcoa business, led to the thought of a joint Alcoa financed - WMC managed exploration venture in Brazil. In October 1980 an agreement was signed under which WMC would provide the personnel and technical expertise at its cost and Alcoa would fund the first US\$5 million of exploration expenditure for a 50% equity in the venture. Alcoa had been operating an aluminium project at Pocos de Caldas in Brazil for many years, had local knowledge, and was also able to provide administrative support from their office in Sao Paulo.

Late in October 1980 Roy Woodall and S J C (Colin) Wise, WMC's General Counsel, went to Brazil together with O A (Owen) Bavington and C M (Chris) Middleton of Exploration Division. Owen had been selected to lead the venture and Chris was to be a part of it. During this visit they made contact with Claudio Margueron and Pedro Maciel who, as consultants, were to provide valuable assistance in establishing the venture.

Both Owen and Chris studied Portuguese in preparation for taking up their duties. A new company, WMC Mineracao Limitada (WMCM) was incorporated in Brazil on 28 November 1980. After delays in obtaining permanent visas, the Bavington and Middleton families moved to Rio de Janeiro in May 1981. A small office was established in downtown Rio and local staff recruited. During the first 18 months administrative and accounting support was provided by Alcoa in Sao Paulo, until in 1982 the office was moved to the Botofago suburb of Rio and became self sufficient.

### **Settling in**

The internal business was conducted in Portuguese, requiring all expatriate staff to learn the language. A wide range of contacts was established with Brazilian mining, exploration services, and financial communities and there was a continuing deliberate effort to build a strong local identity.

The problems of dual currency accounting in a high inflation environment were initially underestimated, leading to numerous changes in the accounting team.

The first 12-18 months was essentially spent in becoming familiar with the Brazil exploration environment through field trips, mine visits, assessment of the Brazilian mining industry and exploration services (drilling, analytical, geophysical), and data acquisition. Emphasis was also on building up the exploration and support teams and establishing an extensive data base, map library, and English and Brazilian geoscientific publications. The formative period was recorded in a series of 'B' reports.

There was a regular exchange of professional exploration staff between Australia and Brazil, later including Brazilian mining, metallurgical and engineering staff spending time at WMC operations in Australia.



## **Focus On Copper**

Initially the attention was focussed on copper for which the Brazilian geological environment, including areas similar to the Central African copper belts, was considered particularly promising. An additional encouragement was that Brazil was a significant importer of copper and there was a ready local market.

The first tenement applications were at Camaragibe (Alagoas) in March 1983.

There were, however, lengthy delays and the first leases were granted only in September 1984 at Cococi (Ceara). Other base metals targets were located at Jaibaras (Ceara) and Rio Pardo (Bahia). With the change in emphasis to gold, no drilling was done on the base metal targets on which \$3.6 million had been spent.

## **Change To Gold**

At a Joint Venture Management Committee meeting in December 1982 the decision was taken to direct some of the effort towards gold. It was realised that much of the data on which the targeting work had been based was incorrect. An increase in the price of gold in the early 1980s, Alcoa's reluctance to become involved in large capital intensive base metal developments, and recognition of the potential for gold in recently discovered greenstone belts in Brazil encouraged the further change of emphasis from copper to gold in 1984.

The first gold tenement applications were submitted for the Papa Farinha (Minas Gerais) and Campinorte (Goias) prospects in April and June 1984 respectively. The first tenements were granted in May 1985.

## **Alcoa Retires**

There had been a change of senior executives in Alcoa and the new people did not support Alcoa's involvement in exploration for minerals other than bauxite. Alcoa consequently withdrew from the joint venture in 1985, after having spent US\$3,720,000. WMC had contributed US\$1,560,000. After an unsuccessful search for another partner, WMC continued with the project as 100% owner.

## **Jenipapo Project**

The rapid granting of exploration tenements in 1986 and 1987 resulted in a number of prospects being drilled in Goias, Minas Gerais, and Paraiba.

Follow-up work of a 60,000 sq km 1984-85 low density drainage survey in southern Goias led to the discovery in mid-1987 of a small but good grade gold deposit at Jenipapo near Aurilandia. The cumulative exploration expenditure to that point was \$9 million. The discovery was quickly brought into production by a joint venture company, Mineracao Jenipapo, in which a Brazilian bank, Banco de Investimentos Garantia SA, held a 25% interest. The purchase price for the Brazilians was US\$1.01 million, being 25% of the estimated net present value, less a 20% discount, less a 25% discount in recognition of Garantia's expected contribution in the financial and commercial areas.

In October 1988 the new Brazilian Constitution was promulgated, requiring mining and exploration companies to be controlled by Brazilian citizens or permanent residents. 'Control' was defined as voting control. As up to 67% of a company's stock could be non-voting shares, a shareholding of only 17% could be controlling. The *Articles of Association* of Mineracao Jenipapo were modified in 1989 granting voting control to Banco Garantia, with appropriate safeguards for WCM.

The Jenipapo Project held rights to 740 sq km.

A 130,000 tonnes per annum Carbon-In-Leach plant commenced operations in June 1989 to treat ore from the nearby opencut. The project worked well, and higher than expected grades in the supergene zone assisted in good gold production.

The capital cost of the Jenipapo Project was US\$8.6 million, approx 20% above the estimate in January 1989. The overrun resulted largely from the freezing of the Cruzado-US dollar exchange rate in January 1989, resulting in increased costs in US dollar terms. Production commenced in 1990.

By early 1992 all the economic mineralisation had been treated for the recovery of 97,512 ounces, of which the WMC share was 73,134 ounces. The plant was removed to Mara Rosa; the disturbed areas were rehabilitated and later sold.

In June 1991 it was estimated that the financial result of the Jenipapo Project was a surplus (after paying all capital cost and tax) of US\$21,805,000, of which WMC share was US\$16,604,000.

## **Financing**

Funds were initially contributed in a number of small transfers, followed by the purchase of offshore debt at a discount of 20%. The bulk of the capital cost of the Jenipapo Plant and ongoing exploration expenditure was funded locally through dollar-indexed short term loans, totalling US\$6 million. This debt was repaid over nine months.

In March 1990 WMCM entered into a gold loan agreement with its parent WMC, taking advantage of the premium of over 100% in the Brazilian price of gold. WMC deposited 9,650 ounces of gold, valued at US\$3.90 million, with a London bank, whose Brazilian branch passed an equivalent amount of gold to WMCM, returnable in 2 years. Sold in Brazil, this gold yielded US\$8.54 million. Most of the gold loan was used for the purchase of equity in Mara Rosa.

## **Further Exploration**

Exploration continued concurrently with the development of Jenipapo, with an increasing proportion of the effort concentrated close to it. Gold mineralisation was discovered in Minas Gerais, but proved erratic and modest in extent. In 1989 option agreements were concluded over a placer gold prospect and an alluvial diamond prospect in Minas Gerais. Both were terminated after evaluation.

## **Mara Rosa Project to 1991**

In September 1988 Mineracao Jenipapo obtained an option from BHP's Brazilian subsidiary Mineracao Colorado over an area of 1660 sq km including a gold prospect at Mara Rosa in northern Goias. Two small deposits, Posse and Zacharias, were tested. The latter was free milling but the Posse Deposit was difficult metallurgically and was treated by heap leaching.

In March 1990 the option was exercised at a cost of US\$10,635,000. Heap leaching was continued and enlarged to treat ore from both Posse and Zacharias. A new crushing plant was built and commenced operations in 1991.

Considerable exploration effort was directed to the vicinity of Mara Rosa.

## Situation in June 1991

A note written by me after a visit to Brazil in June 1991 summarised the situation as follows:

'Our present exploration efforts are directed almost entirely towards finding more gold ore to supplement the known reserves at Jenipapo and Mara Rosa. Recent diamond exploration has been disappointing and is likely to be discontinued.

No significant effort is going into exploration away from the mine areas because:

1. Financial and people resources are limited
2. Ground in the most highly rated exploration areas is tightly held.
3. Foreign companies must have a Brazilian partner in control. There are no Brazilian companies interested in high risk mineral exploration.'

The restriction on foreign ownership of mineral projects was discussed in Brazilia during my visit with the Secretary of Mines and Metallurgy and a number of politicians and other officials. They all agreed that the restrictions had to be eased and believed that this would happen, but expected progress to be slow because it required a change in the Constitution.

The total net expenditure by WMC in Brazil to June 1991 was US\$10,197,000.

## Conclusion of Mara Rosa Project

In 1992 the Jenipapo leaching plant was transferred to Mara Rosa, terminating the heap leach operation.

On 1 July 1993 WMC purchased Banco Garantia's 25% interest in the project after a constitutional change permitting 100% foreign ownership of mining tenements. The Zacharias Opencut was depleted in 1994 and production at the Posse Opencut was resumed.

Due to declining profitability, operations at Mara Rosa were terminated in July 1995 and the plant put up for sale. Total gold production was 90,364 ounces of which WMC's share was 77,491 ounces.

The financial result of the Mara Rosa Project is not available.

## Production

The combined output from the Jenipapo and Mara Rosa gold operations was 187,876 ounces.

Year Ended	Mara Rosa	Jenipapo
1989	2,915	
1990	3,496	41,429
1991	5,902	39,020
1992	6,357	17,063
1993	24,360	
1994	27,059	
1995	16,827	
1996	3,448	

## Activities Since 1995

With the recognition in 1991 that opportunities in both the Jenipapo and Mara Rosa environments were becoming limited and that the endowment characteristics in these areas were unlikely to produce major ore deposits, increased emphasis was placed on the Quadrilátero Ferrífero area around Belo Horizonte for both ground acquisition and negotiations.

Detailed assessments of other gold opportunities in Brazil were made.

The initial policy of WMC in Brazil had been not to become involved in the Amazon area, where infrastructure was poor and exploration and operating costs were likely to be high. There had, however, been a major gold rush in the Amazon rain forest by individual prospectors, known as *garimpos*. At the most important locality, Serra Pelada ('bald mountain') up to 80,000 *garimpos* had between 1980 and 1984 excavated by hand an openpit (*garimpo*) 300 metres by 200 metres by area and 120 metres deep, which had yielded an estimated 70 tonnes of gold. The total 4 to 5 million tonnes of material excavated had averaged 14 to 18 grams/tonne gold and also high values of palladium and platinum. Because of the uncontrolled way in which the mining had taken place, the excavation collapsed and flooded.

There were many other, less spectacular locations. Commencing in 1992-93 WMC investigated a number of gold prospects in northern Mato Grosso. I visited a number of these in the Matupa area in November 1994.

At the Serrinha Prospect near Matupa *garimpos* had mined the soft surface-near material and we were exploring the granite underneath. Another, 50 km and three hours of boneshaking four-wheel drive travel there and three hours back on what was described euphemistically as a road from Matupa, there was a major gravity anomaly in the middle of a cow paddock. We had high hopes. None of these prospects fulfilled their promise and were subsequently abandoned.

At the same time there was a nickel exploration program for komatite-hosted Norilsk type deposits.

A rich but small gold orebody was discovered at the Goiás Velho Project in the State of Goiás, some 135 km north-west of Goiânia, 60 km north of Goiás township, in 1997. The discovery, named Sertão, was within a greenstone belt some 70 km long, with potential for additional discoveries (see location maps). There had been no further discoveries by April 1999.

In 1998 a number of gossans containing copper and gold and magnetic anomalies were located over an extensive area named the São Martin (initially Araguaia) Project in the State of Pará 56 km southeast of the town of Redenção. The area of at least 4 km x 2.5 km represented a major hydrothermal system. This was considered an exciting project, but no discoveries had been made by April 1999.

## Management

Owen Bavington resigned from WMC in late 1985 and was replaced as Manager in Brazil by Chris Middleton. M L (Mike) Schmulian became Chief Geologist in early 1986 and succeeded Chris as Exploration Manager in mid-1987.

P S (Peter) Buck became Chief Geologist, succeeding Mike Schmulian.

## **Financial Results 1981 - 1998**

Cumulative financial results of WMC's activities in Brazil are not available.

### **With Hindsight**

WMC became involved in Brazil because this large country was considered to have high mineral potential and in the expectation that the application of WMC's mineral exploration experience and expertise would result in a major discovery.

It took several years to build up the necessary base of geological and mining information and to gain experience in operating in Brazil. For some considerable time one of the problems was to get title to really prospective exploration ground. The Company policy of not paying graft to officials no doubt slowed things down.

WMC's introduction to Brazil was complicated apart from the language and culture by the mid-stream switch from base metals to gold, the need to get used to operating in an environment of unstable currency, very high inflation (up to 1700% per annum), the fluctuating exchange rate, and the fluctuating Brazilian gold price.

Initially, activities were limited to the area south of the Amazon where operating conditions were considered more manageable and less expensive. In the 1990s some prospective areas further north were investigated, but did not result in discoveries.

After 18 years of reasonably intensive effort and substantial expenditure, a major discovery had eluded WMC. In hindsight, the two small gold operations were distractions from the principal objective. It would have been better to sell the Jenipapo discovery and not to have become involved with Mara Rosa.

### **Subsequent Events**

The search continued after April 1999 without another discovery, until in the course of the downsizing of exploration activities in 2001 the Company withdrew from Brazil. I understand that the Goias Velho tenements where small but rich gold mineralisation had been discovered, were sold to Troy Resources of Australia.

The question remains whether the lack of success was a consequence of the long odds against the discovery of major orebodies or whether, with the benefit of hindsight, certain things should have been done differently to improve the chances of success. I am not aware of whether a post-mortem analysis has been undertaken; I suspect not. WMC, in my experience, was not long on introspection.

## **GOLD IN THE VOLCANO**

Much of the following has been adapted from *Brief History of the Fijian Joint Ventures*, written by G M Ralph in 1993, in *WMC Group Historical Information Collection* as GHI-VJV-5.

### **Early History of Emperor Mines Ltd**

Evidence of gold in the Tavua Basin area in the north-west corner of the Viti Levu island of Fiji had been known since 1872, but it was not until 1932 that Bill Borthwick, an experienced prospector, found the Vatukoula deposit which in Fijian means 'rock of gold'.

There was a mining boom in 1935 and 1936 when more than 20 prospecting and mining groups were active in the district. Emperor Mines Limited (EML) was the dominant entity. By 1939 most of the smaller groups had been acquired or had merged with Emperor. N E (Nils) Nilsen became Chief General Manager.

For many years Wallace H Smith was Chairman and Edward G Theodore the Managing Director. Theodore was a former miner, Union leader, Premier of Queensland, and Treasurer of Australia. He was a controversial figure and featured in the Mungana scandal involving the sale of the Chillagoe mines, smelters, and railway to the Queensland Government.

The Vatukoula Plant had the capacity to treat 640,000 tonnes per annum and the workforce peaked at just over 2400 in the early 1960s, mainly Fijians with some Indians, Europeans, part Europeans, and Rotumans from Rotuman Island.

Emperor suffered from the depressed gold prices of the mid-1970s and was forced to curtail operations. By the late 1970s the workforce was less than 1000. There was a need to improve performance and efficiency if EML was to survive.

### **WMC's Involvement**

WMC's involvement with EML followed the appointment of E E (Ted) Baltis as a Director of Emperor Mines Limited. Ted Baltis was also a Director of Gold Mines of Kalgoorlie Ltd. A former Sydney stockbroker, he had inordinate faith in gold.

On visiting Vatukoula, Baltis was shocked at the inefficiency and labour intensiveness of operations compared to those at Kalgoorlie Lake View. He also thought the mine could benefit from increased exploration. In May 1982 he rang R (Roy) Woodall, WMC's Director of Exploration, to see if he would be interested in carrying out exploration for EML.

Roy Woodall and G M F (Geoff) Hopkins, a senior WMC geologist with much experience in gold, visited Fiji in July 1982 and were impressed with its potential. Following this visit J A (John) Haycraft, a senior geologist with WMC, was seconded to EML on a contract basis and was able to report first-hand on the potential of the various ore structures in the mine. Tragically, he was killed in an inrush of mud underground at Vatukoula on 29 December 1982.

There was no particular enthusiasm for the existing operations which were run down, high cost and required considerable capital expenditure. WMC's interest was in the exploration potential in the surrounding area.

In November 1982 N R (Dick) Hooker, a mining engineer with KLV and K F (Keith) Parry, WMC's Director of Operations, visited Vatukoula.

In the latter part of 1982 a joint venture agreement was negotiated with the Chairman of Emperor Mines Limited, Jeffrey Reid. Reid was a New Zealand stockbroker and investor who had acquired a large shareholding in EML and resided at Vatukoula, in a traditional Fiji chief's dwelling or *bure* built near the mine. While not trained in mining, geology, or metallurgy, he had acted as the Manager of the mine until WMC became involved.

J C (Jack) McDermott, previously Resident Manager of Kalgoorlie Lake View, became Resident Manager at Vatukoula in January 1983. Subsequently a number of other senior executives were appointed, including Mine Superintendent, Chief Geologist, Exploration Geologist, and Senior Mining Engineer.

### **The Joint Ventures**

The formal signing of the joint venture agreement was on 12 April 1983 when Western Mining Corporation (Fiji) Limited (WMCF) gained a 10% share in the Vatukoula Joint Venture and a 50% share in the Tavua Basin Joint Venture for the sum of \$1.7 million. The Tavua Basin Joint Venture was to carry out exploration on an area south of the Vatukoula Mine. Management of these joint ventures was assigned to WMCF. WMCF was also given an option to increase its interest in the Vatukoula Joint Venture by a further 10% for the sum of \$2.5 million. This was exercised on 10 October 1984.

The success of the Tavua Basin Joint Venture exploration through the discovery of a small but high grade ore shoot, Prince William Flatmake, led to the establishment in February 1986 of the Tavua Basin Mining Joint Venture. Its purpose was to develop and exploit the Prince William Flatmake. A shaft was sunk and mining commenced in 1987. WMCF also assumed management of the 50/50 Tavua Basin Mining Joint Venture.

### **The Operations**

There were three shafts at Vatukoula - the Smith, Kayzer, and Borthwick. All were small capacity timber-lined shafts. The Smith Shaft was the main haulage shaft for the field and was able to deliver ore directly into the mill. The flatmakes were typically one to two metres wide and dipped at less than 45° and were continuous but could pinch out or swell over distances of a few metres. The nature of mineralisation meant that stoping was labour intensive and constrained. Added to this were the high geothermal gradient, hot groundwater, and high ambient humidity.

The Vatukoula ore contains tellurides, as does some of the Kalgoorlie ore. It must be roasted to liberate the gold.

The mill was a typical sulphide ore treatment plant with crushing, rod and ball milling and flotation of the telluride-sulphide concentrate, which was then roasted before entering the zinc precipitation section. The float tails were leached in a Carbon-In-Pulp circuit. The gold bullion, which contained about 25% silver, was flown to Australia on a weekly basis for refining. WMC improved gold recovery from 61% to about 81% over the period of its involvement.

Because of its remoteness Vatukoula had to be self-sufficient in services, including power, water and the maintenance of all plant and equipment, which led to a relatively large maintenance workforce.

## **Cullum's View of WMC in Fiji**

A J (Andy) Cullum, the fourth Resident Manager of V atukoula Joint Venture prepared a detailed report, *WMC in Vatukoula, Fiji - 1983 to 1991, A Strategic Review*. It is in WMC historical records as GHI-VJV-11.

Andy describes in some detail the benefits of introduction of trackless mining underground, the improvement in safety (from 80 lost time injuries per million manhours to 10), the disproportionate amount of management time taken by housing and house allocation, the racial composition of workforce, environmental conditions, industrial relations, and relations with the Government.

## **Industrial Relations**

As would be expected with a very large mixed workforce, there were some industrial problems, especially with the original miners' union. There was a period of militancy during the 1970s rising to world notoriety through what was described as the 'Sex Break Campaign' in 1972. This referred to the claim that the rigours of physical exertion in the mines left the employees so weary at the end of each shift that they were unable to fulfil their conjugal obligations. The unions demanded that employees be allowed to go home halfway through the shift to overcome this problem. After a short strike and much publicity the issue faded, presumably because the miners were even less able to fulfil their 'duties' given the added opportunity!

In 1978 there was a long strike which lasted 13 weeks. It resulted in several hundred employees being dismissed and nation-wide black bans being imposed. This all centred around Jeffrey Reid and his resolute response served as a warning against militant union activity. Following the deregistration of the Fiji Mine Workers' Union in 1978 the Vatukoula Mine remained the only major industry in Fiji without union representation, which in itself made it the target of the union movement.

## **The Media Campaign**

In 1989 the unions in Australia started a media campaign against WMC, led by the far left-wing leader of the coal miners, John Maitland, alleging that:

- wage levels were low
- housing conditions were poor
- there was racial discrimination in housing allocations
- management avoided compensation payments
- the Company opposed employees joining the unions.

In addition to a scurrilous media campaign, Maitland also got Simon Crean, President of the ACTU, and Gareth Evans, the Foreign Minister, to write to me in an endeavour to put pressure on the Company.

I advised both Crean and Evans that Hugh Morgan had in correspondence with Maitland completely answered his allegations and that I had nothing to add. However, because of the one-sided publicity campaign, I wrote a letter to shareholders on 24 April 1990 (copy at end of this section) countering the misinformation regarding our activities in Fiji, as well as commenting on the safety of employees at Olympic Dam which had also been the subject of a separate mischievous publicity campaign.



## **The 1991 Strike**

In 1991 there was a concerted industrial campaign which in many ways was similar to the 1978 strike. It resulted in the dismissal of 440 employees, but faded after 18 weeks. Attempts at placing black bans failed, as did the stated objective of bringing the Company and the government to their knees. In many ways this action strengthened the operation by reducing the numbers of employees at a time when economic circumstances were leading to retrenchments in any case.

Regarding the 1991 strike Cullum says: 'The V atukoula dispute was part of the wider union/Labor Party action involving the key industries (sugar, timber and gold) in an attempt to discredit the caretaker government, promulgation of a new Constitution, and eventually to force an election. In the event V atukoula provided the only blocking element to this campaign.'

## **Government Relations**

WMC established and maintained good relations with the Department of Mineral Resources and other departments with whom it had direct contact namely, Immigration, Taxation and Customs. Some difficulty was experienced at one time with the Taxation Department with respect to expatriate salaries.

Two difficulties experienced by the joint venturers with the Government related to:

- a) the lack of Government decision making; and
- b) the gold tax.

The former seemed to apply to any level of bureaucracy and the Ministers themselves. Decisions involving more than one department were near impossible to achieve. The gold tax was imposed on the joint venture in breach of the agreement between WMC and the Government (known as the *Vatukoula Tax Agreement*), concluded before WMC became involved in V atukoula and well after the funds had been committed to the project and substantial improvements made. This impost was at the initial rate of 2% of revenue, in addition to royalties and corporate tax. The rate increased to 5% in January 1990 and was only reduced to the original level in July 1990 after sustained and repeated representation by WMC.

## **WMC Relationships with Emperor Mines Limited**

Emperor was dominated by its Chairman, Jeffrey Reid, who was also a major shareholder. He had gone to V atukoula as Manager following a corporate raid by a New Zealand company in the 1970s. Prior to this Emperor was an Australian registered company with a diverse spread of mostly Australian shareholders. Reid's determination, attitude and drive were the source of many problems during the 1970s but he was also singularly responsible for the operation's survival during periods of major crisis, particularly during the 1978 strike and in the financially troubled period of 1980-82.

Reid maintained a close supportive relationship with the conservative political leaders (and the Chief system) and was thus seen as a bastion of strength for the status quo against expanding populist/racial/union led opposition, particularly in the west of Viti Levu and particularly after the nationalisation and then extreme unionisation of the sugar industry. Reid also held strong links with the remnant planters group of residents.

Reid was a well known and respected man in the Fijian community. He would have preferred to remain in charge of operations at V atukoula, which was unacceptable to WMC. He was offered the position of Chairman of the Joint Venture Management Committee, expressly with no power to interfere in day-to-day management. He was engaged as a consultant on local affairs when WMC took over management

responsibility and was allowed to maintain his residence in Vatukoula - a Fijian Chief's *buré* - despite the requirement to leave Vatukoula as detailed in the original joint venture agreement. This presence allowed him to maintain an active information network and allowed him to influence community events through the Chief-based Provincial Council. Reid's actions in this respect did cause considerable frustration for WMC management. This was not helped by Emperor Mines maintaining an office in Vatukoula, thus attracting expressions of grievances, particularly those against WMC management and making the settlement of disputes rather more difficult. Relationships between the two staff groups were at best cordial.

Whilst the local contacts and understanding of the Fijian system by the Emperor Chairman were of great value initially, his dominance and endeavour to continue domination of the scene proved to be somewhat of a disadvantage to the Company in the latter period, particularly as differences in policy emerged. Also, his relationships with the bureaucrats were adversarial because he used to go over their heads using his government connections. After some disagreements with Reid, WMC started to take a higher profile and Jack McDermott was able to turn the Departmental relationships around.

WMC subsequently acquired a very able and well respected local director, Colonel Paul Manuelli. He proved to be effective as a contact between the Company and the ruling Government.

### **Racial Relations and the 1987 Coup**

Fiji gained independence from Britain in 1970. In the first general elections in 1972 the Alliance Party won government and remained in power until 1987. Beneath the facade of harmony there were deep seated tensions between indigenous Fijians and Indians.

The fifth general election in 1987 brought to power the Bavadra Government, a coalition of the Indian-dominated National Federation Party and the Fiji Labour Party. In May 1987 the third in command of the Royal Fiji Military Forces, Lieutenant Colonel Sitiveni Rabuka, led a bloodless military coup, calling for greater protection of Fijian rights. There are also various arguments other than race advanced as the reasons for the coup: differences in class, custom, specific interests, and traditions. All these probably had some influence.

A negotiated compromise to maintain civilian rule pending a constitutional review and new elections was followed in September 1987 by a second coup re-imposing military control, declaring Fiji a Republic, and severing ties with the British Monarchy.

In December 1987 Lieutenant Colonel Rabuka relinquished military rule and an interim government was set up, with former Prime Minister Sir Ratusese Kama as Prime Minister. In July 1990 a new Constitution was ratified, placing power in the hands of Fijians. In the first general elections under the new Constitution in June 1992 a government headed by Sitiveni Rabuka as Prime Minister was elected.

These political moves had an influence in the 1991 strike in Vatukoula. However, members of the various racial groups - Fijians, Indians, Rotumans, and Europeans worked together in reasonable harmony and racial problems were minimal.

### **Production and Reserves**

See attached tabulations.

### **Management**

J C (Jack) McDermott was Resident Manager from the inception until 1986. He was succeeded by G (Graeme) Sauer (1986-87), W B (Bill) Anderson (1987-89), A J (Andy) Cullum (1989-91). After

WMC's withdrawal from Fiji, M F (Mark) Milazzo remained Acting Resident Manager until 1993 when Emperor Mines resumed management.

### Retirement from Fiji

In 1991 WMC decided to retire from Fiji.

The Company had become involved in Fiji in the hope of major new ore discoveries in what was considered a promising geological environment. After nearly ten years of exploration effort and one high grade but small success (The Prince William Flatmake), the outlook appeared much less promising.

Contributing reasons were lengthy delays in the granting of exploration leases, the different ownership and ore grades of the two operating joint ventures which presented logistical and financial difficulties for the joint venturers, dwindling ore reserves, the high cost operation, and the likelihood of declining profitability.

### Sale of WMC Interest

WMC sold its wholly-owned subsidiary, WMCF, to Emperor Mines Limited on 18 January 1991 for the payment of A\$2 million immediately and F\$6 million over a period of time, together with 5,442,000 shares (about 9.1%) in EML. WMC's management of the operations at Fiji continued for a period of about 18 months, after which WMC withdrew. The shares were held for the requisite 12 months and were subsequently sold.

### The Result

The financial results of WMC's activities in Fiji from March 1983 through to January 1991 are summarised as follows:

	\$Million
Profit before interest	25
Interest paid to WMC Finance	(10)
Profit shown in Group accounts as a contribution from WMC (Fiji)	15
Net written down value of assets at 31 December 1990	16
Proceeds from the sale of Emperor estimated to be	<u>10</u>
Loss recorded in WMC 1990-91 accounts	(6)
	\$Million
Before interest, the net profit on WMC's V atukoula operations was	25
Less the above loss	(6)
Profit	19

The overall cash surplus generated and remitted to Australia was \$9 million. In addition sales proceeds to be received in cash amount to a further \$10 million, therefore the total cash received for the operation including the future cash to be received amounts to \$19 million.

### Additional Information

For a more comprehensive description of operations at V atukoula refer to the *WMC Group Historical Information Collection - GHI-WV-1 to 15*.

**Events After 1991**

Emperor continued mining at Vatukoula, making losses in some years and profits in others. Jeffrey Reid resigned as the Chairman in December 1992 and there were Board room struggles by interests representing various shareholders over the years.

In 1995 Emperor took an interest in a joint venture evaluating a gold deposit in Russia and various gold prospects were pursued outside the Vatukoula area in Fiji.

In the year to 30 June 2002 Emperor made a profit of \$2.3 million, the first profit in six years. After being registered in the Isle of Man for a period the domicile of the company had been returned to Australia. Production was 131,000 ounces and the gold resource was estimated at 3.1 million ounces.



## ***GOLD FROM TARNAGULLA***

Among the various gold exploration projects in Victoria was a joint venture with Central Victorian Gold Mines NL at Tarnagulla in central Victoria, 37 km west of Bendigo. The agreement was executed on 10 October 1985. WMC earned a 75% interest for a contribution of \$900,000 and managed the project.

Gold production on the Tarnagulla Goldfield had come from quartz reefs with widths from one to six metres, with Poverty Reef over a strike length of 130 metres to a depth of 120 metres below the surface providing 74% of the total. At that depth the reef was 'entirely lost', it being uncertain whether it was cut by a fault or split into a number of spurs which then ran out. The Joint Venture was to investigate this.

Surface drilling in 1985, 1986 and 1987 yielded gold intersections at depth.

In 1988 the Joint Venture decided to reopen the Prince of Wales Shaft and to carry out underground development and exploration on the No. 5 level on the Poverty Reef structure. It was thought that a potential orebody of 130,000 tonnes in situ at approximately 6 grams per ton existed on the Poverty Reef, and that the profit from the treatment of this ore in the existing New Moon Treatment Plant would pay for the underground evaluation.

On 1 February 1989 WMC acquired Central Victoria's interest and became a 100% owner.

In July 1989 it was reported that development on No. 5 level continued 'with little encouragement'. Some surface diamond drill holes intersected gold mineralisation at about the No. 10 level horizon.

In 1990 it was decided to sell the property. Poverty Gold NL hoped to acquire the leases in 1992-93, but the deal fell through. The Tarnagulla property was eventually sold to Bendigo Mining NL for \$0.5 million in April 1994.



## ***AGNEW'S GOLDEN CHARM***

### **Early Days**

The higher gold price and the depressed nickel market in the early 1980s prompted re-examination of several prospective gold mining areas that WMC had either examined or operated previously, or to which it held title. The Emu Mine (not named after the famous Australian bird, but an abbreviation for East Murchison United [EMU], a part of the De Bernalles group which operated the mine in the 1930s) near Agnew was one such location. It had been investigated by WMC in the 1960s but was then not considered of economic interest.

WMC took an option over the leases early in 1974 and exercised the option in 1976. It was intended to restore the old shaft to gain access to underground workings for sampling and geological inspection, but the work proved more difficult than expected and the possibility of bulk mining the depth extension of the old underground workings off the Emu Shaft was tested by drilling. The underground work was not proceeded with; instead the old Emu (AG) Opencut was extended along the strike of the lodes. The known ore reserves had a life of five years and it was decided to build a treatment plant which was literally good for only five years, using a contractor's crushing plant and scrounged second-hand equipment. Until the plant was completed, some ore was carted to Windarra for treatment.

Various relics of the original Emu Plant, notably a 20 head stamp battery, two steel headframes, and a collection of old machinery and equipment, were assembled and exhibited near the old Agnew Pub.

As so often happens, once the operation had been established more ore was found around the opencut and in the district. The plant which was expected to last about five years was re-built and expanded on several occasions. The operation, which started to produce gold in 1986, was still going strong in 1999, thirteen years later.

### **Establishing Operations**

By June 1986 an opencut reserve of 1.8 million tonnes at 3.6 grams per tonne was established and by August 1986 a Carbon-in-Pulp (CIP) plant of 750,000 tonnes per annum capacity had been commissioned.

Agnew Mining Company, which developed the Perseverance Nickel Mine some 35 km north of Agnew, had established a new town at Leinster about 15 km south of the nickel mine and 20 km north of the Emu Mine. The Agnew township therefore never revived. What had previously been a town of several thousand had by that time been reduced to the Agnew Pub, an example of a bygone era. Transportable units near the treatment plant provided an office and some temporary accommodation.

Most of the work was done by contractors, with only four or five WMC staff on site. Operations were directed by P M (Peter) Bartlett, Resident Manager of Windarra Nickel Operations (WNP) some 275 km to the east-south-east. The nickel operations were suspended between June 1978 and May 1981 because of the uneconomic price of nickel. WNP had already reopened the old Lancefield Gold Mine between Windarra and Laverton in 1981.

Experience during the first year of operation at Agnew prompted a recalculation of the underground and opencut ore reserves. To the south of Emu there were other prospects. The Redeemer Prospect was originally held as a joint venture with WMC 75% and Nord Resources (Pacific) Pty Ltd 25%. WMC acquired Nord's interest in April 1988. The purchase price of \$40 million cash was agreed by B J (Brian) Hurley (General Manager - WA) without reference to Melbourne Office, and this nearly got him



fired. It may have been a good deal (I am not aware of any post-mortem calculations) but he clearly over-stepped his authority.

Soon thereafter development of the Redeemer Opencut was commenced and the Deliverer Prospect was being explored.

Initially the operation was called Emu Gold Operation but was changed to Leinster Gold Operation until 1989, when it changed again to Agnew Gold Operation.

### **Expansion and Consolidation**

Further drilling established additional opencut reserves and an underground ore reserve below the Redeemer South Opencut. The AG orebody below the opencut was explored and the plant was expanded in 1989 to treat 1.3 million tonnes per annum. A new gold deposit, named Pilgrim, was defined about 150 metres north-west of Deliverer. The various deposits are thought to have been named by John Mackay, the exploration geologist at the mine at the time. He had the appearance of a farmer, and indeed had been one prior to taking up geology at a mature age. He obviously also had an interest in religion.

The hymn which was the source of the names was:

*Guide me, O Thou great Redeemer,  
Pilgrim through this barren land;  
I am weak, but Thou art mighty,  
Hold me with Thy powerful hand;  
Bread of Heaven,  
Feed me now and evermore.*

*Open now the crystal fountain,  
Whence the healing streams do flow;  
Let the fiery cloudy pillar  
Lead me all my journey through;  
Strong Deliverer  
Be Thou still my strength and shield.*

*When I tread the verge of Jordan,  
Bid my anxious fears subside;  
Death of death, and hell's Destruction.  
Land me safe on Canaan's side;  
Songs of praises  
I will ever give to Thee.*

When WMC acquired the Agnew Nickel Mine from MIM Holdings Limited and BP Australia in 1988-89, its name was changed to Leinster Nickel Operations. As the nickel and the Emu Gold Operations were to come under the same management (R A [Rob] Dennis), it was decided to rename the gold activity Leinster Gold Operations.

In 1988-89 Leinster Gold Operations were second only to Kambalda (St Ives) in the WMC Group in gold production, although this was short-lived - Hill 50 overtook Leinster in the following year.

### **A Tragedy**

Tragedy struck on 13 June 1989 when over 100 mm rain in the region caused flash flooding over a wide

area, swelling a nearby creek which burst its bank and flooded into the Emu Opencut and down the decline off the bottom of the opencut, drowning six men. This was the worst accident ever for WMC.

T H (Tim) Proctor, the Mine Manager, sensing the danger, had driven down the decline to warn the five miners when the torrent of muddy water reached the decline and quickly filled all the underground workings. J (John) Savage, a miner who had witnessed the event from the surface, was reported in the media as having said,

'He (Tim Proctor) was giving his own life to save his fellow workers. The men never had a chance from the flood water. It just came rushing down in a huge torrent straight into the shaft (where the men were). We just knew there was no hope. The whole area was just covered in water.'

In March 1991 the Governor-General, Bill Hayden, announced that Timothy Proctor was posthumously awarded the Star of Courage, Australia's highest bravery award.

### **Continuing Development**

The small Deliverer Opencut was developed and mined out and the AG Mine ceased operations in 1989-90.

An elution plant and a gold room were added in 1990-91 avoiding the transport of loaded carbon to Kambalda for treatment, and other improvements were made when it was recognised that sufficient reserves and a good potential for a longer term operation existed in the area.

The Redeemer Underground Mine commenced full scale production, using two computer controlled drilling rigs. Additional ore bodies were discovered west of Redeemer and at the Cox Lode to the south.

In 1991-92 mining of all opencuts was completed and by year end feed to the treatment plant was mainly from the underground Redeemer Mine. Drilling showed significant extensions to the underground resource on Cox Lode. In 1992-93 a small lease approximately 2 km south of Redeemer was acquired from Asarco Australia Ltd as it contained an extension of the upper sections of the Cox Lode. These were subsequently mined by opencut.

### **A New Identity**

In April 1994 the gold operations were separated from the Leinster Nickel Operations and renamed Agnew Gold Operation, but continued to draw services from Leinster. I M (Ian) Suckling, a mining engineer who had been seconded to the Treasury in Melbourne Office for a period, became Resident Manager.

Development of the Crusader Decline from within the Cox Opencut to gain access to Cox Lode underground commenced in June 1994 and a new deposit known as Claudius was discovered about 2 km south of Redeemer. Production from the Crusader Decline started in October 1994.

Operations at Crusader were suspended in 1996 to permit further exploration and evaluation of the complex geology. The Redeemer Mine was the main source of ore.

The Crusader Mine was re-opened in 1997-98. Drilling added to resources and reserves at the Redeemer, Crusader, and Emu mines. A new opencut was under consideration at the latter site.

### **Managers**

Ian Suckling was succeeded as Resident Manager in February 1996 by M A (Mark) Zolezzi and he in

turn, in November 1998, by N (Neil) Whittaker.

## **Production**

The gold production from commencement in August 1986 to 31 December 1998 was 1,399,717 ounces (see attached tabulation).

## **The Future**

At the end of 1998 Agnew Gold Operation had far exceeded the modest expectations when production started in 1986. While an analysis of the capital investment, profit, and returns on capital is not available, it is most likely that the project had given a satisfactory return over its nearly 13 years of existence.

The main constraint on the future of Agnew Gold Operation at the end of 1998 was the restricted lease area, surrounded by ground held by other companies, which limited the potential for further ore discoveries. The longer term future appeared to be either purchase of some of the adjacent ground, or sale of the operation.

## **The Agnew Pub**

New roads constructed in the 1980s and 1990s bypassed the old Agnew townsite. Little remained of it in 1999 except a couple of cottages and the Agnew Pub.

The spirit, however, was still there as sung by country and western singer Jimmy Nunn (written by Peter Muir):

*Yes the Agnew Pub's still standing and the boys still breast the bar  
Tell modern tales of mining and bush camps near and far  
Their dusty throats are dampened as their elbows smartly bend  
No the Agnew Pub's not finished, it's nowhere near its end  
No the Agnew Pub's not finished mates, we'd hate to see it go  
The Agnew Pub's not finished mates - one more before we go!*

## **Subsequent Events**

The decision in 2001 to dispose of all WMC gold assets included the Agnew Gold Operation, which was sold to Gold Fields Limited of South Africa in September 2001, together with the St Ives Gold Operations. The gold production to the date of sale was 1,802,956 ounces.

## **GOLD IN TEXAS TAR**

### **Introduction**

In March 1986 Hugh Morgan happened to meet Steve Gose. As I recall it, the meeting was casual - from memory, while both were spectators at a sporting event in Geelong. During conversation Gose said he controlled a small company called The Exploration Company which had found precious metals, mainly gold and silver, in an extensive tar sand deposit near San Antonio, Texas. They were petroleum engineers, not mining people, and were looking for a mining company to join in the project. If WMC were interested, they would be welcome to participate.

Hugh asked Roy Woodall whether it was possible that precious metals would occur in association with tar. Roy's view was that WMC should look into this because:

- '1. a significant amount of the gold in the great Witwatersrand deposits of South Africa is associated with hydrocarbons,
2. a recently discovered precious metal deposit in Poland (Luben) occurs in a bituminous shale, and
3. some of the more recent gold discoveries in the Western United States have associated hydrocarbons.'

### **The Investigation**

Roy made an urgent visit to USA and called into the office of The Exploration Company in San Antonio on 19 March 1986, met the President, Jim Sigmon, and was given reports and other information.

It appeared that The Exploration Company and its partner, Retamco Properties Inc, owned the mineral rights over extensive asphalt deposits in limestone south-west of San Antonio, estimated to contain 265 million barrels of asphalt, known as the Anachacho Formation.

The partners had engaged Rogers Research and Analysis Company of Salt Lake City to investigate ways of recovering the asphalt and in 1985 Rogers reported that XRF (x-ray fluorescence spectrometry) analysis had detected significant quantities of gold and silver. Three samples contained between 0.8 and 1.2 ounces of gold and 1.6 to 15.9 ounces of silver per ton and five subsequent samples between trace and 0.5 ounces of gold and 0.8 to 14.2 ounces of silver per ton.

The Exploration Company had samples analysed by a small laboratory in Texas and in South Africa and further work was done by Rogers Research and the University of Utah. All reported the occurrence of gold and silver, although some samples returned trace values. The highest values occurred near volcanic plugs which intruded the asphaltic limestone.

Roy rang Hugh and me on 20 March and said, as he later recorded:

I explained that on the basis of the evidence I had been presented with, both verbally and in reports, the prospect seemed exciting and certainly should be investigated further. There was however a problem. Word was getting around that The Exploration Company might be investigating gold and silver and Exxon had made contact with them three weeks earlier to enquire if there was any truth in the rumour. Mr Steve Gose had also invited several other Australian companies to look at the data and I was informed that personnel from Southern Pacific had been investigating the project for two weeks and were presently in Salt Lake City. Because it was important to Mr Gose's private company and to The Exploration Company to acquire more mineral rights quickly, they said they had no option but to accept the first company

to take up their offer of 20 million shares in The Exploration Company for US\$5 million in cash. I advised Mr Morgan and Sir Arvi of this fact and recommended that in view of all the circumstances and the very great reward that could exist if the technical data I had viewed was correct, we should be prepared to take a risk and take up the available equity in The Exploration Company.'

A shelf company acquired from Arthur Robinson & Co in 1978 was renamed Western Exploration Pty Ltd to acquire the shares in The Exploration Company (TEC).

On 26 March 1986 a Stock Purchase Agreement was signed and the initial payment of US\$3 million made. The balance of US\$2 million was to be paid progressively over the next six months against evidence of land/tenement acquisition by TEC. Concurrently, the validity of the technical information and the TEC corporate structure and land and tenement title position were to be verified.

Roy had flown with Jim Sigmon and Steve Gose to the asphalt occurrence in a helicopter and taken three samples of the bituminous limestone where it was being quarried for road making, in an area where previous sampling had given results of 0.28 and 0.51 ounces of gold to the ton.

On return to Australia the samples were analysed by CSIRO using the XRF method and by WMC Kalgoorlie laboratory using atomic absorption and fire assay. All results were negative. A technical team was despatched to the USA to observe the sampling and analytical procedures at Rogers Research and the other laboratories involved.

Progress information was presented to the WMC Board on 3 April 1986.

N A (Norman) Trueman had been given by Roy Woodall the responsibility for resolving the analytical issue. He visited USA in April and May and he and G A Hollis wrote a report on 20 August 1986. The conclusion was that there were no significant amounts of gold in the samples analysed by three different methods. It was thought that the gold values shown by analysis in America were due to lax laboratory procedures leading to contamination of the samples.

Someone who knew Steve Gose well volunteered that Gose was the only person in San Antonio who had flown a Lear jet to Dallas to file for bankruptcy. He was also reputed to have spent US\$250,000 to charter a 747 to fly a San Antonio polo team to Argentina; he was a *high flyer*. He was said to participate in a regular weekly breakfast meeting with several prominent San Antonio businessmen.

## **The Aftermath**

WMC was left in a very delicate situation. While it had concluded that there was no gold in the samples, The Exploration Company made a press release on 22 October 1986 announcing a 'Second Discovery of Gold and Silver'. WMC's conclusions related to the samples it had analysed; it was not in a position to comment on any other matters.

Attempts were made in 1990 to sell The Exploration Company shares held by Western Exploration for US\$1.5 million to The Exploration Company's largest shareholder, Spectrum Resources. An offer by Spectrum was accepted but it did not proceed and the situation became messy, with talk of court actions.

At a Board meeting of Western Exploration Pty Ltd in Perth on 6 November 1991 an account was authorised to be established with Prudential Bache Securities to deal in securities, for the purpose of selling The Exploration Company shares. A sale, however, was complicated because of the limited market and the possible effect of a sale on some merger discussions Gose was pursuing in relation to a project to convert cars to use compressed natural gas.

**Subsequent Events**

In March 2002 WMC still held the shares in The Exploration Company.



## **YANDAN GOLD**

The Y andan gold deposit in the Drummond Basin south of Townsville in Queensland was discovered by WMC in 1986, using stream sediment sampling. The mineralisation was epithermal and largely stratabound, disseminated within the sediments.

In the Annual Report for 1987-88 the probable ore resource was estimated at 3.3 million tonnes at 2.1 grams per tonne. Additional drilling was planned.

In April 1989 it was reported that work on this project had been deferred due to current economic conditions. Drilling recommenced in the last quarter of the 1988-89 financial year, but development was deferred due to the impact on its viability of the proposal to tax gold and the depressed price of gold.

In October 1991, using a 1.5 grams per tonne cutoff grade and cutting high assays to 10 grams per tonne, the resource was calculated at 2.7 million tonnes at 2.28 grams per tonne Au, containing 198,000 ounces. Of this the recoverable reserve was 1.85 million tonnes at 2.43 grams per tonne containing 145,000 ounces. The expenditure to mid-1991 had been \$6,306,040.

The marginal viability of the project and environmental difficulties of development - a river ran through the deposit area - led to the discovery being sold to Ross Mining in July 1992 for \$6.5 million.

### **Subsequent Events**

The cost of bringing Y andan into production in August 1993 was stated to be \$9.7 million, transferring an existing 1 million tonnes per year CIP plant from a mined out property. The first gold was poured in September. A heap leaching operation of low grade material was conducted concurrently. Y andan was Ross Mining's main producer during the next five years.

Mining ceased in December 1998 after 5.5 years of profitable operations, the plant being again transferred to another location.

From start-up in August 1993 to June 1998, Y andan and its satellite operations produced 380,087 ounces of gold at an average cost of \$250 per ounce.





## ***BENDIGO REVISITED***

### **Background**

Gold Mines of Australia Ltd, a company in the WMC Group, had unsuccessfully attempted reviving gold mining on the Bendigo field in the latter half of the 1930s when it spent over £1 million sinking and developing three shafts and building a stamp battery and gold recovery plant. The effort was a financial failure and led to the jingle *We did our dough in Bendigo*.

In the latter half of the 1970s, when the price of gold rose rapidly, WMC returned to the Bendigo field.

### **Exploration**

The Company obtained exploration licences over the field in 1978. An office was established at Eaglehawk on the northern outskirts of Bendigo under the direction of R (Roger) Wright. Efforts to carry out exploration were to some extent frustrated by the very restrictive local government regulations and the fact that there were five local government areas covering the field. Consent had to be obtained from all these authorities. Drilling was a non-conforming land use and under Victorian legislation this required an application followed by long periods of review, submission of objections and public hearings. A limited percussion drilling programme finally began in 1982. Roger Wright was succeeded by G H (George) White, previously Chief Geologist at Olympic Dam.

By December 1985 the Company had spent more than \$7 million on collating existing records and on 322 drill holes.

### **Going Underground**

Because drilling in an environment of coarse gold was inconclusive, it was decided to reopen the Williams United Shaft on the New Chum line of reef to obtain bulk samples from stripping the old workings and driving on the upper levels.

On 2 March 1987 A C (Colin) Cruickshank, formerly Resident Manager at Hill 50 Gold Mine NL, was appointed Resident Manager of the project. Soon after dewatering of the William United Shaft was completed to 126 metres the shaft was rehabilitated, a working level established at 71 metres and a loading station at 91 metres. A small treatment plant to process large bulk samples was built in the Whipstick Forest area off Beaslebub Gully Road.

In the latter part of 1986 there was an effort to interest others in joining WMC in further work at Bendigo and a document inviting tenders was distributed to selected parties. The attempt was unsuccessful.

In August 1987 the Victorian Government granted Mining Lease 1345 which covered the majority of the historic Bendigo Goldfield.

Soon thereafter WMC announced that it was sponsoring the formation of Great Bendigo Goldfields Limited to take up a 25% interest in the Bendigo Gold Project. Hugh Morgan had become Managing Director in 1986 and was keen to leverage the Project while gold was popular with investors. Also, WMC's exploration rights to the whole Bendigo field were contested by some local groups and there was considerable unfavourable publicity. It was thought that floating a separate company, with some locals on the Board and locals as shareholders would overcome this. I was more concerned with what would happen to the new company when the inevitable downturn came and with the possible

unfavourable reflection on WMC. (BHP went through a similar process, floated BHP Gold and later regretted it.)

It was intended to offer shares in Great Bendigo Goldfields to Western Mining shareholders, Bendigo Building Society, Sandhurst Building Society, and to residents of Bendigo, to raise \$34.5 million through the issue of 115 million 20 cent shares at 30 cents each. WMC Finance Ltd was to underwrite the issue. The company was registered but the enthusiasm within WMC waned and the public float did not proceed; a good outcome in retrospect.

Over the next year underground diamond drilling was carried out from the Williams United Shaft but no significant unmined mineralisation was encountered. The old Carshalton Shaft, which had been sunk by GMA in 1935, was dewatered and surface facilities established. The shaft was rehabilitated to 50 metres in preparation for underground exploration.

Further work depended on obtaining the approval of the Victorian Government, including that of an Environmental Effects Statement (EES). This process was further complicated in Bendigo by the mining lease encompassing an urban area and the jurisdiction of four different local government authorities. The Statement was finally submitted to the authorities.

The following are extracts from a critical review by B J (Barry) Goss in August 1988:

There has been a number of attempts to re-open the Bendigo Goldfield, each of which has commenced by making a number of assumptions and then basing the exploration strategy on these assumptions.

Previous assumptions appear to have been that if you develop enough mines one of them may be a winner and pay for the rest. This led to a huge number of shafts being sunk mainly looking for "centre" country saddles, resulting in over 90,000 metres of shaft sinking. ....

Our initial exploration strategy was to search for the traditional saddle reefs, which had produced between 60 and 80% of the underground gold from the field, by drilling some deep (700 m) diamond drill holes into areas selected on previous production histories and environmental considerations. These holes also tested the drilling techniques and drillability of the country. Four holes were drilled; two at the northern end of the field and two at the southern end. These holes recorded 11 intersections of significance.

After this phase of drilling the search strategy was modified to test traverses across a number of anticlinal and synclinal axes to a depth of 250 metres. Three traverses were drilled, involving a total of 25 holes, at Sailors Gully, Quarry Hill and Spring Gully.

Lines of anticlines tested were Garden Gully and New Chum (6 holes); New Chum, Sheepshead, Deborah and Garden Gully (13 holes); and British and Foreign, Nell Gwynne and New Chum lines (6 holes). These holes produced a total of 13 significant intersections but because of the general lack of continuity and expense of continuing the program, and because a significant number of shallow intersections had been found at Nell Gwynne, within reach of percussion drilling, a proposal to percussion drill for shallow ore was put forward in 1983 as being the quickest and most cost effective way to explore for shallow ore positions.

This proposal was based on drilling selected areas to a depth of 200 metres using close spaced reverse circulation and open hole percussion drill holes across the lines of reef.

The location of this percussion drilling was largely dictated by the Bendigo urban spread, and past production and exploration successes. ....

In total the above drilling programs involved 17,000 metres of diamond drilling in 45 holes and 43,000 metres of percussion drilling in 285 holes.

Following the results of the shallow Reverse Circulation Percussion program and the earlier diamond drilling, three areas on three lines of reef were chosen to be evaluated via underground exploration, these being the New Chum (north) area via the Williams United Shaft, the Carshalton (south) area via BML Carshalton Shaft and the Nell Gwynne line (south) via the North Bendigo Shaft.

Williams United was chosen to be developed first because it had the highest grades in the shallow drilling, was by far the most productive area and presented less environmental problems. However, the extensive old workings in the area presented a negative but unknown factor. No deep diamond drilling had been done at Williams United to guide work past the shallow exploratory development. ....

Driving on the St Mungo east back at the Williams United Shaft has now seen all of the intersections that were planned to be investigated.

What we have found during this work was that the upper parts of the New Chum line have been extensively worked by tributors after the major companies stopped work in these areas. Many more stopes were found than anticipated. Stopping had been on all sorts of quartz reefs from narrow spurs to major fault reefs. Tight backfilling was found in all stopes and many drives and crosscuts, where clean stope backs were seen (such as near the Sadowa Shaft) rescue stoping was a common form of mining. Percussion drilling had, in many cases, not "seen" these backfilled stopes due to the large size of the backfilled material and by 100 years of compaction.

Some small discontinuous spurs were found near the Sadowa Shaft, but none of these showed the potential to develop into a significant ore source for WMC.

Opening up of the Carshalton Shaft is proceeding, whilst the Nell Gwynne work will not proceed until the EES is approved.

After looking at the previous production history of the major mines, it was obvious that major ore surfaces were required to justify their existence, and today, nothing has changed. ....

Results from the Williams United have been extremely disappointing and have led to a re-think of the future strategy at Williams United and Bendigo in general.

Expenditure to date has been \$17.8 million. Management recommends that sufficient exploration potential exists to justify a further \$9 million expenditure in the next two years, on Australia's second largest goldfield, to confirm an economic resource.'

By 1989 there were severe setbacks to the project. The price of gold had declined, profits on gold mining were to be taxed and the Victorian Government panel reviewing the Environmental Effects Statement imposed unacceptable constraints. Further exploration was discontinued and work was limited to a reassessment of the existing geological data.

## **Second Retirement From Bendigo**

In April 1989 WMC announced that it would cease operations at Bendigo. At the time there were about 50 local people dependent on the project and it was reported in the *Herald* that 'the closure came out of the blue'. One contractor, Mr Sam Tehira said that 'I feel the shut down is political, the Government and

the Greenies have kept obstructing things. It is not Western Mining's fault.'

A limited amount of surface diamond drilling was carried out over the next two years and in October 1991 the Company announced that the project had been reclassified as an exploration activity.

Despite denials that it did not intend to withdraw from Victoria, in 1992 the Company wrote off approximately \$20 million and offered its interest in the Bendigo field for sale. It was subsequently sold to Bendigo Mining NL, a Bendigo company which had maintained an interest in the field through a small scale operation at the Central Deborah Tourist Mine, for \$1.6 million, plus a royalty on future gold production. The effective date for the sale of the Bendigo Project to Bendigo Mining NL was 7 October 1992.

Once again, *we did our dough in Bendigo*.

### **Subsequent Developments**

Bendigo Mining NL subsequently acquired as its Chairman Peter Philip, a former President of Newmont who is credited with having set Newmont on the road of becoming the largest gold mining company in the world.

Bendigo Mining attracted financial support of \$13 million, largely from Sir James Goldsmith and Kerry Packer, and embarked on an ambitious attempt to develop the field at depth. By 1997 the company had been able to raise a further \$35 million to sink a major decline to obtain bulk samples and confirm or otherwise the optimism of its Chairman and staff.

In 2001 the South African gold company Harmony Gold supplied further finance by taking up a shareholding in Bendigo Mining.

Interestingly, after retiring from WMC Board, Roy Woodall became a consultant to Bendigo Mining and a Director. In 2003 the decline was very close to the drill indicated ore positions and the validity or otherwise of the assumptions made by the developments was about to be tested. I wish them luck!

## ***LIBERIAN ADVENTURES***

The Republic of Liberia, founded in 1822 by freed American slaves, has had small scale alluvial diamond mining since the early 1950s. The value of production has ranged between \$20 million and \$40 million a year.

WMC Exploration Division (ExDiv) became interested in Liberia in June 1987 when Bill Boberg, whom Roy Woodall had first met in Casper, Colorado in 1983 while on a lecture tour for the Society of Exploration Geologists, approached Roy while visiting Australia about a 'diamond-gold play' in Liberia.

Bill knew retired US Army Colonel Allen M Buckner, who had been Chief of the US Military Mission to Liberia from 1973 to 1976. On retirement Buckner and another retired Colonel, Jack Roberts, formed in 1978 Delta Engineers (Liberia) Inc, which had obtained the Mano River - Lofa River diamond and gold concession on the Sierra Leone border until it went bankrupt because of 'removing itself' from the concession following a coup in April 1980.

In 1985 Buckner was invited to return to Liberia to re-establish his concession. Forming a new company, Delta Mining Company, Buckner and Roberts were keen to farm out an interest in the concession. Boberg became aware of this and, after having discussed the possibilities with Roy, compiled reports on the potential of Liberia and the interests of Delta Mining Company.

Roy retained a diamond consultant, Pino Bonaccorsi, who reviewed the reports and recommended further investigation. Boberg, Buckner, Roberts, and Bonaccorsi visited Liberia in November 1987, collecting samples and assessing aspects of working in Liberia. Subsequently, negotiations were commenced with the Liberian Government regarding a much larger concession of 21 000 sq km, covering all the areas of northern and western Liberia considered prospective for diamonds and other minerals.

Roy gave the WMC Board an oral presentation on the diamonds opportunity in Liberia on 18 November 1987.

An important adviser to WMC and negotiator in Liberia was a lawyer, Gerald Padmore, a Liberian citizen with good contacts in that country and a partner in the law firm Cox & Padmore P C with offices in Denver and Palo Alto.

WMC Liberia Ltd was incorporated in Liberia on 21 October 1987. The name was changed to WMC (Liberia) Limited on 19 February 1988, to WMC Management (Liberia) limited on 30 September 1988 and to WMC Liberia Management Limited on 15 November 1988. Under the latter name the company became the Manager of the Joint Undertaking between The Republic of Liberia and Liberia Western Mining Corporation Limited.

Liberia Western Mining Corporation Limited, incorporated on 11 November 1988, became the Operator of the Joint Undertaking. Its Board included six representatives nominated by WMC and four representatives nominated by The Republic of Liberia.

A third company, incorporated in Hong Kong on 19 July 1988 as Vasterling Limited changed its name to WMC (Liberia) Ltd on 29 December 1988. It held shares in WMC Liberia Management Limited and Liberia Western Mining Corporation Limited.

Roy Woodall first visited Liberia in February 1988. Hugh Morgan and Don Morley visited Liberia and met President Doe later in 1988.

G M F (Geoff) Hopkins and his wife Margaret visited for a week in May 1988. One day was spent in the field with Bill Boberg, the remainder of the time being used to getting a feel for the living conditions and assessing management challenges.

Geoff's impressions were:

- Liberia was on the edge of a financial crisis due to lack of foreign exchange and flight of capital. The WMC project reversed this flow and was described as the 'saviour of the country'.
- Despite 'abundant' government bureaucracy and petty corruption, Geoff's view was that the business system was workable, if very time consuming and at times frustrating. 'All managers said that most of their time (+90%!) was necessarily taken up in dealing with government and administration matters'.
- Living conditions were demanding. The climate required air conditioning of offices, homes and vehicles. Malaria and dysentery were endemic and hepatitis was common. AIDS was a hidden problem of unknown dimension.
- The expatriates in Monrovia had a reasonable lifestyle but suffered from the climate, hassles with the locals (petty theft etc) and a generally run down, dirty environment.
- Telephone communications were bad and freedom of movement was restricted. Expatriates don't stroll in the streets or drive themselves. Ocean beaches are dangerous. Wives suffered from the restricted lifestyle; some companies allowed the wives two trips per year to European destinations. Women who worked found this a form of relief.
- Geoff was impressed with the potential for the project and commented that 'It is extraordinary that this area has not been explored by a major company prior to this'.
- Security was a major concern with high value products.

Geoff also commented that 'it is unfortunate that this lease (*west of the Tahn Village A P*) covering the old Delta area, is not available to us for testing at the present time'.

## **The Agreement**

S J C (Colin) Wise and J H (Jim) Lalor negotiated the Joint Undertaking, assisted by Gerald Padmore. An agreement between the Republic of Liberia and WMC (Liberia) Limited was signed on 15 November 1988 and ratified in April 1989.

WMC would hold a 60% and the Republic of Liberia a 40% interest in a 'joint undertaking' to explore for diamonds, gold and base metals in a concession area of 19,832 sq km (about 18% of Liberia) in western Liberia which covered all the significant alluvial diamond mining areas. The concession area incidentally included an iron ore deposit in the Bea Mountains of Grand Cape Mount County.

WMC was obliged to fund (or procure the funding of) the Operator, either by subscribing for non-voting (Class C) shares or arranging commercial loans to the Operator. Only Class C shares were entitled to dividends.

Substantial costs were involved in achieving the Agreement. Two lawyers were working full time for WMC for a considerable period, and numerous visits were made to Europe and Liberia for the negotiations.

## **The Programme**

Roy Woodall and Jim Lalor visited Liberia and met various Ministers and officials in mid-1989, after the signing of the Agreement.

The programme was to:

1. Establish a group of key expatriates and recruit and train local personnel
2. Define areas of potential alluvial deposits through detailed analysis of radar imagery
3. Conduct broad spaced (160 m x 640 m) initial auger sampling to define the extent and thickness of the gravels, with infill sampling as necessary
4. Bulk sample gravels for diamond content using a processing plant (commencing 1991-92)
5. Concurrently with diamond prospecting conduct a regional stream geochemical program to prospect for alluvial and lode gold and base metals.

The budget (in \$US) was:

1989-90	Operating	3,273,000	
	Capital	846,000	Total 4,119,000
1990-91			3,000,000
1991-92			3,000,000

An office, sample preparation facilities, and mineralogical laboratory were established in Monrovia.

WMC staff were seconded to the project, based in Monrovia, and other expatriate and Liberian staff recruited. An exploration base was established, initially at the Mano River Iron Mine site and subsequently close to the village of Tahn in Western Liberia.

Extensive areas of gravel were defined by auger drilling (594 holes totalling 2,634 metres). The diamond content of the gravels was not determined.

Regional geochemical reconnaissance sampling was carried out (one sample per 10 sq km), with collection of a panned heavy mineral concentrate (HMC) and a fine fraction sample. By the time exploration work ceased 60% of the concession area was sampled, with 918 HMC and 1,077 fine fraction samples collected.

The managerial responsibility for the project was with Jim Lalor in Toronto, assisted by J (John) Thomson. Bill Boberg in Denver was Project Manager. Accounting and secretarial assistance was provided by the Coopers & Lybrand office in Monrovia.

On 21 November 1989 President Doe made an Economic Policy Speech which was of concern to WMC because some of the provisions appeared to cut across the Agreement just concluded. Pending clarification, the project marked time. Jim Lalor who, apart from having executive responsibility for the project was also the Chairman of the Board of Directors of WMC (Liberia) Limited, visited Monrovia in January 1990 and met a number of Ministers, but was not able to obtain clarity.

Expenses incurred prior to the ratification of the Agreement, including some exploration and evaluation, were US\$3.69 million. Expenditure on fixed assets was US\$1.7 million and on operating approx US\$3.0 million. The total cost of the venture was about US\$10 million.



At 30 June 1990 the value of property, plant and equipment of Liberia Western Mining Corporation Limited (the Operator) was US\$1,215,870 and WMC loans to the company were US\$6,043,915.

### **The Insurrection**

Master Sergeant Samuel K Doe had gained power and became a General and the President after a bloody coup in 1980, following which previous President William Talbert and a number of Ministers and members of his Government were killed in a public massacre on a beach.

On 24 December 1989 an insurrection commenced against his Government by the National Patriotic Front led by an Americo-Liberian, Mr Charles Taylor, a former officer in the Doe Government. The fighting was largely on tribal lines, between the rebel Mandingo and President Doe's Krahn tribal groups, with accusations of brutality on both sides. Government troops attacked and killed several people in the United Nations compound near Monrovia.

The rebels gained ground quickly, occupied the key population and economic centres, and threatened Monrovia. President Doe was assassinated in 1990. However, there was no fighting in the area close to the Sierra Leone border where the WMC base was and, although the Company was very concerned about the safety of its staff, the three expatriates there were reluctant to leave.

### **Project On Hold**

In February 1990 J J (Jeff) Gresham visited Liberia and reported that:

'We are making excellent progress and the program has settled down to a well organised, efficient routine. Camp facilities and organisation are excellent.'

The extent of the gravels was in question, but 'Gem quality of the diamonds appeared much higher than reported in the literature ..... There is a lot of gold in places and we should focus on quantifying this and getting a small operation going'.

Exploration activities ceased because of the internal unrest in May 1990. On 4 June 1990 the facilities were put on maintenance and standby. Expatriate employees were evacuated during May and June.

On 13 June 1990 there was a Board meeting of Liberia Western Mining Corporation Limited in Amsterdam, which was attended by directors representing Liberia, including the Minister of Finance, Emanuel Shaw. According to Shaw, the civil war was at a stalemate, the economy was in a shambles, and peace talks were taking place in Sierra Leone. Many Liberians were fleeing the country, including a number of Ministers.

Interestingly, one of the decisions at the Board meeting was that WMC (Liberia) Limited would join the World Gold Council and that Minister Shaw would be the Company's representative on the Council! This was undoubtedly a welcome appointment for the Hon Emanuel Shaw, but one wonders about the rationality of a company just about to go out of business joining the World Gold Council.

On 20 October 1990 personnel maintaining the Company's facility at Paynesville were evacuated 'due to aerial bombardment and a battle around the facility'.

### **Force Majeure**

On 21 November 1990 WMC gave notice of force majeure which prevented WMC from carrying out its obligations under the Agreement. It is indicative of the circumstances that the letter was sent by prepaid registered mail to the Minister of Land, Mines and Energy and the Minister of Finance in Monrovia but,

'due to the apparent interruption of regular postal service to Liberia' a copy was also sent to the Ambassador of Liberia in Washington.

This ended WMC's activities Liberia.

In June 1992 Jim Lalor recommended to K R (Keith) Hulley that WMC should arrive at an agreement with Gerald Padmore and Bill Boberg for them to take over management of WMC's assets in Liberia. Roy Woodall endorsed this, but it does not appear to have been proceeded with.

## **The Civil War**

Confused factional fighting, with a number of attempts at cease-fires, continued until the war finally came to an end in 1997. Elections in that year, considered by outside observers to have been fair, brought President Charles Taylor (the leader of the initial insurrection in 1989) to power.

The writer Kenneth Cain has described the seven-year Civil War as 'a relentless campaign of sadistic, wanton violence unimaginable to those unfamiliar with the details of man's capacity to visit the abyss'. According to Cain, Taylor 'inaugurated the use of grade school-age children as scouts, spies and cannon fodder [and] explicitly employed terror tactics, ethnic cleansing and political assassinations'.

Hugh Morgan wrote a carefully worded letter on 11 August 1997, congratulating President Taylor and advising him that 'Western Mining would like to hold discussions ..... with regard to the future of our project in Liberia'.

During the Civil War WMC's assets in Liberia were looked after by Nat Thomas, Field Manager (a Liberian), who was paid an annual retainer of US\$500 (elsewhere said to be US\$400). Apart from equipment at Tahn Camp, there were goods and equipment in storage at the Port of Monrovia.

In the first half of 1997 responsibility for the project was transferred from Toronto office, which was being 'restructured', to ExDiv in Melbourne (D F [Dan] Evans). Advised of this, Dan commented that 'all my past sins have come to haunt me!'.

The transfer was messy; some of the people involved in Toronto, including those who knew the history of the project, had already left WMC, others were employed as consultants on different matters, the whereabouts of some records was uncertain. It must have been an example of how not to manage anything.

Subsequently the responsibility within ExDiv passed to J (Jens) Balkau in Belmont office.

In November 1997 Nat Thomas in Monrovia, after meeting with Gerald Padmore, advised Jens Balkau: 'I did not know that the office had been transferred and I was still sending faxes to Canada without any respond'. He also questioned gently: 'What will happen to Nat Thomas? Is he still receiving monthly stipend?'

## **After The War**

In August 1997 Bill Boberg, now with Africa Mineral Resource Specialists Inc, reminded that in 1992 he had suggested that WMC may wish to turn the project over to him and Gerald Padmore on a fee plus share in success basis to keep it alive and to find a way to resurrect it. However, from the files it appears that the decision had been made by WMC to quit Liberia. The question was, how to do this without residual obligations and risk to WMC.

## Subsequent Events

In 1999 WMC formally notified the Liberian Government that it wished to withdraw and relinquish all its concession rights. A part of the WMC concession area was subsequently reassigned to a London-based junior company called Mano River Resources.

According to reports, President Taylor's regime has been oppressive and violent. The political opposition and press have been largely silenced, and Human Rights Watch reports in 2002 say that members of the police and armed forces act with impunity in carrying out harassment, extortion, mistreatment, killings, 'disappearances' and torture. Taylor is also known to provide Sierra Leone's insurgents (RUF) with weaponry, military training and logistical support. In return for his backing the RUF - which routinely amputates its opponents' limbs - supplies Taylor with looted diamonds from areas it controls.

As at March 2002, Gerald Padmore advised that WMC and the Liberian Government have signed the Articles of Dissolution that would terminate the existence of the corporation jointly owned by them for Liberian mining activities. Similar documents had been executed for the dissolution of the WMC Liberian management entity. It was expected that the WMC involvement in Liberia would finally and formally end in April 2002.

Padmore said that Liberia remained in a difficult position. Its economy had not rebounded, although the large Firestone rubber plantation was back to pre-war levels of production. Liberia had been subject to United Nations' sanctions for supporting rebels trying to overthrow the government of neighbouring Sierra Leone during 2000 and 2001. Those sanctions, which principally banned the exports of diamonds and international travel by high Liberian government officials, were scheduled to end in April 2002. President Taylor had been indicted by a United Nations-backed Court for war crimes.

An American owned company, Freedom Gold (owned by the well-known US evangelist and political figure, Pat Robertson), had obtained exploration rights for gold in the eastern part of the country.

In July 2003 insurgents were reported holding more than two-thirds of the country and President George W Bush ordered 4,500 US Marines from the Mediterranean to go to Liberia's coast, to be in a position to support an expected peacekeeping force from the Economic Community of West African States.

US officials said US troops would not enter Liberia until President Taylor had left the country; Taylor indicated he would stay until international troops arrived. He finally stepped down on 11 August 2003 and went to exile in Nigeria. US Marines landed on 19 August.

## ***CONSOLIDATED GOLD FIELDS plc***

In March 1987, with expectations of substantial cash inflow from sales of WMC gold properties and a possible rights issue, Hugh Morgan commissioned Lazard Bros & Co in London to review and advise on possible corporate mergers and/or acquisitions. Separate advice was sought from accountants, tax experts and lawyers. A number of companies were studied, including Gold Fields of South Africa, Newmont Mining Corporation, Renison Goldfields Consolidated, Minerals and Resources Corporation (MINORCO), Anglo American Corporation, and Engelhard Corporation. The main effort, however, was directed towards Consolidated Gold Fields plc, code name Project Gleam.

Consolidated Goldfields was a 101 year old independent British minerals company with operations and investment in UK, North America, Southern Africa and Australasia. The Group was the free world's second largest gold producer, with increasing production. It was one of the two leading producers of crushed stone products in the UK and fifth largest in USA, had major interests in coal in USA and in companies producing other metals and minerals.

After the acquisition of four gold companies in North America at the end of 1987/early 1988, it was decided to reduce the relationship with Lazard's to a watching brief.

In the event, in September 1988 Minorco made a takeover bid for Consolidated Gold Fields in which they already had a 28% holding. The takeover succeeded in 1989.



## ***THE NORTHERN VENTURE***

### **The Beginning**

WMC's first and only involvement with gold mining in the Northern Territory was the Goodall Gold Project in the Adelaide River region between 1985 and 1993, in a 60:40 joint venture with W R Grace Australia Pty Ltd.

The Project got its name from the late Bob Goodall who was a consultant to W R Grace & Co of New York. He had acquired the Mount Bunday Pastoral Lease for the Australian subsidiary of W R Grace & Co. The Chairman, Mr Peter Grace, took a great interest in it, making regular visits to the Territory each year. Goodall, a large man with a kind and considerate nature, was affectionately known as 'The Gentle Giant'.

In 1979 Goodall approached Joe Fisher, a mining consultant in Darwin, and asked him to try to find gold on the Bunday Pastoral Lease in a desperate bid to ensure its survival. Joe Fisher in his article *Birth of a Gold Mine* said, 'This was a tall order for as large as the property was, there was no pre-history of mineral or gold discoveries within its boundaries.' Undeterred, Fisher decided 'to give it a go'.

Grace Australia over the next few years examined a number of gold occurrences in the Adelaide River region some 150 km south of Darwin. The main activity was centred on the Bunday locality where a major costeaning and drilling programme indicated a significant zone of previously unknown stockwork and vein hosted gold mineralisation which had been missed by the earlier prospectors.

An extensive drilling programme commenced. In 1982 a permanent site for an exploration camp was selected on the nearby ridge and the programme expanded into 1983. On Joe Fisher's recommendation the option to purchase the Ringwood Pastoral Lease to the north was initiated and the necessary Sacred Sites survey was conducted by an anthropologist, Stephen Davis, thus preparing the way for mining to begin.

Sadly, Bob Goodall died in New York in 1984 and was denied the pleasure of seeing his concept of a gold mine become a reality.

### **Forming a Joint Venture**

In 1984 Grace invited a number of Australian companies to inspect the deposit with a view to forming a joint venture to establish and operate the project. Western Mining Corporation was successful and took a 60% interest in and management responsibility for the development. The 60:40 joint venture commenced in September 1985. A proved and probable ore reserve of 4.3 million tonnes of ore at a grade of 2.4 grams per tonne had been calculated.

### **Operations**

In 1987 work commenced on the development of an opencut mine and the construction of a Carbon-In-Leach (CIL) gold treatment plant with a capacity of 750,000 tonnes of ore per annum. Production commenced in May 1988. The first Resident Manager was R A (Rob) Dennis.

Mining ceased in July 1992 with the exhaustion of reserves. Milling operations continued until August. During the life of the mine 4,036,100 tonnes of ore were treated for the recovery of 229,498 ounces, the average recovered grade being 1.77 grams per tonne (see attached tabulation).

The treatment plant and all ancillary equipment were sold, removed from the site, and the concrete foundations buried.

Two factors contributed to rapid rehabilitation of the area. Firstly, the removal of overburden and mining was completed by contract in a relatively short time, allowing the stockpiling, shaping, topsoiling and replanting to begin before treatment operations were completed. Secondly, the location was such that native vegetation grows rapidly during the 'wet' season.

### **The People**

A C (Colin) Cruickshank was transferred from the Bendigo Gold Project to become Resident Manager at the Goodall Project in April 1989 when Rob Dennis moved to Leinster. On completion of mining Colin Cruickshank was transferred to Three Springs as Resident Manager of Talc Operations in December 1991 when R N Budden was appointed Acting Resident Manager until the Mine Office and the Darwin Office closed in October 1992.

### **The Financial Result**

A financial analysis of the operation is not available.

## ***NORTH AMERICAN FIASCO***

A number of mining operations in USA and Canada were acquired in early 1988. They were all unsuccessful.

The acquisitions were:

Grandview Resources Inc (Carson Hill in California), gold  
 Northgate Mines Inc (Chibougamau in Quebec), copper and gold  
 Seabright Resources Inc (Operations in Nova Scotia and Seabright Exploration, a subsidiary), gold  
 Western Goldfields Inc (Hog Ranch in Nevada), gold

Also acquired were two exploration companies: Norbeau Mines Inc and Seabright Explorations Inc.

Northgate Mines Inc was renamed Chibougamau Mines Inc.

A fully owned subsidiary, Westminer Canada Ltd, based in Toronto, was formed to manage these operations. The Toronto Office later also assumed responsibility for the Cuban Nickel Project and for operations in Brazil; these are described separately. The business unit looking after the North and South American interests became known as 'WMC Americas'.

### **Background**

In the 1980s WMC began to expand its activities overseas. In 1981 the Company became involved in exploration in Brazil, and shortly thereafter in USA. In 1983 it entered into mining and exploration joint ventures in Fiji and in 1986 two exploration joint ventures - Camp Bird in Colorado and Tintic in Utah - were entered into in USA.

After selling its interests in Lady Bountiful/Davyhurst for \$135 million cash in May 1987 and in Kalgoorlie Lake View Pty Ltd and Gold Mines of Kalgoorlie Ltd for \$268 million in June 1987, the Company had substantial funds to invest. Gold was the preferred metal. The rights share issue in October 1987 raised another \$840 million for investment.

The main interest was in acquiring operating mines. One reason for this was that exploration costs overseas could not be deducted for tax purposes in Australia. It was necessary to have earnings overseas to gain the tax deduction in the countries in which income was earned.

In May 1987 H M (Hugh) Morgan established a small group headed by James H (Jim) Lalor, formerly General Manager Exploration, to locate and assess prospects. One of the early tasks of the group was to review the assets of St Joe Minerals and determine a tender price.

### **The Bid For El Indio (St Joe Minerals)**

In June, 1987, Fluor International, an international engineering and construction company, called for tenders for the purchase of St Joe Minerals, which it owned. WMC was selected in partnership with Homestake Mining Ltd to be a tenderer.

St Joe owned various mineral properties around the world, the major asset being the El Indio Gold Mine at an elevation of some 14,000 ft in the Andes in Chile.



Because this would be a major investment and because it was WMC's first prospective venture in Chile, the Board of WMC (except for Sir Kenneth Townsing) visited Chile from 22 to 26 August 1987. A series of briefings by WMC personnel and Chilean advisers were given at the Crown Plaza Hotel in Santiago. Directors also met with Ministers, politicians, public servants, businessmen, management of El Indio, President of the Human Rights Commission, Australian and New Zealand ambassadors, and so on and were invited to lunch by General Matthei (one of the four members of the ruling Junta). The Board was informed about the conditions and outlook in Chile over three and a half days. A visit to the El Indio Mine had to be cancelled because an avalanche of snow had buried the access road.

The intention was that the Board would travel from Santiago to San Francisco for meetings with the Homestake Board at which the tender offer would be agreed. Before leaving Santiago, however, Hugh Morgan was advised by telephone that Alan Bond had flown in on his private jet and made an offer of US\$500 million, which had been accepted by Fluor without waiting for the invited tenders.

The Board was very unhappy about the unethical behaviour of Fluor in calling for tenders, causing WMC to spend very considerable time and money in preparing an offer, and then accepting a bid without waiting for the tenders to be submitted. The displeasure of the Board was made known to Fluor.

It was nevertheless decided to continue with the travel plans and the WMC Board had its first ever meeting outside Australia at the St Francis Hotel in San Francisco on 28 August. In discussions with Homestake it was agreed that, had the tender continued, an offer of perhaps US\$450 million could have been made. It was agreed that, should the property again become available, a bid of up to US\$500 million in conjunction with Homestake could be considered.

After a very pleasant dinner with the Homestake Board that night, directors returned to Australia.

## **Rights Issue**

Discussions with WMC's brokers in anticipation of a successful tender offer had indicated that the share market was favourable for a major rights issue. Although there was no longer a need for money for the purchase of El Indio, the Board at its San Francisco meeting decided to use the favourable market conditions to make a 1 for 4 rights issue at \$5.00 per share to raise \$840 million. It was expected that other opportunities would arise where this money could be used.

The issue was announced on 2 September 1987. The closing coincided with the worldwide stock market crash on 19 October (20 October in Australia). WMC shares, which had been \$9.90 when the issue was announced, were hovering at just above \$5.00 on the closing date.

In the event, only \$597 million was subscribed by shareholders. E L & C Baillieu and Potter Partners succeeded in placing the shortfall of \$242 million at \$5 per share.

The WMC Board was visiting Olympic Dam and had been invited to the Manager's (R J [Bob] Crew) house for a barbeque on 10 November, during which Hugh Morgan carried out final negotiations with Clive Smith of E L & C Baillieu over his mobile phone. I had to convene an urgent Board meeting in Bob Crew's lounge room to sanction the final moves. Directors attended holding glasses of red wine. J C (John) Anderson, who had just joined the Board a few days earlier, subsequently recalled that he was rather surprised by the informal way the Board did business!

## **The US and Canadian Acquisitions**

Following the failure of the St Joe Minerals effort, Jim Lalor's group continued with the task of reviewing other possible acquisitions in North and South America. The intention was to identify small

to modest sized operating gold mines which were considered to have the potential for discovering more ore and growing into substantial producers. The emphasis was on exploration potential leading to increased production, rather than the value of the existing operation. Jim and his staff researched the available information on (from memory) some one hundred and fifty properties and found five which they thought satisfied the criteria. One of these (a gold mine in British Columbia) was eliminated and the final prospects were: Chibougamau Mines in Quebec, Seabright Resources in Nova Scotia, Grandview Resources in California and Western Goldfields in Nevada.

The Board on 18 November 1987 decided that a total investment of \$500 million in acquisitions of gold companies in Canada and USA would be considered.

It was decided not to approach the companies in the first instance, but to depend on public information. Some shares would be acquired quietly on the market before announcing the bids, which would be pitched about 40% above the market price to ensure a good chance of acceptance. The four bids were timed together in December 1987 so as not to signal the method of approach to the market beforehand. The acquisitions were all completed in January and February 1988.

WMC set up an office in Toronto under the direction of Jim Lalor, who became President of Westminer Canada Ltd, the holding company for investments in North and South America.

### **Chibougamau**

Chibougamau, in Quebec, is an established mining centre 580 km north of Montreal with an historical production in excess of three million ounces of gold plus associated copper, most of it produced since 1960.

In January 1988 WMC's Canadian subsidiary, Westminer Canada Ltd purchased all the shares in Northgate Mines Inc for the sum of C\$160 million. The company had two operating mines in Chibougamau, Copper Rand and Portage. In April WMC also acquired a related company, Norbeau Mines Inc for C\$4.7 million. Norbeau held a number of exploration properties nearby.

Westminer took control in February 1988 and retained Ram Kanwar, the previous Resident Manager. The two mines were both approximately 1100 metres deep and fed copper-gold ore to a central milling facility located on the shore of one of the many lakes nearby. The treatment plant produced a concentrate which was railed to Noranda's Horne Smelter in Western Quebec. In addition to maintaining the operations at about the same scale, WMC embarked on an exploration programme in the 200 sq km area, especially in the vicinity of Dore Lake where a decline was driven to open up drilling intersections below the lake.

In 1989-90 operations were severely disrupted due to a shutdown for major repairs to the timber of the internal shaft at Copper Rand and the timber headframe at Portage. Further problems arose due to a breakdown in the Collective Agreement negotiations with the unions; in February and May 1990 this led to a six months' long cessation of operations.

When operations were resumed there was a steady improvement in productivity, partly due to increased mechanisation of underground stopes at both mines. Operating costs were still too high and entrenched union practices made change very difficult. The Copper Rand No. 6 Internal Shaft was shut down in early 1992 and 142 employees were retrenched.

Some improvement resulted from the introduction of a new work schedule in 1992 when a roster of two shifts of 10 hours per day, six days a week was introduced. Modifications to the treatment plant also resulted in improvements in recovery and performance, increasing the copper concentrate grade to 23% with consequent reduction in freight costs.

In line with Group Environmental Policy, work was done to enhance the surrounding areas, including the removal of unused buildings, improving the quality of water discharged from the site and revegetating disturbed areas.

There was little exploration success in the region and efforts to prove up a discovery under Dore Lake were unsuccessful. One of the contributing factors to the declining profitability was the exhaustion of the higher grade ore at the Portage Mine.

Depressed copper and gold prices, rising operating costs and increasing losses prompted Westminer Canada to announce the suspension of operations in November 1992. The property was sold in February 1993, following a write-off of C\$120 million in the 1991-92 accounts.

During its period of ownership WMC produced 30,278 tonnes of copper and 272,977 ounces of gold from its mines in this area.

### **Seabright**

Among the various properties owned by Seabright Resources Inc in Nova Scotia in December 1987, when Westminer Holdings made its formal takeover bid, were two partially developed underground gold mines, Beaver Dam and Forest Hill, and the Gay's River Milling Complex. In addition Seabright Resources held a 54% interest in Seabright Explorations.

WMC's formal offer, submitted on 23 December 1987, was for C\$8.50 per share and C\$3.00 per warrant. This valued Seabright at C\$92 million. Some 96% of Seabright shareholders had accepted when the offer expired on 27 January, and WMC took over the management in February 1988. The existing Resident Manager, David Armstrong was retained.

Shortly after taking charge, WMC was told that the published ore reserves at Beaver Dam could not be substantiated by underground work. A complete reassessment of all geological and assay data previously generated by drilling and development was carried out. It was found that the ore reserves did not exist. Further drilling and reassessment by WMC and consultants Watts, Griffis and McQuat Ltd confirmed the serious deficiencies in the public record of the property as maintained by the previous owners.

As WMC's offer was motivated and priced on the basis of the public record and the Seabright directors had signed a statement that there had been no material change in circumstances since the last public report, WMC commenced an action in the Supreme Court of Ontario on 29 July 1988 against the former directors of Seabright Resources Inc for C\$60 million in damages, arising out of the alleged failure to ensure that the public record was accurately maintained. This led to a series of court cases which are described in Part B *THE TROUBLES, The Seabright Saga*.

It soon became evident that the Beaver Dam Mine was worthless. Underground equipment was salvaged and the surface reclaimed within a year. Underground development at Forest Hill was discontinued in February 1989 and, when the developed ore had been mined out later that year, the mine was closed. Only 17,266 ounces of gold were recovered from mines with reserves purporting to contain mineable reserves of at least 341,000 ounces.

In an endeavour to salvage something from the investment, the Gay's River lead-zinc mine was reopened in November 1989. It was planned to reach an annual production rate of 200,000 tonnes of ore. The lead-zinc milling circuit was re-established and production of concentrates began in March 1990.

This mine was, however, not without problems. The major difficulty was an excessive inflow of water

from the river traversing the deposit, which brought operations to a halt in May 1991 to enable technical investigations and trials to be carried out. This, combined with unstable ground and falling lead-zinc prices, resulted in a large part of the workforce being laid off.

A detailed technical evaluation could well have resolved most of the technical difficulties at the Gay's River Mine, but as lead and zinc were not of strategic importance to WMC and the scale of operations was small it was decided to sell the property rather than resume production. It was sold for C\$6 million to Savage Zinc Inc in 1996.

During its period of ownership WMC produced 21,432 ounces of gold, 6,079 tonnes of lead and 12,622 tonnes of zinc from its Seabright acquisition.

### **Carson Hill**

WMC acquired Grandview Resources Inc, owners of 86% interest in the Carson Hill Gold Mine in California, in January 1988 for C\$95 million. The interest was increased to 100% later in 1988.

The Carson Hill Mine, in Calaveras County, had a long history of gold production dating back to 1850. The old abandoned underground workings extended to a depth of 1300 metres. Up to 1942 the underground operations had yielded over 1.2 million ounces of gold.

At the time of WMC's acquisition operations consisted of a newly developed opencut mine and a heap leach gold recovery facility. The crushing plant was enlarged and upgraded subsequent to the purchase. The existing Resident Manager, Ben Licari, was retained by WMC.

With greater depth in the opencuts, problems were experienced with unweathered sulphide ore and the recovery from the heap leach operations fell substantially. Further exploration failed to identify any economically viable ore reserves in adjacent areas and mining operations were discontinued in October 1989.

Small quantities of gold were recovered in the following years during clean-up operations. The total amount of gold recovered during WMC's ownership was 69,042 ounces. Work on reclamation of the mine site, decommissioning of the leach pads and monitoring of the site continued until 1997.

### **Hog Ranch**

In February 1988 WMC acquired through the takeover of Western Goldfields Inc. a 65% interest in the Western Hog Ranch Gold Mine in Nevada USA. The cost of the purchase was C\$100 million. In April WMC purchased the remaining 35% interest from another party for US\$29.75 million

There were three opencuts (Krista, Geib and East) and facilities for heap leaching of the ore. Stated ore reserves were 5.5 million tonnes at 2.0 grams per tonne. There were good prospects for further discoveries in the 8,150 hectare block and an active exploration programme commenced immediately following the acquisition. Operations were occasionally disrupted by rain and snow during the winter months. The Resident Manager was M Hall.

Within a year it was realised that the previously published ore reserve calculations could not be justified and that, after about a million tonnes of ore had been treated, heap leach recoveries were only economical at the Krista Pit from which the majority of ore had been mined. All the other areas had much lower recoveries and the reserve was reduced to 550,000 tonnes. It was found that the ore reserve calculations had been made using computer software which was not applicable to this type of ore occurrence. The geologists were in effect using a 'black box' without understanding what was in the box.

Efforts to find more ore were in vain. The scale of operations was reduced while the future of the mine was reassessed.

A new orebody was discovered at Bell Springs, 5 km south of Hog Ranch. This enabled operations to continue for a year or two at a lower rate. An improvement in operating costs was achieved by replacing the mining contractor with company employees using leased equipment. Gold production increased in 1992, but by 1993 the ore reserves were depleted and mining ceased.

As part of the rehabilitation process a 'rinse and remove' programme was implemented in which crushed ore that remained on the leach pads was progressively rinsed and removed slice by slice and returned to the opencut. In this way over 200 hectares were reclaimed. The leach areas were decontaminated. Further gold was recovered during this reclamation phase to partially offset the closure costs. WMC won an environmental award for its efforts in rehabilitating this site.

The total amount of gold recovered during WMC's ownership (to June 1996) was 142,935 ounces.

### **Comment**

The unsuccessful North American ventures were probably the worst episode during the 25 years covered in this review. In retrospect, there are virtually no redeeming features to excuse the debacle.

At Seabright the explanation was simple: the ore reserves at Beaver Dam and, to a lesser extent, Forest Hill simply did not exist. This became apparent to WMC immediately after the takeover was completed at the end of January 1988 and an announcement was made on 13 May 1988. At that time, however, WMC still thought that the other acquisitions 'met expectations' and forecast a 1988-89 gold production of 200,000 ounces from the acquisitions. In fact, the production was only 9310 ounces.

What caused the spectacular failure of the North American acquisitions?

The only outside influence beyond the control of WMC was a fall in the price of gold from US\$450 an ounce to US\$375 an ounce soon after the acquisitions. The major causes, the obviously grossly over-optimistic assessment of the potential of the properties and the unwarranted (in retrospect naive) belief in the completeness and accuracy of the public information were clearly WMC's fault. With hindsight, I should have personally enquired more closely into the reasons for selecting the four properties which were acquired; not one of these turned out to have any potential. The group assessing the prospects should have included one member with the express responsibility of analysing the risks and possibilities of failure, acting as devils' advocate. A contributing cause was the impatience to invest the large amount of cash available from the sale of the Western Australian gold properties and the rights issue which, in retrospect, affected the caution we would have normally exercised. The disaster was compounded by the unbelievably unjust outcome of the subsequent court cases in Nova Scotia (see *THE TROUBLES, The Seabright Saga*).

The loss of some \$500 million was a serious setback, but the main cost was in terms of the Company's reputation which suffered severely. When the Ernest Henry incident occurred in 1993, the previous North American fiasco and the ongoing extremely critical publicity about the court cases in Nova Scotia compounded the damage. It is remarkable that the Company was able to continue without management and Board changes and that it was gradually able to regain a good reputation and the respect of the market.

## ***OLYMPIC GOLD***

While gold and silver are minor by-products of copper and uranium production at Olympic Dam, they nevertheless added appreciably to the production of these metals by WMC over the years.

The gold and silver bullion produced at Olympic Dam has to go through an extensive and complicated process to remove the last trace of radioactivity which would otherwise severely limit the use of these metals.

The total production of gold from commencement in 1989 until 31 December 1998 was 272,810 ounces, more than from a number of gold operations in the 24 years covered by this review. The production of silver in the same period was 3,252,301 ounces, considerably more than from Norseman during its then life of over 60 years.



## ***GOLD IN FROZEN NORTH***

The Meliadine Gold Project is approximately 30 km north of Rankin Inlet, a town of some 2000 inhabitants at 63° N, just south of the Arctic Circle, on the north-western shore of Hudson Bay in the north-east of Canada. It was introduced to WMC by two Canadian junior mining companies, Comaplex Minerals Corporation and Cumberland Resources Limited, in 1995.

Rankin Inlet is serviced by air from Yellowknife (approx 1150 km due west) and in the summer by ocean barge from Churchill, Manitoba, further south on Hudson Bay, which is in turn linked to the North American rail system.

### **Pre-WMC Exploration**

Gold was found in a drill core looking for nickel in the early 1970s. This led Comaplex geologists back to the area in 1987 when they found gold showings and staked the first claims. More prospecting and claim staking in 1989 was followed by drilling in 1990.

Rio Algom joined in the exploration in 1991 by taking over exploration of the western part of the exploration claims and drilling in 1991 and 1992. Cumberland took over the Rio Algom program in 1993 and drilled in 1993 and 1994.

By 1994 gold had been discovered in two main locations in a west north-west to east north-east striking group of leases some 70 km long. The two Canadian companies were looking for a partner to finance further work and ultimate development.

### **WMC Involvement**

WMC International Limited examined all available information and negotiated an entry into the Meliadine West area in 1995, with a right of first refusal over the Meliadine East area which continued to be held 50:50 by Comaplex and Cumberland. The main features of the agreement between WMC, Comaplex and Cumberland were:

WMC farmed into the 35 km long western half of the leases totalling 23,420 ha, and became Project Manager. For a 56% interest, WMC funded 100% of pre-production costs as well as all future exploration and development costs for Comaplex and Cumberland as a non-recourse loan at Canadian Prime Rate, repayable out of project cash flows if commercial production is achieved. The 56% interest was acquired after spending C\$12.5 million as of July 1997. WMC also agreed to make option payments of C\$1.0 million per year, increasing to C\$3.0 million a year after 2005 until operating date.

Until repayment of the Project loans, each of Comaplex and Cumberland were allowed 6% of the total cash flow, the remainder of their share of cash flow was to be applied to loan repayments.

WMC had the right to purchase an additional 4% of the project (2% each from Comaplex and Cumberland) for between C\$1.75 million and C\$4 million once production commenced.

### **The Project Area**

In 1995 the project area was a part of Canada's North-West Territories, but on 1 April 1999 it became a part of the newly established 1.9 million square kilometre Nunavut Territory, an area twice the size of Ontario with 24,700 people in 40 separate communities. Nunavut Territory is governed by the



indigenous Inuit (Eskimo) people. The claims explored by WMC (known as Wesmeg claims), staked prior to the *Nunavut Land Claims Agreement*, were grandfathered, i.e. dealt with in accordance with the conditions applying previously.

### **Exploration 1995 - 1998**

Previous exploration in this area had defined gold mineralisation in an Archaean iron formation at a number of prospects over a strike length of 45 km.

In 1995 drilling of 7,172 meters in 33 holes discovered the Tiriganiaq and Wolf gold bearing zones and confirmed the F zone.

In 1996 18,200 meters drilled in 77 holes enlarged all the gold bearing zones. 8000 ha of Federal claims and 40,000 ha Inuit owned claims were added to the joint venture area.

In 1997 32,820 meters were drilled in 122 holes. A pre-feasibility study showed a combined resource of 3.29 million ounces of gold in Tiriganiaq and F zones. A further 43,127 ha of Federal claims was taken up.

In 1998 drilling of 36,268 meters in 144 holes increased the resource estimate for the Tiriganiaq and F zones to 6 million ounces.

In 1997-98 the total resource discovered to that time was estimated at 23.7 million tonnes at 8.5 grams per tonne of gold at a cut-off grade of 3.0 grams per tonne.

### **Environmental Conditions**

The Meliadine Project is in a very sensitive permafrost tundra environment. Environmental studies were carried out on the climate, permafrost, water flow, vegetation, fish life, and wildlife.

Great care is taken during exploration to prevent surface disturbance and contamination of the many bodies of water in the area. In the summer, drilling wastes are clarified in settling ponds before discharging the water. After cleaning up, drill sites are treated with peat and fertilizer to speed revegetation. When drilling from lakes in the winter, all drilling solids are collected and disposed of in Rankin Inlet land fill. Wooden walkways in the camp area prevent damage to the tundra surface.

### **Archaeological and Traditional Land Use Investigations**

The traditional knowledge investigation by the Inuit elders showed that the project area was lightly used but an important thoroughfare for travel to more remote locations. On examination of the archaeological sites by elders, it was determined that the sites over the Tiriganiaq zone were recent and not significant in a heritage sense, but that sites near Meliadine Lake were very old, significant, and should not be disturbed.

### **Community Consultation**

Community consultation started in 1995 and continued throughout the program. Meetings in Rankin Inlet and Chesterfield Inlet informed residents and they, in turn, expressed their support and co-operation. WMC received outstanding co-operation from the Kivalliq Inuit Association, which owns much of the land explored since 1995.

## Local Employment and Contracting

The project made full use of local and regional workforce and the services of local and regional contractors and businesses. The Inuit workers and suppliers were found to be safe, diligent, and reliable.

### Visit in June 1997

I visited the Meliadine Project at the end of June 1997, on my way back to Australia after attending a Sara Lee Board meeting in Chicago. Having arrived by air from Yellowknife, I travelled to and from the exploration camp and drilling sites by helicopter on the next two days (the road from Rankin Inlet terminates half way to the camp), visited the Rankin Inlet school and presented them with a lap-top computer, and attended a reception in my honour at Rankin Inlet at which most of the local Inuit leaders and officials were present.

The climatic conditions in this area of Arctic Canada are severe. During the winter season from November to April typical daytime temperatures are minus 20 to minus 40 degrees Celsius, excluding the windchill factor. Daylight in the winter lasts only 5 to 10 hours. Paradoxically, in spite of the extreme cold and the blizzards the winter is the preferred period for exploration because the many lakes gouged during the ice age and the swampy tundra are frozen and land transport of the year's supplies from Rankin Inlet by tyred or tracked trucks and snowmobiles can take place. The camp is well insulated and heated.

Ground activities are extremely limited during spring when swamps and lakes are thawing, and the autumn when the freeze-up occurs.

During the summer from June to August daytime temperatures are 10 to 15 degrees Celsius and daylight lasts 15 to 20 hours, making sleeping difficult. Because of the swampy ground, in the summer drill rigs and personnel are moved by helicopter (at a cost of C\$1000 per helicopter hour). Biting flies are a serious nuisance, and weather may at times inhibit the use of helicopters and float planes. However, in the summer it is possible to move equipment and supplies by ship to Rankin Inlet from southern Canada. At other times all supplies must be flown in.

When I visited at the end of June, the daytime temperature was around 5<sup>0</sup>C and there was still some ice on the lakes and on Hudson Bay. Warm pullovers, anoraks, and gumboots were the dress code.

I was impressed with the project, the potential for further discoveries on the 35 km strike length of the exploration area, and particularly with the attitude of the Inuit people who were all in favour of development - a refreshing change from other areas where we operated. A list of local businesses and agencies involved in the project 1995-2001 is attached. There was also considerable exploration potential in the surrounding areas the joint venturers had acquired.

The potential exploration area was so large that thorough exploration to determine the ultimate resource, and thus the ultimate scale of the project, was likely to take a long time.

I was hoping that an initial operation could be started at an early time to:

- a. give operating experience in the arctic conditions
- b. provide a cash flow and taxable income in Canada for further exploration
- c. reduce the cost of further exploration.

## Feasibility Work

A feasibility study in 1998 visualised both opencut and underground mining and a conventional CIL treatment plant. A 1.4 million tonnes per annum operation requiring an estimated C\$240 million pre-production capital and producing 400,000 ounces per annum appeared to be the best choice.

## The Problem with Meliadine

There was, however, a problem from WMC's point of view.

Kym Saville recalls:

The fundamental problem in relation to WMC's interest in the project, rendering it unattractive as a development to WMC and unattractive as an acquisition to other gold companies, was the onerous obligation to fund 100% of the Project development for 60% of the reward. The Meliadine discovery, although interesting and arguably commercially viable in the absence of that funding obligation, was not robust enough to deliver an adequate return to WMC in light of that funding obligation. This was especially the case as only 60% of the minority parties' share of cash flow was available to repay the loans. Initial financial studies by WMC Treasury officers based on the initial pre-feasibility study in 2000 showed that the resource discovered at that time would be exhausted before sufficient cash flow had been generated to repay the loans. Regrettably, this was another occasion where our explorers' enthusiasm to access promising new ground led to them agreeing a bad commercial deal. This meant that even a very successful exploration programme did not deliver any return to WMC shareholders.

A fairly concerted effort was made to renegotiate the financing obligations over a two year period commencing in 1999. Although Comaplex appeared amenable to agreeing a more satisfactory arrangement that would increase the likelihood of WMC approving a commitment to project development, Cumberland remained resistant.'

## Subsequent Events

At December 2000 the indicated and inferred gold resource (at a 3 grams per tonne cut-off grade) in five deposits - Tiriganiaq, F-Zone, Wolf Main, Wolf North, and Pump was estimated at 20,259,000 tonnes containing 4,377,000 ounces, a grade of 6.7 grams per tonne. At June 2001 the cumulative expenditure was approx C\$45 million, a discovery cost of about C\$10 per ounce.

In 2001 WMC decided to sell its gold assets and the Company's 56% interest in the Meliadine Project was also put up for sale in March 2001.

The following announcement was released on 17 July 2003:

'WMC International Holdings Ltd, a wholly owned Canadian subsidiary of WMC Resources Ltd has accepted an offer to merge its Canadian operating subsidiary, WMC International ("WIL"), with Canadian mining junior, Comaplex Minerals Corp ("Comaplex"). (Comaplex is listed on the Toronto Stock Exchange - CMF).

The merger will result in Comaplex assuming control of all WIL's exploration properties, including its 56% interest in the Meliadine West gold project in Canada's lower Arctic territories. This will increase Comaplex's ownership in that project from 22% to a 78% interest.

WMC will acquire 5,200,000 or 15% of shares in Comaplex and receive a cash payment of US\$6,750,000. The offer, effective 1 October 2003, is subject to due diligence, regulatory and Board approvals.'

## ***GOLD THAT CAN'T BE DETECTED***

As long as there has been gold mining there have been people who maintain that the methods used for detecting gold do not show all the gold there is. The usual contention is that some gold is so fine that it passes through the normal processes of analysis and treatment and finishes up on the tailings dam, there to represent a bonanza waiting to be recovered.

Gary Morgan, best known for running a well known opinion polling business in Australia, was also involved in a gold mine in the Pilbara area in Western Australia through a 68% interest he had acquired in 1991 in an old established small gold mining company, Haoma Mining NL. The company had a 76% owned subsidiary, Kitchener Mining.

In late 1992 Gary Morgan had approached WMC for assistance in resolving gold recovery problems: the gold recovered was less than expected from sampling. WMC technical people concluded that the problem was caused by the 'nugget' effect - the presence of slugs of free gold in the ore.

By mid-1993 Morgan was commissioning work by Melbourne University metallurgists and made presentations to K R (Keith) Hulley and R (Roy) Woodall. Roy managed a co-operative study using outside consultants.

### **The Elazac Process**

Gary Morgan advised in strict confidence that, as a result, there had been developed the Elazac (the name of a famous footballer, Cazaly, spelt more or less backwards!) process (or the EP process) which was able to indicate and recover gold which could not be detected by conventional methods. There was more gold in the ore than was believed, and the Elazac process would make it possible to produce all of it.

The owner of the gold extraction process was Elazac Mining Pty Ltd, a Melbourne based mining company, of which Gary Morgan was owner and Chairman. Elazac licensed the technology to Haoma which tested it on ore from Haoma's Bamboo Creek Mine.

In early 1995 Elazac conducted a series of trials of the process under WMC supervision. Following the trials, WMC entered into a *Heads of Agreement* to evaluate the process and, if satisfied, enter into a joint venture with Haoma and Elazac.

The Board was informed of the wish to proceed with the evaluation by Keith Hulley and Roy Woodall on 17 May 1995 but, because of the confidentiality agreement, they could not tell directors anything about the process. The only other similar situation I ever encountered was on the Alcoa Board in Pittsburgh when Alcoa became involved in a company doing secret defence work for the US Government for which most directors were not cleared. This created the ridiculous situation where the Board had to approve expenditure of many tens of millions without knowing what it was for!

### **Heads of Agreement**

Gary Morgan proposed that WMC and Haoma should form a joint venture over the Haoma leases at Marble Bar and for all new areas in Australia which may be taken up. The obligation to joint venture on new areas would cease when the EP process became public knowledge. The use of EP overseas was subject to further negotiation.

WMC would pay \$1 million on signing the agreement, giving WMC the right to examine the process in

strict confidence at WMC cost for a period of two months, extendable to four months (Stage 1). If the representations by Elazac were not proven, WMC was entitled to a refund.

The Joint Venture interests were WMC 60%, Elazac 20%, Haoma 20%. The designated area was within a radius of 30 km from Marble Bar, within which Haoma and Elazac would contribute their existing tenements other than Bamboo Creek, Nolan's Project, and Second Fortune Mine or tenements acquired ancillary thereto. Additional tenements could be acquired by Haoma and Elazac with WMC approval and at WMC cost while Stage 1 was in progress and offered to WMC at 60% of cost of acquisition.

Upon successful completion of Stage 1 WMC was to pay Elazac a further \$1 million and agree on a bankable feasibility study over the Marble Bar properties at WMC cost (Stage 2). WMC would reimburse and contribute to the Joint Venture the \$7 million cost of acquiring the Marble Bar leases. The interests would be WMC 60% Haoma 40% at Marble Bar and in all new areas acquired within Australia. Separately, WMC had an option to purchase for \$50,000,000 a 50.1% interest in the Mickey's Find leases owned by Haoma.

There would be a royalty on production, 5% above threshold recovered grade (the grade expected to be recovered without the EP process, or the grade required to produce 10% DCF return), rising to 50% when the grade was twice threshold grade. No royalty was payable on first 100,000 ounces of Pilbara production and it ceased when EP became in the public domain and successfully used by other participants in the gold industry, but in any case the royalty was payable for an initial five year period.

WMC could terminate the agreement at any time. Tenements contributed to the Joint Venture by Haoma and Elazac without charge would be transferred back to them. The tenements acquired at WMC cost would be offered to Haoma and Elazac.

On 27 May 1995 the Herald Sun reported that the market price of Haoma shares had increased from 40¢ to 68¢ after the announcement of the joint venture with Western Mining. Additional media interest was based on John Elliott being a substantial shareholder in Haoma.

### **Agreement Terminated**

WMC terminated the Agreement on 21 September 1995 after completing its evaluation of the process and offered the leases it had acquired in the Marble Bar area to Haoma at their cost of \$7.3 million. Haoma had insufficient funds and, in addition to receiving a payment of \$1 million, WMC took up a parcel of 10 million Haoma shares instead, to be held in escrow for 12 months. In March 2002 these shares were still held by WMC.

Because of the confidentiality agreement, details of the process and why WMC discontinued its interest are not known.

### **Subsequent Events**

On 4 June 1996 *The Bulletin* reported that 'WMC pulled out of a joint venture after only four months last year'. Evidently BHP had become involved after WMC because the report continued 'and BHP has barely begun work'.

On 25 November 1996 Dr Peter Scales of the University of Melbourne Advanced Mineral Products Research Centre stated in a letter to Gary Morgan that 'Recent work on understanding metallurgical problems in the assay and recovery of gold from ores and tailings from leases in the Pilbara is showing excellent results'.

At the Annual General Meeting of Haoma Mining NL in November 1997 the Chairman advised that pilot testing of the application of the Elazac process to Bamboo Creek ore had begun, and the plant was expected to be fully operational in December. The 1999 Annual Report stated that, using the Elazac process, 'test results show that gold can be economically extracted from the ore'. During the year 283 fine ounces were produced.

At the Annual General Meeting in December 2000 the Chairman, Gary Morgan, told shareholders that, after a five year hiatus, Bamboo Creek was about to re-open. The resource was 5 million tonnes at 1.6 grams per tonne using conventional fine assaying but, using the Elazac process, an (unstated) higher amount could be extracted. Morgan produced a gold bar which he said had been produced from Bamboo Creek using the process.

In August 2003 it was announced that Hugh Morgan (then retired from WMC) would act as a consultant to Haoma Mining. There was reference in media reports to unresolved metallurgical problems.



## ***GREAT CENTRAL MINES***

In 1995 the Gold Business Unit came up with a very complicated proposal to take an interest in Joseph Gutnick's Great Central Mines, which had been very successful in establishing attractive gold mining operations in the Yandal Belt in the northern end of Eastern Goldfields. WMC had been exploring in the general region for many years but had not made any discoveries. Gutnick was known to be in need of finance and the Business Development section of the Gold Business Unit was casting around for ways to establish a presence which, hopefully, could be later expanded.

The proposal was brought to the Board in June 1995 but, I was glad, did not proceed.

Some years later Normandy Mining became involved with Gutnick in this region on the basis of a complicated scheme. The Chairman, Robert de Crespigny, appears to have spent much time personally dealing and negotiating with Joseph Gutnick.

In 1998 Gutnick proposed that WMC should take equity in Great Central and appoint directors to the Board. WMC declined, but indicated an interest in taking up equity in specific operations. I am not clear whether this was before, or after, the deal with Normandy.

### **Subsequent Events**

I understand that subsequent to my retirement in April 1999 there was another approach by Gutnick for WMC to buy shares and take options over shares in Great Central, which was not followed up.

As it happened, Normandy subsequently proceeded to untangle its relationships with Gutnick at some considerable cost to itself. In 2001 Great Central ran into financial difficulties, related mainly to borrowings for the Cawse Nickel Project, and was put into receivership.

Hindsight has confirmed that WMC made a sound decision in not becoming involved with Joseph Gutnick. In my view the Company was also wise in declining to pursue complicated arrangements.

Merchant bankers are in the business of collecting fees (often exorbitant) for concluding deals. Their involvement ends when the deal has been done. Their interest is therefore in concluding the deal, however complicated it may be. The participants in a long term business have to live with it.

Complicated deals have built-in difficulties:

- the future benefits to the participants are not identical
- people change and the original intentions are likely to be forgotten
- the external conditions can change in a way not visualised at the time of the deal.

These inevitably lead to future problems.





## ***GOLD ON THE SILK ROAD***

Exploration Division (ExDiv) geologists had visited Uzbekistan in 1993 and 1994. WMC became aware that the Uzbekistan Government intended to call for tenders from foreign companies to take up an interest in and operate the government-owned Zarmitan Gold Deposit 90 km north-west of Samarkand (see location maps). The expansion of ExDiv's activities overseas in 1995 probably encouraged WMC to become interested in this area.

### **Uzbekistan**

Uzbekistan, formerly a part of the Soviet Union but independent since 1991, lies along the famous Silk Road between Europe and the Far East. The population in 1995 was 23 million. Uzbeks are 70% of the population, with the rest a mixture of Russians, Kazaks, Tajiks and other central Asian people. The official language is Uzbek, although Russian is widely used. Most of the population is Sunni Muslim.

There is a strong President who approves all major decisions. The main industries are agriculture (cotton, self sufficient in food), minerals (gold, copper, lead-zinc, coal, uranium), oil and gas, and heavy industry (developed mainly through movement of industry to east of the Urals during World War II).

Uzbekistan in 1995 was the world's eighth largest gold producer (90 tonnes per annum), with the largest opencut mine at Muruntau (2.5 million ounces per annum), and a large copper producer. Substantial foreign investments were by British American Tobacco (US\$150 million), Newmont in Zarafshan Gold Joint Venture at Muruntau (US\$270 million), Lonrho, Gencor, etc.

### **The Zarmitan Gold Deposit**

This deposit, some 8 km long and 2 km wide, had been drilled extensively during the Soviet era (over 7000 drillholes over 30 years) and partly developed and mined by both opencut and underground methods. There were over 15 vertical shafts; underground development had commenced in 1971 and production in 1986. The ore was trucked 90 km to a mill at Marjanbulak. The reserves were estimated to contain 25 million tonnes of ore averaging 10 grams/tonne, a gold content of 7.9 million ounces. The estimated potential was 37 million ounces. There was also exploration potential in the surrounding area of 80 km x 30 km where there were known under-explored gold occurrences.

Zarmitan had been previously investigated by Brenna Resources of Canada who submitted an unsatisfactory proposal, and by RTZ who withdrew after completing a feasibility study.

The Government in 1994 called for indicative tenders for the purpose of choosing one bidder for definitive negotiations. In June 1994 WMC was one of four foreign companies shortlisted as potential partners. The tender included the Charmitan, Guzumshai and Marjanbulak deposits and the Marjanbulak Concentrator. The Uzbek parties intended to retain 65-70% ownership.

### **The Joint Venture**

WMC conducted due diligence in November 1994 and June 1995. A representative office in Tashkent was opened at the end of 1995.

The tender documents had become available in May 1995 and WMC formally lodged its tender offer in August. The following is an extract from a subsequent debriefing report by S P (Sean) Heary, the Project Manager:

The WMC Tender did not strictly conform with the Tender Document.

The principal reasons for the non-compliance were:

- WMC requested 50 per cent of the issued capital in ZGC (refer to Zarmitangold - the joint stock company to be established as a result of the proposed transaction). With this ownership structure it was estimated that the Uzbek's would receive by way of taxes, royalties and dividends approximately 65 per cent of the net cash generated by the project.
- WMC did not want to take equity in the Marjanbulak Gold Processing Plant because, among other things, it was too far from the Zarmitan deposits (90 km) and expanding the plant to take all of the Zarmitan ore would cost almost as much as a new plant at Zarmitan. Environmental exposure of the plant and the tailings ponds was another reason for excluding Marjanbulak.
- WMC's tender submission was conditional upon obtaining a more favourable regulatory and fiscal regime.
- It was also conditional upon obtaining various agreements, including a State Agreement to be ratified by Presidential Decree. It required the five principal project agreements to be all signed contemporaneously on the date the Shareholders' Agreement was signed.

WMC proposed that the negotiations be held outside Uzbekistan (WMC suggested Bangkok or Kuala Lumpur).

The major components of WMC's bid were as follows:

- WMC would assume management responsibility at Zarmitan from signing of the Shareholders' Agreement.
- WMC would conduct a Feasibility Study. The exact scope of the Zarmitan Project would be defined by the Study. However, it was envisaged that the project would comprise of:
  - ⇒ introducing WMC-pioneered decline mining technology to develop 3 mines at Charmitan and 2 at Guzumshai. Ore production from underground sources would reach 2 million tonnes per year by year 4.
  - ⇒ for the purpose of the tender the shrink stoping method of mining was identified as the main method of extraction. It was thought that several veins could be partly mined by cut and fill or sub-level stoping. It was proposed to carry out further analysis during the feasibility.
  - ⇒ ore would be treated in a new Carbon-in-Leach gold processing plant using modern technology.
  - ⇒ gold production was predicted to reach over 12 tonnes per annum within three years of Project Completion. Shortfalls in mill feed would be met from stockpiles created during the feasibility, financing and construction phases.
  - ⇒ Mineable ore reserves of 21.5 M tonnes at mill head grade of 7.6 g/t delivered to the gold processing plant, containing 170 tonnes of gold, were estimated from the C1 and C2 reserves as defined by Goscomgeologia.

- WMC would make payments to the Uzbekistan Government of US\$37.6 million.
- The Cashflow projections that accompanied WMC's bid assumed a gold price of US\$350/oz.
- In line with the tender terms WMC agreed to pay for the services of the Uzbek's technical adviser Barents Group LLC and their legal adviser Mayer, Brown & Platt.

In order to conform to the desire of the Uzbeks to keep Marjanbulak in production it was proposed to provide up to US\$3.5 million commencing on the signing of the Shareholders' Agreement to assist with funding of repairs and improvements at the Marjanbulak Plant such that it would be capable of maintaining a throughput of at least 150,000 tonnes per year.

The US\$3.5 million was to be regarded as a pre-payment by ZGC of tolling charges for Marjanbulak tolling ZGC ore in the future.

WMC would also pay US\$0.5 million per year to Uzalmazzoloto towards payments of the wages of workers at Marjanbulak for a period of three years also as a pre-payment of tolling charges.

ZGC was to provide Marjanbulak with up to 150,000 tonnes per year of ore from Zarmitan for three years after the signing of the Shareholders' Agreement and, in recognition of the pre-paid tolling charge, pay Uzalmazzoloto an additional US\$17 per tonne of ore as a toll payment for transporting and treating Zarmitan ore.'

In February 1996 WMC was advised that it had been selected for conducting exclusive negotiations for a Joint Venture agreement.

Negotiations commenced with the Uzbek State Committee for Geology and Mineral Resources and the Uzbek Association of Gold Mining and Diamond Processing Enterprises, Uzalmazzoloto, in April 1996 and were expected to be completed by the end of the year. The Uzbek *Business Weekly* featured on the front page in August 1996 Hugh Morgan shaking hands, under a headline (in Russian): 'What is good for WMC is good for us'. (see enclosed copy).

A presentation to the Board on 2 August 1996 was based on a mining rate of two million tonnes per year, producing 430,000 ounces in year five, and an internal rate of return of 38.5%. It was thought that negotiations would take a year, the feasibility study a year, financing a year, and construction two years. (As it happened, the negotiations took nearly three years.)

While the orebody was attractive, there was concern about the sovereign risk. The experience in the region had been variable: Newmont had established a successful tailings retreatment project in Uzbekistan, north of Zarmitan, but Canada's Teck Corporation had pulled out from the Vasilkovskoye Gold Project, said to be one of the largest undeveloped deposits in the world, after problems with the government. However, Teck had signed a joint venture with Government of Uzbekistan for a US\$8 million gold exploration effort in the Kyzyl-Kum desert. The Uzbeks were also reported as calling for international tenders for seven gold and non-ferrous metals deposits in the western part of the country.

On 1 October 1996 Chris Morgan, an Englishman with experience with Shell/Billiton International Metals in West Africa, Morocco and Peru was appointed Project Director of the Zarmitan Project, based initially in Melbourne but then relocating to Uzbekistan.

At about the same time WMC circularised its employees, seeking expressions of interest in living and working at Zarmitan. Employees were advised that the expected project timetable was:

1996	Negotiate terms and conditions of investment, carry out due diligence and pre-feasibility
1997	Carry out feasibility study, assume management and commence mining from existing pits and underground mines
1998-2000	Project financing, mine and plant development and construction.
2001	Full scale production from new plant

In late 1996 the price of gold started to fall and by February 1998 was below US\$300 per ounce. The WMC assessment was that a gold price greater than US\$330 per ounce was necessary to justify investment in the project.

WMC advised Uzbekistan's Foreign Investment Department that the project's Final Feasibility Study should be deferred because of current gold prices. However, Hugh Morgan was quoted as saying: 'Our initial work assessing the project has been encouraging and we look forward to completing the feasibility studies when the gold outlook improves'. A small WMC representative office was to be maintained in Uzbekistan, but about 30 people working on the project in Australia and Uzbekistan would be redeployed or retrenched after completion of current studies.

Unfortunately the announcement in Australia was made before the Uzbek partners had been advised, who found out about it from the media. This understandably strained relationships!

WMC endeavoured to secure an option over the deposits until the gold price had recovered to over US\$350 an ounce for three months or more. In April 1998 the terms of an option agreement (Interim Agreement) were approved by the Prime Minister and a Memorandum of Cooperation (*State Agreement*) had been drafted, both to be signed by President Karimov and Hugh Morgan in May. WMC considered the *State Agreement* (equivalent to an Act of Parliament relating to the project) as vital.

Hugh arrived in Tashkent on 12 May 1998. That morning Prime Minister Sultanov had shown the Agreements to the President for the first time. The President reportedly angrily rejected the arrangements.

Meetings between Hugh and various officials, including the Prime Minister, resulted in a stalemate. The main difficulty was the *State Agreement* which WMC insisted it must have to proceed, and the President insisted he would not sign. The Uzbek practice was that the Parliament was not involved in such matters - the President issued *Decrees*. Presumably he regarded WMC's insistence on a *State Agreement* as a challenge to his authority.

On returning to Tashkent on 21 June Hugh agreed to consider the matter further and arranged for R P (Ross) McCann to visit Tashkent to pursue discussions.

In August 1998 WMC withdrew its insistence on a *State Agreement* and discussions were resumed on the basis that the provisions of the State Agreement would be reallocated between the Presidential Decree, Joint Venture Agreement, and a Charter.

A J (Tony) O'Neill had visited Zarmitan and written an appreciation of the situation from an operator's point of view. Hugh Morgan gave it to me for comment and in February 1999 I expressed serious misgivings about the workability of the proposed arrangement.

The management of the project was to be vested in a separate company. WMC had majority of votes for the initial period and voting was 50:50 thereafter. WMC had no management rights - only the right to appoint General Director and one of the three Deputy General Directors.

As WMC initially provided 100% of the finance there were obvious, almost guaranteed opportunities for conflict of interests which could be very difficult to resolve - in case of deadlock, the only resolution was that the previous plan continued. This may not be practicable in many instances.

The comments by Tony O'Neill indicated that the most sensible way to develop the project may not be in accordance with the feasibility study and development timetable in the JV Agreement.

Tony said:

- mine design could take 12-18 months, preferably pre-feasibility
- current concept of bulk mining trial was unlikely to give WMC any definitive answer that could be used for feasibility study
- there should be further drilling in targeted areas to confirm geology and test for sub 1.5 gram material.

While the potential of the orebody was not in question, our interest was in being able to operate it properly and obtain a good financial return. I wasn't at all sure that this was possible; in the note to Hugh on 9 February 1999 I concluded that 'on the face of it we could be heading for an unsolvable dilemma'.

Nevertheless, the Joint Venture Agreement was finally signed in Tashkent on 30 March 1999. The Agreement provided for the establishment and operation of a joint venture company 'Closed Joint Stock Company Zarmitangold' (ZGC) in which the shareholders were WMC (Zarmitan) Ltd 50%, State Committee of the Republic of Uzbekistan on Geology and Mineral Resources 25%, and Uzbek Association of Gold Mining and Diamond Processing Enterprises 25%.

Preparations commenced for a US\$900,000 mutually agreed drilling programme to test low grade material between high grade veins and bulk sampling to confirm ore quality and mining and geological assumptions and ore reserve estimates.

This was the situation in April 1999.

### **Subsequent Events**

When WMC announced its 1999 results in February 2000, shareholders were informed that the Company had retired from a number of projects. Zarmitan was one of these.

While the reasons were not explained and probably differed from the concerns I had expressed, I was not unhappy to hear about the decision. Someone at some time will make money out of Zarmitan, but I doubt whether it would have been WMC.

### **In Retrospect**

The Company's understanding of the differences between working in Uzbekistan and working in Australia was undoubtedly inadequate.

I also suspect that the reasons for wanting to be there in the first place were not clearly thought out.

Kym Saville, then Commercial and Marketing Manager for Nickel and Gold in Perth, recalls being approached in February 1996 by Keith Hulley to lead WMC's negotiations. Keith expected the negotiations to take place in Bangkok and be completed in three months, taking 25% of Kym's time! Kym wisely declined, but became involved later as Group Manager Commercial in Melbourne.

In my view one of the things we did not do well in our Zarmitan involvement was that we had too many people conducting the negotiations, a number of these outsiders with no ongoing commitment to WMC, while the WMC people responsible for the project kept changing. In the legal area there were four different English law firms involved. It can be questioned whether they (and our own people) had a clear understanding or direction as to what they were supposed to achieve.

Kym Saville agrees:

The problem was that in establishing the management for this Project, WMC either hired external people who were totally dedicated to the Project, or seconded WMC staff exclusively to the Project. Many of the seconded staff were not experienced in Government negotiations, joint venture agreements or financial evaluation (the prospect of working in Uzbekistan is not going to attract many high quality Australian staff). To make matters worse, they reported to a General Manager whose sole responsibility was to develop new projects. WMC at the time was under pressure from analysts and the media to demonstrate where new growth was coming from. This pressure would have been felt keenly by the General Manager and the Project staff. Zarmitan was one of four Projects which WMC was touting as the next big things. Relative to the other three (Cuba, Tampakan and Meliadine), Zarmitan probably looked reasonably attractive, especially to those who failed to appreciate the hazards of dealing with Government and developing and operating in a place like Uzbekistan. The doubts of those with a more realistic appraisal of the attractiveness of the opportunity, and the attendant risks, are all too easily cast aside as ignorant naysayers or outsiders pursuing their own agendas.'

Kym also points out another big problem:

It was at the time, and probably still is, common for Governments of developing countries like Uzbekistan to require in tender documents that the successful tenderer pay the costs of the Government's legal and other advisers. It can be tempting to agree to that condition as a relatively minor cost of winning the deal. This is a big mistake. It has to be remembered that the condition is normally inserted in the first place by the Government's advisers, who thereby secure for themselves a lower credit risk and a client who is not going to complain about their bill. They then overservice their client, who as a Government is happy to be seen to be extremely diligent in putting the deal together, especially since the cost is paid by the other party. Further, there is no cost incentive for the Government to expedite the negotiations, so they run on and on, with the meter ticking against the party paying all the costs. This gives a considerable amount of leverage in the negotiations to the Government. I pointed this out as soon as I became involved and recommended we walk away from the negotiations unless the Government agreed to pay its own advisers, or as a minimum that WMC's liability for these costs be capped. The reaction to this recommendation at the time was one of horror. WMC could not go back on its deal.'

WMC spent \$16 million on the project. The only benefit from this was the experience gained. In July 2000 Sean Heary, the Project Manager, wrote a report on 'Lessons Learnt' (see *Group Historical Information Collection*, GHI-ZPG-5). The danger is that the people who learned the lessons will soon retire or leave, the corporate memory will be lost, and future generations will have to learn it all over again. I hope that Sean's report will not be forgotten.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**BUSINESSES AT APRIL 1999**

**VOLUME TWO**

***THE SHINE OF NICKEL***



# ***THE SHINE OF NICKEL***

## **CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>119</b>
<b>A Company Transformed</b>	<b>123</b>
From Gold Miner To Diversified Minerals Producer	
<b>Kambalda: Where It Started</b>	<b>125</b>
Kambalda/St Ives Nickel Operations	
<b>Making Metal At Kwinana</b>	<b>135</b>
Kwinana Nickel Refinery, WA	
<b>The Fiery Furnace at Kalgoorlie</b>	<b>139</b>
Kalgoorlie Nickel Smelter	
<b>Helping The Chinese</b>	<b>147</b>
Assisting With Jinchuan Nickel Smelter	
<b>Great Boulder</b>	<b>151</b>
Kalgoorlie, WA	
<b>The Windarra Venture</b>	<b>155</b>
Windarra Joint Venture, WA	
<b>Moving North: Adding Leinster</b>	<b>161</b>
Leinster Nickel Operations, WA	
<b>Further North: Mt Keith</b>	<b>169</b>
Mt Keith Nickel Operations, WA	
<b>Nickel In Laterites</b>	<b>177</b>
General & WMC Interest in Nickel Laterites	
<b>Laterites in Eastern Goldfields</b>	<b>181</b>
Sherritt Gordon & Resolute Joint Ventures, WA	
<b>In Fidel's Domain</b>	<b>185</b>
Pinares Joint Venture, Cuba	
<b>Yakabindie For The Future</b>	<b>187</b>
Yakabindie Nickel Deposit, WA	
<b>To Market, To Market</b>	<b>189</b>
The Marketing of Nickel	
<b>The Pastoral Suite</b>	<b>201</b>
Pastoral Properties in WA & SA	

# ***THE SHINE OF NICKEL***

## **OVERVIEW**

By 1974 Western Mining was well established as a world scale nickel producer. Output in 1973-74 was about 8% of world production, with mining at Kambalda, in a joint venture at Scotia and Carr Boyd Rocks and about to begin in the joint venture at Windarra (see attached map). The Kalgoorlie Nickel Smelter and the Kwinana Nickel Refinery were both being upgraded.

Nickel markets and prices experienced many ups and downs during the following years and the financial results were also affected by movements in the exchange rate of the Australian dollar relative to the US dollar. There were several periods when production was reduced, but over the twenty four years from 1974 to 1998 WMC's nickel production capacity continued to grow.

World nickel production exceeded demand from 1974 onwards and stocks continued to grow, to about five months' consumption by 1977.

International Nickel Company of Canada (INCO) and Falconbridge Nickel Limited of Canada (FALCO) cut production in 1977-78 in an effort to reduce oversupply. WMC ceased production at Scotia, in some of the lower grade areas at Kambalda including the Fisher Mine and at Windarra. The total reduction by WMC amounted to about one third of production. Development was reduced to a minimum and about 300 personnel became surplus, with further reductions over a period.

The Scotia and Carr Boyd mines, placed on care and maintenance in 1977, were subsequently sold. No nickel was produced at Windarra between June 1978 and May 1981.

WMC accumulated very substantial metal stocks after a decision in 1977-78 not to sell at less than a minimum price.

The Canadian producers also cut back production substantially in 1978, but excess stocks maintained an oversupply and prices were well below US\$2.00 per lb at the end of 1978.

WMC was seriously considering taking a 25% joint venture partner into its integrated nickel operations. Discussions with BP in 1978 terminated when it was found that, instead of a substantial premium, BP expected to enter the venture at a discount!

Consumption increased and prices improved in 1979.

In 1979 the policy was to consolidate output at 40,000 tonnes per annum of nickel in product, approx 25,000 tonnes as metal and 15,000 tonnes as matte. The feed was from the Company's sources at Kambalda and Windarra and from toll treatment or purchase of feed from producers in the district (Shell at Windarra, Selcast/MIM at Agnew, Metals Ex, etc). Laterites in the district were investigated as a possible basis for an eventual expansion of production.

Kambalda was the mainstay of ore production until the early 1990s. Leases purchased in the Widgiemooltha area in the early 1980s became a part of Kambalda Nickel Operations and at about the same time nickel mines were opened up south of Lake Leakey in the St Ives area.

The Windarra Joint Venture became wholly owned in 1983.

In 1985 WMC acted as a consultant to a team of 20 Chinese draughtsmen and engineers who designed a flash smelter for the Yongchang Nickel Mine at Jinchuan in Gansu Province in China. Subsequently WMC Smelter staff assisted with training the operators and the commissioning. The background and the events are described in *Helping The Chinese*.

In 1989-90 WMC purchased Agnew Mining from BP and MIM and brought the dormant property back into production. In 1990 WMC embarked on a \$800 million upgrading and expansion of the nickel operations, including an upgrade at Kambalda and Leinster, acquisition and bringing into production of the Mt Keith nickel deposit, rebuilding and expansion of the Kalgoorlie Nickel Smelter and upgrading of the Kwinana Nickel Refinery. On the downside, nickel production at Windarra ceased in 1990-91 when the orebodies had been exhausted.

The initial intention to increase nickel production from 35,000 to 65,000 tonnes per annum was increased to 93,000 tpa after the Mt Keith deposit was acquired in 1992-93.

On 1 December 1992 it was announced that, following the substantial decline in nickel prices from an average of US\$3.38 per lb in the first half of 1992 to as low as US\$2.39, the Nickel Division was operating at a loss, with no improvement in sight. Long term expansion and cost reduction plans to lower total costs below US\$2.50 per lb would continue, but output would be reduced.

At Leinster mining of higher grade Rocky's Reward ore would be brought forward, opencut operations at Perseverance would be continued beyond previously planned limits and underground development at Perseverance would be slowed down. At Kambalda the remnant mining at the Foster Mine would be completed and the mine closed by the end of the financial year.

Nickel Division operations would remain under review.

In 1994 WMC signed a *Memorandum of Understanding* with the Cuban Government regarding the development of the Pinares de Mayari West deposit in eastern Cuba in a joint venture, with WMC holding a 65% interest. At December 1998 investigations of this project were continuing.

In 1996 natural gas became available to the operations at Mt Keith, Leinster, the Nickel Smelter and Kambalda from the newly completed Goldfields Gas Transmission Pipeline, initiated and managed by WMC. Spur lines were completed to the operations and gas turbines with a total capacity of 40 megawatts installed at each of the four sites, at a cost of \$120 million. In late 1998 WMC's interests in the pipeline, the spur lines and the turbines were sold to Southern Cross Pipelines Australia Pty Ltd consortium, to free capital for the Olympic Dam expansion. Gas to generate power for the operations was secured under long-term contract.

The nickel expansion was complete by 1995-96 when production reached 94,805 tonnes. Production at Mt Keith was further upgraded and WMC nickel output reached a record 113,959 tonnes in the year to June 1998.

During the market downturn and extremely low prices of nickel in 1997-98 a joint venture partner in all the nickel operations was again considered, this time Sumitomo Metal Mining who would contribute their nickel operations and US\$600 million cash for a 40% equity. The proposal did not proceed.

At December 1998 the WMC nickel production capacity was about 115,000 tonnes per annum, with smelting capacity at Kalgoorlie at 105,000 tpa and refining capacity at Kwinana at 67,000 tpa. For comparison, the initial refinery capacity had been 15,000 tonnes per annum and the initial smelting capacity 20,000 tpa.

The total WMC Group nickel production from commencement in 1967 to December 1998 was 100,044,962 tonnes of ore for 1,538,848 tonnes of contained nickel. Details are shown in Book Three, *Appendix V*.



## ***A COMPANY TRANSFORMED***

The discovery of nickel at Kambalda in January 1966 transformed Western Mining's financial, technological, and commercial characteristics virtually overnight.

### **Market Capitalisation**

WMC's average market capitalisation in the years after the domicile was transferred to Australia in 1949 and before Alcoa of Australia was formed in 1961 had varied between \$1.5 million and \$4.9 million. The Alcoa development increased the capitalisation by 1965 to \$16.5 million.

After the Kambalda discovery was announced the market value nearly doubled to \$30.5 million in 1966 and, when its significance had been better understood, to \$114 million in 1967. The resulting 'nickel boom' saw WMC's market value reach \$422 million in 1970, until the downturn in the nickel market brought the value back to \$147 million in 1974.

Correcting these figures for inflation into values as at 31 March 1999 results in the following comparison:

<b>Period</b>		<b>Market Value In</b>	
		Dollars At the Time	March, 1999 Dollars
		\$	\$
Pre-Alcoa	(say) 1960	4.9 million	38 million
Post-Alcoa	In 1965	16.5 million	123 million
Post Kambalda	In 1966	30.5 million	224 million
	In 1967	114 million	826 million
	In 1970	422 million	2,975 million
	In 1974	147 million	769 million

The Kambalda discovery clearly lifted Western Mining to a new financial status.

### **Technological Ability**

Pre-Kambalda WMC was essentially a mining company, with metallurgical skills limited to gold ore processing. The Kambalda discovery led the Company into milling, refining, and smelting nickel ores.

The extent of the change is illustrated by the following incident.

At the time of the first drill hole intersection of 8.3% Ni at Kambalda on 28 January 1966 I was stationed in Kalgoorlie. Melbourne Office asked me to advise them, literally, whether this result was 'good or bad'. Having no knowledge of nickel myself, I resorted to converting the value of the nickel into the equivalent gold value and, after making guesses about the cost of treating nickel ores as against the cost of treating gold ore, was able to advise that the result was, indeed, good - equivalent to more than an ounce per tonne in gold terms.

While the milling of nickel ore was different from the treatment of gold ore, the basic processes were well known to our metallurgists and they adapted quickly to the new challenge. Even then, initially the recovery of nickel into concentrate at Kambalda was low, of the order of 75% for some years until experience gradually lifted it to today's 90% plus.

Early production of nickel metal, which became an urgent project as soon as Kambalda had started, was made possible by the purchase of concentrate refining technology from its developers, Sherritt Gordon Mines Ltd of Canada. The construction was managed by Bechtel Corporation. Sherritt also made a significant contribution to the design and commissioning of the refinery at Kwinana. Some WMC people had been seconded to the Sherritt refinery at Fort Saskatchewan in Canada for training and experience, but essentially the refinery staff had to learn on the job, no-one having any significant previous experience.

For the smelter subsequently established at Kalgoorlie we purchased the technology from its developers, Outokumpu O/Y of Finland, who once again assisted greatly with the design. The construction was managed by WMC's Engineering Department under the direction of S E (Stan) Evers. This time the commissioning, however, was managed by C J D (Ned) Williams, an experienced smelter man who had joined us in 1970 from the Electrolytic Smelting and Refining Co at Port Kembla.

The Kambalda discovery was very significant in broadening Western Mining's horizons into non-ferrous metallurgy, including the production of refined metals.

### **International Marketing**

A further significant consequence was for WMC to become further involved in international marketing of minerals and metals. There had been an introduction to this through the Geraldton iron ore venture and, to a lesser extent, through alumina and talc and the experience and knowledge gained in these activities was very useful indeed. Major links were established early with Sumitomo Metal Mining Company of Japan in marketing nickel concentrate and, subsequently, metal and matte in Japan.

The initial negotiations and arrangements in Japan were handled by W M (Bill) Morgan and D P (Doug) McIntyre in Melbourne. When nickel metal from the Kwinana Refinery became available for marketing in Europe, Doug McIntyre engaged R W (Bob) Allard ex INCO, who was very experienced in this area. Subsequently, T F (Tom) Moorman ex FALCO, also experienced, was employed to handle metal marketing in North America.

## ***KAMBALDA: WHERE IT STARTED***

The early history of Kambalda, the discovery of nickel by WMC in 1966 and the subsequent development of nickel and gold mining are described in J J (Jeff) Gresham's book *Kambalda - History of a Mining Town*, published in 1991, in Lindesay Clark's *Built on Gold*, and in other publications. The story is well recorded and will not be repeated here. This section deals with the nickel developments at Kambalda from 1974 to 1999.

### **The Operations in 1974**

There were seven mines supplying the mill, which had been expanded to a capacity of 1.5 million tonnes per annum. The diesel power station had an installed capacity of 42 MW, concentrates were dried and railed to the smelter, and there were two towns - Kambalda and Kambalda West - with a combined population of over 5700.

In 1973-74 over 1,409,000 tonnes of ore was treated for 37,760 tonnes of contained nickel, of which 2270 tonnes was from purchased ore. The average recovered grade was 3.0% Ni.

The proven nickel ore reserve at Kambalda and St Ives in June 1974 was 24.5 million tonnes at 3.22% nickel. In addition ore was being purchased from the Nepean Mine operated by Metals Exploration Ltd, nickel concentrates were being purchased from Great Boulder Mines Ltd and North Kalgurli Ltd, and arrangements had been concluded to purchase ore and concentrates from Selcast Exploration's operations at Spargoville in the coming year.

The main sources of ore were the Lunnon-Hunt, Durkin and Otter-Juan mines. Fisher and McMahon declines were in production and work on the Hunt Decline and sinking of the Jan Shaft at St Ives was underway. Raise drilling was increasingly used for ventilation shafts and ore passes because of its economic and practical advantages.

### **Mine Development and Ore Production 1974-1986**

An inclined shaft on the Edwin Shoot at St Ives and sinking of the Long Shaft were begun in 1975 and the first ore from the Jan Shaft produced. Sinking of the Victor Shaft was begun in 1977, but discontinued in 1978 in favour of lateral development from the Long Shaft.

In the mid-1970s the nickel market turned down and, after the record output of 1,479,100 tonnes of ore in 1976-77, production was curtailed in September 1977. About 250 employees were retrenched at Kambalda and another 150 left of their own accord. The Silver Lake Shaft produced its three millionth tonne of ore.

Despite the reduced workforce, production in 1977-78 was a record 48,456 tonnes of contained nickel while sales fell drastically (see *To Market, To Market*). The ten millionth tonne of ore at Kambalda was milled. Long Shaft sink was completed.

Recovery began in 1979, although further expansion and development of the nickel operations was undertaken with caution. First ore was produced from the Long Shaft. A decline was commenced in 1979 at Carnilya Hill in a joint venture with BHP.

The Foster Shoot was developed from a decline commenced in 1980 and Silver Lake Shaft hoisted its four millionth tonne of ore.



The four millionth tonne of ore from the Otter/Juan Decline was produced in 1981 and the first ore from the Foster Decline was milled.

In 1982 surface and underground diamond drilling reached one million metres (1000 km). Production from the McMahon and Fisher declines reached one million tonnes each. WMC purchased several nickel mines which had been established by Selcast Exploration, Anaconda-CRA, INCO-BHP and Metals Exploration in the Widgiemooltha region. The first of these to be worked was the Mt Edwards Mine, which was reopened in 1980.

The Durkin Shaft closed in May 1983 after having produced 3.2 million tonnes of ore, the first mine to be worked out at Kambalda. A shaft was sunk to the Foster Shoot between 1983 and 1985 during which an Australian shaft sinking record of 38 metres of sink and line in 14 days was achieved.

The Wannaway Shaft at Widgiemooltha was rehabilitated and brought into production in 1984. Otter/Juan produced the five millionth tonne of ore. In September 1984 the SEC powerline from Muja, near Collie, to the Eastern Goldfields was commissioned and the diesel electric powerhouse at Kambalda fell silent.

A record was established in 1985 in advancing the Lanfranchi Decline at St Ives: 170 metres in a single heading in 14 days. A small deposit at Cave Rocks was recovered by opencut mining in 1985. Long Shaft produced its millionth tonne of ore.

The Foster Shaft reached its final depth of 731 metres in 1985-86. Lanfranchi commenced production. The Silver Lake Shaft - Kambalda's and Australia's first nickel mine - closed in January 1986.

In the mid-1980s there was again a downturn in the nickel market and Kambalda also suffered from poor ground conditions, production difficulties and industrial disputes, particularly a long strike in 1986. This is worth recording in some detail, because it had a number of long term consequences for WMC.

### **The 1986 Strike**

On 4 April 1986 it was announced that five of the eleven operating mines at Kambalda (Fisher, McMahon, Hunt, Jan and Wannaway) would be closed immediately and that the South Windarra opencut would cease production at the expiration of the contractor's three months notice period. The reason was continuing low nickel prices and likely future wages and other cost increases, including a proposed fringe benefits tax on employee housing. The unusual level of industrial stoppages at Kambalda in recent times had aggravated the position.

After the transfer of some production personnel to other mines on additional shifts, about 200 employees would become redundant. The reduction in annual nickel production would be about 10%.

The WMC action followed INCO's closure of several of its Canadian mines for 10 weeks, starting in December. Cutting of production from high cost areas if the price did not improve had been indicated at the WMC Annual General Meeting in November and again at the release of the half-yearly results in February.

Redundancy agreements with the unions had been negotiated for some time and union officials had agreed to put these to a mass meeting. The meeting, held the day before the announcement, had rejected the proposed conditions and the employees went on strike.

WMC's General Manager Industrial Relations, S J (Stan) Carter, asked by the *West Australian* to comment, did not hesitate to mix his metaphors. 'The utter stupidity of the unions is incredible. You have a company with its back to the wall and the unions are boring holes in the bilges'.

Officially, the major issue was the redundancy provisions. Behind the scenes, the main force behind the strike was an Australian Workers' Union organiser, Bruce Wilson, who had only recently entered the scene. The main union officials were moderate and reasonable people. Wilson clearly wanted to make a name for himself, set himself up in opposition to the moderates and turned out to be a skilful rabblouser. He had been the inciter behind a number of stoppages at Kambalda over pinpricking issues over the previous six months in an apparent attempt to create an atmosphere of discontent. The strike was the follow-on from this and his great opportunity.

Julian Grill, the Labor member of the Legislative Assembly for the region, was adding fuel to the fire by exhorting against WMC at meetings of the strikers. He was so blatant that on 8 April I sent a telex of protest to him:

I am most distressed at your comments reported in the *West Australian* this morning if in fact you have made these comments. To imply that you have any knowledge of the facts leading to the shutdowns at Kambalda is simply not true and to mislead those who are trying to prolong the present stoppage which cannot achieve anything other than cause further unnecessary hardship to the people at Kambalda into believing that the government has a magic means of making uneconomic mines economic is nothing short of irresponsible.

I am sending a copy of this telex to the Premier, the Hon Brian Burke, as I regard the matter as most serious. The nickel industry is in a very difficult situation and needs the cooperation of all concerned, including unions and governments. To imply that this is some sort of a game is not only absolutely wrong but a serious reflection on your understanding of it.

We are ready to explain the facts to you at your convenience.'

Julian did not respond to the invitation.

Over the following weeks there were meetings between Stan Carter and the union officials, meetings of the strikers, behind-the-scenes power struggles in the unions, and appearances before and hearings by the Industrial Relations Commission. There was no progress.

On 10 May K F (Keith) Parry suddenly died of a heart attack. It is very likely that the strain of the then five weeks long strike contributed to this.

I was informed of his death by a telephone call from H M (Hugh) Morgan on Sunday morning, 11 May, in the Qantas lounge at Sydney airport while returning from USA, and continued on to Perth that afternoon to take charge until a successor to Keith could be appointed.

The strike was, of course, the most important item on the agenda. Early the following week I received a telephone call from Julian Grill, who suggested that the solution was to appoint an arbitrator and offered himself for this position! I declined, and there was an equally negative reaction from the State Secretary of AWU, who said that politicians had no place in industrial disputes.

A compromise was finally worked out and accepted by a mass meeting on 16 May. The Company retained the right to decide who would be retrenched, any disputes being referred to the Industrial Commission.

The Musicians Union in Perth was reported to be sending a band to Kambalda for a Victory Dance. Stan Carter's comment was: 'See if you can pick a winner from the last six weeks - I can't'.

Keith Parry was not replaced as Director of Operations. In June, B J (Brian) Hurley was appointed Senior General Manager-WA in addition to being General Manager-Nickel Division. I retired as Managing Director and was succeeded by Hugh Morgan, who took over some of Keith's responsibilities.

### **Mine Development and Ore Production 1987-1998**

The demand for nickel improved in 1987-88 and the price reached a peak in March 1988. The low nickel price in 1985-86 and the effects of the long strike had caused the Company to go into survival mode, including curtailment of underground development at Kambalda to conserve cash. This reduced the flexibility to cope with unexpected production setbacks, such as occurred at the Long and Foster mines.

High rock stresses encountered in the Long Mine required re-development of the lower levels, tying up higher grade ore in pillars which would not be extracted for some time. Difficulties in locating the orebodies at Foster required development of underground drill sites and additional drilling and there was a bottleneck in reducing the broken ore in size for hoisting up the vertical shaft, until the decline broke through. Nickel production at Kambalda in 1988-89 consequently fell to 33,737 tonnes and further to 29,717 tonnes in 1989-90. This limited the Company's ability to take advantage of the high prices.

In the late 1980s the Long and Foster mines were the main producers. In 1986-87 McMahon, Jan and Fisher ceased production. An opencut was developed on a shallow deposit called Widgie 3 in 1987-88.

In 1989 declines were commenced at the Blair Prospect near Golden Ridge and to gain access to the Victor and Schmitz orebodies. An opencut was begun to recover shallow ore from workings at Redross and later a decline was developed to mine the lower levels. Another opencut produced a small tonnage of ore from an orebody called 132 North in the vicinity of Mt Edwards. The twenty-fifth millionth tonne of ore was produced.

Decline development of the Mariners deposit on an island in Lake Zot was under-way by 1991. A new orebody known as Miitel was discovered to the north of Mariners in 1992. The two millionth tonne of ore was produced from Foster. Widgie 3 Mine closed. Schmitz commenced production.

By 1992 there was another downturn in the nickel market and on 1 December 1992 the Company announced a number of measures, including scaling down of operations at the Foster Mine and its closure by mid-1993. Production at Mariners was deferred.

In 1993 production commenced from the Victor Decline. Foster ceased production. One millionth tonne of ore was produced from Lanfranchi.

The Hunt Mine and Mt Edwards ceased production in 1994.

In 1995 the Coronet decline commenced production. The seven millionth tonne was produced from Otter/Juan and the four millionth from the Long Shaft.

Helmut commenced production and Helmut South was discovered in 1996. Natural gas became available for the Kambalda Power Station.

The Miitel Decline commenced in 1997. Kambalda celebrated the 30th anniversary of commencement of production. The new mill and upgraded concentrator plant became operational.

Another market downturn, with prices at very low levels in real terms, led to placing the high cost mines of Otter/Juan, Blair, and Wannaway, with a combined annual production of 10,000 tonnes of contained nickel, on care and maintenance during 1998. Development started on the Miitel Mine, with production expected in early 2000.

During December 1998 KNO produced its one millionth tonne of nickel.

Further retrenchments took place in March 1999 in an endeavour to reduce losses. In all 310 people lost their jobs, 80 WMC employees and 230 contractors, when the Long/Victor and Mariners nickel mines closed. Only Lanfranchi, Skinner and Coronet mines remained in operation.

At the end of March Hugh Morgan and I were in Kalgoorlie as a part of my farewell visits to operations. Torrential rains and flooding just before our visit caused a substantial abbreviation of the programme. However, while in Kalgoorlie, I was interviewed by the *Kalgoorlie Miner* and endeavoured to explain the reasons for the curtailment at Kambalda.

"The problem with Kambalda is that it is not a low-cost mining operation and there are very high development costs getting access to the ore bodies," he said.

"There's nothing wrong with Kambalda if the price is adequate, but recent (nickel) prices have been at rock bottom levels and some of the mines are just not economic".

Sir Arvi said WMC had been bleeding in Kambalda for the past nine months and had lost \$54 million in the last six months of 1998.

"It's not as if we made a rash decision," he said.

"We are very aware of the hardships and very much aware that this is a pretty tough decision, but it's unavoidable. You just can't continue losing money like that.

We don't intend to leave Kambalda, those mines that are a problem are not being closed down, they are on a care and maintenance basis to be brought back into operation when the price justifies it."

Sir Arvi said Kambalda had been the mainstay of WMC's business for the first 25 years and had been worked intensively for 30 years.'

The production from Kambalda from commencement in 1967 to December 2001 is shown in Book Three, *Appendix V*.

## **Continuous Mining**

In the early 1990s there was a lengthy dispute with the unions about the introduction of continuous mining at Kambalda and St Ives. While the action took place at these locations, the issue was a pathfinding exercise for WMC (and the mining industry) in Western Australia. The events are therefore described in Book Two Part C, *CORPORATE ACTIVITIES*, Volume Six, *Employee Relations*.

## **The Radioactive Gauge**

This was a minor incident which received a great deal of publicity because of the intensive anti-uranium campaign in Australia at the time. It is recorded here solely for showing the extraordinary way in which commonsense can be negated by determined activist groups and media beat-ups.

On 14 November 1978 it was found that a gauge measuring pulp density in the Kambalda Mill, which had been removed for re-calibration, could not be located. The gauge, as was normal in such instruments, contained a small amount of radioactive Cesium 137.

A short time afterwards Sims Consolidated Limited, who had shipped a cargo of scrap metal from Kambalda to National Iron and Steel Mills (NISM) in Singapore, forwarded advice from NISM that one of their furnaces had been contaminated by Cesium 137. NISM claimed that Sims was responsible, and Sims in turn claimed that they should be indemnified by WMC.

WMC's Resident Manager at Kambalda, B S (Barry) Patterson, was prosecuted by the Western Australian Government for breaches of the Radiation Safety Act and fined \$100 in May 1979.

Media reporting used headlines such as 'Miner Accused On Atomic Waste', 'Lost Nuclear Device', and 'N-Waste Has To Be Moved'. After becoming old news, and while the three companies involved had almost reached agreement on a settlement, leaked cables from the Australian High Commissioner in Singapore to the Foreign Affairs Department in Canberra in September 1979 made it newsworthy again. The issue now became what to do with the slightly radioactive waste material (refractory bricks, sludge, etc, contained in 119 forty four gallon drums) from the cleaning up of the furnace.

The Singapore Government became involved and unrelated political matters (aviation issues) became tangled up in the government to government dealings. Progress was glacial.

By the middle of February 1981 Singapore had formally requested Australia to take back the waste. WMC and Sims put a formal proposal to the Australian Government that the material be returned to Western Australia, and import approval was granted by Canberra.

There was great difficulty in arranging shipping, in spite of the radioactivity being extremely low and the material having been packed in accordance with International Codes of Practice. The delay and the continued media publicity gave various activist groups (including the Campaign Against Nuclear Energy) the opportunity to protest against the storage of the material at Kambalda. Media headlines included 'W.A. Shed Will Be Home For N-Waste'. In September 1981 there was a protest strike at Kambalda.

In an effort to counter wild assertions, on 14 September 1981 a scientist with the Australian Atomic Energy Commission in Sydney addressed a public meeting at Kambalda. It was decided to store the material not in a shed as originally proposed, but in an underground concrete bunker some distance from Kambalda.

A ship (the *Cape Comorin*) was finally arranged to load the material in Singapore in November. The arrangements were kept confidential to avoid media publicity. However, on 12 November a report emanating from the Australian High Commission in Singapore confirming the shipment re-ignited the publicity. It is hard not to conclude that the repeated leaks from the High Commission were deliberate.

The 16,000 tonne *Cape Comorin* left Singapore with the five containers of waste material its only cargo, which was to be offloaded at Geraldton and transported by road to Kambalda. However, the Waterside Workers at Geraldton imposed a black ban on the ship, on the basis that the radioactive gauge had left Australia in a shipment from Fremantle and the waste should be returned to Fremantle. As it happened, Fremantle was closed at the time because of a nationwide strike.

The Esperance Port Authority contacted WMC and the *Cape Comorin* finally berthed at Esperance on 7 December amidst extensive media coverage and various threats, including minor damage to one of the

vehicles for transporting the material. However, the convoy eventually arrived at the disposal site around midnight on 7 December. By 2.30 pm on 8 December 1981 all five containers had been placed in the concrete bunker, completely sealed in concrete, and covered with topsoil. Measurements by the WA Government laboratory after the burial showed 'no measurable effect on background radiation in the area'.

In contrast to their earlier fascination with the story, the media failed to cover the final disposal. It was apparently not considered news.

The final act was that the *Cape Comorin* was blackbanned at its next destination - the Port of Melbourne - until it was cleared of any radioactive contamination.

### **The Concentrator**

The original concentrator of 130,000 tonnes per annum capacity at Kambalda had been expanded to 1,200,000 tpa in 1972. This included new crushing, grinding, and flotation plants, additional thickening and drying capacity, and pneumatic handling and silo storage of the dried concentrate prior to railing to the K algoorlie Nickel Smelter.

Incremental improvements increased the capacity further, and in 1976-77 the concentrator treated a record 1,479,000 tonnes.

As the price of cobalt increased towards the end of the 1970s, efforts were made to increase its recovery into the concentrate. A gold circuit was added in 1980 to treat gold ore, and in 1982 a 500,000 tonnes per annum Carbon-In-Pulp circuit began operating. This was later increased to 750,000 tpa and continued in operation until the St Ives Gold Plant was commissioned in September 1989.

### **The Environment**

Since the beginning of work at Kambalda, environmental care had been a high priority. The standards were set by both L C (later Sir Laurence) Brodie-Hall, who was a keen gardener, and by the first Resident Manager, J B (John) Oliver, who took a particular interest in town planning and wanted to preserve as much of the natural vegetation as possible.

John decreed instantaneous dismissal as the penalty for removing trees and shrubs unnecessarily; his personal permission was often required. Brodie-Hall had arranged for a landscape architect, Jean Verschuer (later to become Lady Brodie-Hall), to provide advice regarding landscaping and the maintenance of native gardens which required minimal water. The resulting practical and attractive township attracted comment from many visitors and outside experts.

Water conservation was also an important issue. Bert Barnes, a very capable and inventive civil engineer, devised a process for recovering from sewerage effluent water of acceptable quality to water the Oval, built dams to collect storm water, and established a system of water recovery from the tailings for re-use in the mill.

Restoration of disturbed sites and rehabilitation of overburden and barren rock storages was a high priority. The latter were graded to attractive shape and revegetated with native species planted by young people from local organisations. Another focus under the Environmental Manager, C (Colin) Woolard, was waste minimisation.

## The Community

In March 1975 there were some 5750 people living in over 1100 houses and in single accommodation in Kambalda and Kambalda West. It was a vital and active younger-than-average community. The Company encouraged leisure, recreational, and community activities and helped by providing land, buildings, and services.

The activities and clubs and associations included CWA, Basketball, Parents and Citizens, Volunteer Fire Brigade, St John Ambulance, Soccer, Football, Guides and Brownies, Scouts and Cubs, Badminton, Cricket, Golf, Tennis, Youth, Lions, Land Yacht sailing, Bowling, Rugby, Pre-School, Swimming, Gun, Cycling, Aeromodellers, Netball, Lapidary, Masonic Lodge, Penguin, Pistol, Pottery, Repertory, Squash, and various church and political organisations.

Of these, land yachting which started in 1970 with some 30 yachts participating was probably the most unusual. The 520 sq km Lake Lefroy provided the perfect venue of a level and smooth salt surface. There is evidence of land yachts having been on the lake before 1900. Australian Land Sailing Championships were held on Lake Lefroy each year from 1983 to 1986. The lake also provided the venue for the Goldfields Gliding Club, formed in 1972.

Primary schools were established at Kambalda and Kambalda West in 1968 and 1969 respectively. Secondary school students travelled to Kalgoorlie until the Kambalda West High School was opened in 1974.

Apprentice training facilities were established in mid-1970s, a new Apprentice Training Centre was opened at the Victor site in 1987, and a Staff Training Centre at the Fisher site in 1990.

In 1974 Kambalda won the Western Australian section of the *Keep Australia Beautiful Tidy Town* competition.

The Kambalda community was one of the most diverse and cosmopolitan in Australia.

## Management

### Resident Managers 1966 - 1974

J B (John) Oliver	1966 - 1971
K F (Keith) Parry	1971 - 1973

### Resident Managers 1974 - 1998

J E L (Jack) Manners	1973 - 1974
B J (Brian) Hurley	1974 - 1977
B S (Barry) Patterson	1977 - 1980
A J (Tony) Palmer	1980 - 1984
B J (Barry) McCahon	1984 - 1985
P J (Phil) Lockyer	1985 - 1990
T M (Tim) Moran	1990 - 1992
W B (Bill) Anderson	1992 - 1994
A J (Tony) O'Neill	1994 - 1996
W (Wojciech) Ozga (Acting)	1996 - 1997
P (Peter) Armstrong	1997

## Resident Managers 1974 – 1998 contd.

M F (Mark) Milazzo	1997 - 1998
B A (Brian) Kennedy (Acting)	1998
H J L (Hamish) Bohannon	1998

## General Managers

H J L (Hamish) Bohannon	1998 - 1999
L (Luke) Tonkin	1999 -

**Subsequent Events**

The Long/Victor Mine was closed in June 1999.

The demand for nickel rose later in 1999, as did the price, and WMC reduced its nickel stocks. In February 2000 Hugh Morgan announced the company was reviewing the future of its KNO operations. The Blair Mine was sold in January and others may follow.

In November WMC announced the sale of nickel properties in the Kambalda region for \$38 million to a consortium consisting of Mincor Resources (76%), Clough Mining (12%) and Donegal Resources (12%). It included the moth-balled Mariners and Blair mines and the as yet unworked Miitel Mine. The sale was conditional upon the ore being sold to WMC for treatment in its Kambalda Concentrator. Production commenced in March 2001. The same group bought the Wannaway Mine for \$10 million.

Two more mining properties, Otter/Juan and Coronet were taken over by GBF Underground contractors in May 2001, to be worked on a 10 year lease/treatment agreement. Production resumed in July. Titan Resources acquired the North Widgiemooltha block for \$515,000.

In 2002 WMC the Long-Victor nickel mining complex was sold to Independence Gold for \$15 million.

In the last week of March 2002 WMC ceased nickel mining at Kambalda. The concentrator continued to treat purchased ore. While not expressly stated, the implication was that smaller, more focussed owners could produce the ore at a lower cost than WMC, even allowing for their profit margin. All the purchasers were doing very well in 2003 and there was media criticism that WMC had sold out too cheaply. There was also some internal criticism that the decision for industrial relations reasons in 1996 to use contractors underground had increased WMC's costs which, in turn, had led to the sale of the properties (see Part C, *CORPORATE ACTIVITIES*, Volume Six, *Employee Relations*).

WMC had produced 1,047,570 tonnes of nickel from more than 40 million tonnes of ore up to the end of 2001 (see Book Three, *Appendix V*). At March 2002 prices this was worth \$A13 billion.





## ***MAKING METAL AT KWINANA***

Considerations of further processing of Kambalda nickel concentrate commenced as soon as a decision to go into production had been made in April 1966. It was considered important to become a producer of nickel metal, giving direct access to metal users while conditions in the world markets remained favourable. D P (Doug) McIntyre in *WMC Nickel History - The Commercial Aspects* describes the early events in some detail.

### **The Investigations**

Discussions between W M (Bill) Morgan, Bechtel Corporation, and a Toronto based metallurgical consultant with extensive nickel experience, J H (Jan) Reimers, were held in Canada in September 1966. Bechtel was commissioned to carry out a preliminary feasibility study and A D M (David) Green, an Australian metallurgist, was employed in January 1967 to pursue concurrent investigations on behalf of WMC.

In April 1967 David Green recommended a nickel smelter, followed by either the Sherritt refining process or electrowinning. The Bechtel report in August 1967 concluded that the Sherritt concentrate leaching process promised the best economic return. A Sherritt refinery was also attractive because it enabled Western Mining to become a metal producer in the shortest possible time.

While installing a metallurgical complex near Kalgoorlie had been contemplated, there were good arguments for locating a Sherritt type refinery at Kwinana: availability of various process materials, water and power, and established infrastructure. A refinery producing 15,000 tons per annum of nickel metal was considered an economic size.

### **The Sherritt Process**

The hydrometallurgical process developed by Sherritt Gordon Mines Ltd in the early 1950s involves leaching nickel concentrate in an ammonia solution under elevated temperature and pressure and precipitating nickel from the solution as a high grade powder, which could be pressed into briquettes and then sintered. Copper and cobalt are recovered as copper and mixed nickel cobalt sulphides, and sulphur is removed as ammonium sulphate, a saleable by-product. The recovery of precious metals is low, but the precious metals content of the Kambalda ore was minimal.

### **The Kwinana Refinery**

On 10 October 1967 a memorandum from Bill Morgan to senior staff advised that the second stage of the nickel development would be increasing Kambalda production from the initial 5000 tons per annum of nickel in concentrate to 20,000 tons per annum and establishing at Kwinana a 15,000 tpa Sherritt type refinery, the target date for the completion of both being January 1970. The estimated expenditure on the second stage expansion was \$50 million. The memorandum stressed that this target date was not to be achieved at all costs. While the initial development at Kambalda had been deliberately undertaken on a crash basis ignoring normal planning and cost control procedures, these would be reinstated in Stage Two. It also indicated that during further expansion in Stage Three a smelter could be built in addition to the refinery.

The land for the refinery was made available by the WA Government.

A licensing and technical assistance agreement with Sherritt Gordon during design, construction, and

commissioning and an agreement in principle with Bechtel for the design and construction of the plant were signed in October. David Green was appointed the WMC Liaison Officer with Sherritt and Bechtel for the design in Montreal, Canada, and A J (Allen) Gittos, a metallurgist with alumina refining experience at Gladstone, was recruited as Refinery Manager-elect. L C (later Sir Laurence) Brodie-Hall negotiated an agreement with the Western Australian Government covering the developments at Kambalda and Kwinana, which was signed on 19 January 1968.

Several WMC employees were sent to Sherritt's Fort Saskatchewan refinery for training and Sherritt staff came to Kwinana to assist with commissioning and operator training.

The feed for the refinery was Kambalda concentrate containing 12% Ni. First metal was produced in May 1970. The first shipment of nickel briquettes was despatched to Commonwealth Steel Company, a BHP subsidiary, in Newcastle on 29 May 1970.

The refinery cost \$36.4 million which was a substantial overrun on the initial estimate. The agreement with Bechtel was badly defined and on completion there was very considerable argument about their responsibility regarding the overrun. Bill Morgan delegated to me the task of negotiating with Bechtel and I spent many hours in discussing the issues with them. In the end they agreed to forego the additional fee above their fixed fee, from memory about \$250,000. Whether they had added a comparable amount in the beginning in expectation of having to yield something later is a question which will never be resolved.

Sherritt had made their own estimates of the capital and operating costs before the project commenced. Their estimates were generally more optimistic than Bechtel's. In particular, their estimate of the manning of the refinery was never even approached in the actual operation.

Instead of a lavish opening ceremony, such as was held at Kambalda, the Company endowed a Chair of Environmental Studies at Murdoch University to mark the official opening on 15 September 1970. (I was instrumental in substituting a useful contribution to the community for what I suggested was useless expenditure on an expensive one-day binge. There was considerable resistance to this and, to convince everyone that I was serious, I did not myself attend the modest ceremony at the refinery. Regrettably, this was a one-time occasion; it has not been done again by WMC since then. Politicians and, I suspect, company executives are too fond of an opportunity for publicity.)

## **Initial Operations**

It took an anxious year or so to overcome teething problems, establish a satisfactory management team, and for the process to settle down. Sherritt were helpful in seconding staff for the commissioning, but we soon realised that we ourselves, rather than consultants and advisers, had to make it all work.

In the second half of 1970 and early 1971 I visited the refinery frequently to review progress and to encourage Allen Gittos and the team. Among other things, to establish a reputation in the market it was important to meet our contracted deliveries for nickel metal. It must have been with a sense of relief that I noted in a statement on nickel operations policy on 22 March 1971 that 'Kwinana Refinery is now producing nickel briquettes at a rate of 15,600 tons per annum', and that we believed the output could be expanded.

The plant was converted from oil to natural gas when this became available and the capacity was increased to 20,000 tons per annum, both in 1972.

## Gradual Expansion

In 1974-75 an ammonia plant was added, for reasons described in Volume Four, *THE FERTILE ROCK*, under *Fertilizer At Kwinana*. By the end of 1975 some additions to plant, improvements in operating practices, and partially substituting nickel matte from the Kalgoorlie Smelter for concentrate further increased the output. The changeover from concentrate to matte occurred gradually over the following 10 years. A secondhand ammonia plant was erected in 1976.

Partial conversion to matte feed and additions and improvements to the plant and operating practices increased the refinery's capacity to 30,000 tonnes per annum by mid-1980, although for various reasons the output peaked at 28,630 tonnes in 1983 and did not exceed 30,000 tonnes until 1991-92.

In 1986 the manning of the refinery was completely revised and the workforce reduced.

By 1986 all feed to the refinery was matte. In 1987 a CIP gold recovery plant was installed to treat the refinery residues, but the gold content of the feed declined and the plant ceased operations in 1992.

## Further Expansion and Upgrading

As a part of the expansion and upgrading of the WMC Nickel Operations, the Company announced in September 1991 a \$50 million upgrade of the Kwinana Nickel Refinery (KNR), to achieve a capacity of 42,000 tonnes of nickel metal per annum by mid-1995.

Following the completion of expansion to 42,000 tonnes per annum capacity in 1994, KNR's production output grew steadily to approximately 47,000 tpa in 1996. In 1997, a continuous production improvement program commenced which resulted in an output of over 60,000 tonnes per annum by 2000.

During this period, KNR's improved production plan combined process improvement, plant uptime and increased plant capability. Fundamental changes included increasing process intensity, changing the leach chemistry and optimisation of the briquetting machines. Some minor capital projects and upgrades were completed together with the implementation of three small de-bottlenecking projects. The improvement was delivered at a total cost of about \$10 million.

## Environmental Issues

Two of the chemicals used in the refining process, ammonia and  $\text{H}_2\text{S}$ , have a pungent smell and there were frequent complaints while the Kwinana Beach townsite adjacent to the refinery was occupied. Over a period of years the State Government resumed the Kwinana Beach townsite and nearly all the houses were eventually removed.

Another problem occurred with a pig farmer close to the residue dam at Baldivis, some 6 km from the refinery. The farmer regularly complained of the ammonia smell and on one occasion threatened a member of WMC staff with a shotgun. The farmer happily agreed to sell the farm to WMC. The Administration Manager at the Refinery, W B (Bruce) Gardner, who was handling the purchase, recalls that, when handed the cheque one lunchtime the farmer and his wife just said goodbye, got in their car and drove off. Bruce was left with 400 pigs to feed at 4 pm! He managed to make arrangements, and in due course the pigs were sold.

A more serious environmental problem occurred through leakage of the welded plastic liner of the residue dam, allowing traces of ammonium sulphate and nickel to leak into the groundwater and

threatening vegetation around nearby Lake Cooloongup. The contamination occurred over an area of 350 ha, including a zone of more concentrated contamination of 75 ha.

A much smaller leakproof pond was constructed to temporarily store plant effluents awaiting retreatment.

The problem was arrested and gradually reduced by recovering contaminated ground water through bores and treating it in a reverse osmosis plant to recover the dissolved salts. The long term solution was to remove all the accumulated residues from the dam and return these to Kambalda for underground disposal, as were the tailings from current operations. Plans to rehabilitate and revegetate the Baldy area were approved by the Environment Protection Agency and work commenced in 1990.

In 2002 it was estimated that the remediation work at Baldy would be completed in 2008.

### Comment

It is doubtful whether the Kwinana Refinery has returned an attractive financial return on the investment compared with the production of concentrate and matte. It has, however, met the most important requirement of making the marketing of WMC nickel independent from its competitors and WMC a real force in the world nickel market. Also, in market downturns WMC was able to sell metal and obtain the critical cash flow, while it may not have been possible to sell non-refined material at all beyond the Sumitomo Metal Mining contract.

It also enabled WMC to approach other complex metallurgical projects, such as at Olympic Dam, with confidence in the Company's ability to construct, operate, and manage such plants. The entry into fertilizer manufacture was also aided by the knowledge that the processes there were mostly what the Company had successfully handled elsewhere.

### Staff

Resident Managers at Kwinana Nickel Refinery were:

	A J Gittos	(Allen)	11.12.67	-	26.3.74	
	J K Copping	(John)	27.03.74	-	8.1.80	
	D J Head	(Don)	9.1.80	-	14.2.85	
	C W Hastie	(Charlie)	15.2.85	-	1.7.87	
	D R T Hall	(Don)	1.7.87	-	1.3.91	
	P R Hunt	(Phil)	1.3.91	-	10.4.94	
	A K Dundas	(Alan)	9.5.94	-	30.09.96	
	S French	(Seamus)	17.02.97	-	1.11.98	.. then title
(Gen Mngr)	S French	"	1.11.98	-	2.05.2001	change..
" "	R Smith	(Rowena)	11.06.01	-		

### Subsequent Events

In 2001 the refinery capacity was increased to 67,000 tonnes per annum and it operated at that rate in 2002. Output of 60,532 tonnes of nickel metal was a record to that date.

## ***THE FIERY FURNACE AT KALGOORLIE***

### **Background**

Had the decision regarding refining been to produce electrolytic nickel, a smelter would have been necessary from the beginning. When it was decided in 1967 to build a Sherritt type ammonia leach refinery to produce metal direct from concentrate, a smelter may have appeared not necessary. The longer term plan, however, included a smelter as explained in W M Morgan's memo to senior staff of 10 October 1967. A smelter was seen as providing maximum flexibility in the marketing of nickel products - concentrate, matte, and metal. There were also potential advantages in the longer term in feeding the refinery with matte instead of concentrate, partly due to reduced freight costs.

### **Investigations**

Early work on alternative smelting processes was done by the Chief Metallurgist, C M (Colin) Kleemann and a group headed by A D M (David) Green. After acting as liaison officer with the refinery design team in Montreal, David was appointed Manager of the smelter project in October 1969. He was assisted by J (John) Zubrinich.

There was no longer the overwhelming urgency which applied to getting into production at Kambalda and establishing the refinery. Considerations regarding a smelter were much more detailed and methodical.

All methods of smelting were considered - blast furnace, reverberatory furnace, flash smelting, the WORCRA process, and the Momoda process. By 1970 a decision had been made to adopt flash smelting, developed by Outokumpu Oy of Finland.

This method uses the exothermic oxidation of sulphur and iron in the concentrates to supply most of the heat for smelting and is almost autogenous. It has environmental advantages in that a very high percentage of the sulphur can be recovered as sulphuric acid in a continuous process and that the production of CO<sub>2</sub> is minimal. While there were four copper flash smelters in the world in 1969 and several more under construction, the WMC smelter was the first application of this technology to nickel smelting outside Finland, where the first nickel flash smelter in the world had begun operations at Harjavalta in 1959.

After considering Kambalda, Kwinana, Esperance, and Port Pirie as possible alternative locations, Kalgoorlie was chosen because it was central to the known and likely nickel deposits in the Eastern Goldfields and there was existing infrastructure and a ready labour force available from the then declining gold mining industry. There was no *Environmental Impact Statement* required.

Because WMC did not have enough feed for the smelter from Kambalda, it was essential for the smelter's economics to acquire feed from other sources in the district. These efforts are described under *Kambalda: Where It Started* (re Nepean Mine), *Great Boulder* and *The Windarra Venture*.

The WA Government made land available south of Kalgoorlie. Western Mining agreed to contribute to the cost of standardising the railway from Kalgoorlie to Esperance and building a spur line into Kambalda. In return, the Company received a special freight rate for the cartage of nickel ore, concentrates, and matte on the Western Australian Government Railways.

## Construction and Commissioning

The announcement on 4 November 1970 said that the cost of the smelter would be \$30 million and that it would take two years to construct 'after the Agreement has been ratified by the Western Australian Parliament'.

In contrast to the refinery project where Bechtel was appointed to carry out the design, procurement, and construction, the smelter project was carried out by Western Mining's Engineering Department headed by J C (John) Hill, Chief Engineer. S A (Stan) Evers was appointed Project Engineer responsible for it. Stan had come to WMC from Mt Isa and was well experienced in smelter engineering. C J D (Ned) Williams, the Smelter Superintendent with the Electrolytic Refining and Smelting Co (ER&S) at Pt Kembla, who had been a consultant to Western Mining on the smelter project, was appointed Resident Manager-elect on 1 January 1971.

Ned's appointment was sensitive because it could be seen as 'poaching' after ER&S had generously agreed that he could consult for us. It fell to me to explain the circumstances to Sir Wilfred Brookes, who was both the Chairman of ER&S and a director of Western Mining. To his credit, Wilfred said that it was a step up for Ned, and that he would not stand in his way.

Compared with the refinery project we had an experienced Manager, although all other senior smelter staff still had to be recruited or trained.

Outokumpu provided detailed drawings and specifications for their typical flash smelter and slag cleaning furnace and cooperated with WMC in the design of ancillary equipment and buildings. M D (Michael) Softley of WMC went to Finland for several months to assist in the detailed design.

Site works began early in 1971 under the supervision of R (Roy) Sutton, WMC's Construction Superintendent. Early in December 1972 the first concentrate was fed into the flash furnace. A modest ceremony took place on 5 December when L C Brodie-Hall set the plant in operation.

The date had been set when the project was first approved. Subsequently I had made a bet with Ned Williams that it could not be achieved. It was a bet I was very happy to lose! It was a remarkable achievement to complete the construction in that time, even if the first concentrate run was nominal.

The initial capacity of the smelter was 200,000 tons per annum of nickel concentrates which, at a grade of 10% Ni, produced about 29,000 tons of 70% granulated nickel matte. The cost was less than \$20 million as against the announced cost of \$30 million.

The official opening of the smelter was performed by the Prime Minister, the Hon E G Whitlam, on 7 April 1973. Compared with the refinery opening, this was back to being a formal affair.

## Initial Operation

The Kalgoorlie Nickel Smelter being only the second nickel flash smelter in the world, there was not a great deal of outside experience to call upon.

The original circuit consisted of a traditional flash furnace with one separate slag cleaning furnace. Low grade matte was converted to low iron matte in two Pierce-Smith converters. Energy from waste furnace gases was recovered in an Ahlstrom boiler and superheated for power generation.

There were the usual commissioning challenges of technical problems, modifications to equipment,

operator training, and improvements to operating procedures. By June 1973 the smelter was operating at two thirds design capacity.

The initial production was inhibited by the high levels of magnesium oxide (MgO) in the concentrate, which required higher operating temperatures. Ned Williams, in his recollections held in *WMC Group Historical Information* files, says 'the temperature requirement that was necessary in our initial operation was much higher than Outokumpu anticipated and as a result the design, selection of materials and method of construction were inadequate. This really caused some serious problems in the beginning which we had to correct'.

The high temperature of operation resulted in erosion of refractory lining in the curtain water cooled reaction shaft and damage to the shaft transition at the settler. In addition, the high magnesia slags resulted in severe bath accretions in the settler.

The response was to increase the pyrrhotite recovery at the concentrators. Fe/MgO ratios in concentrate were increased whilst nickel grades were reduced. This was completed by July 1973.

In September 1973 the flash furnace required partial rebricking. The first period between rebrickings - known as 'campaigns' - had therefore been only 10 months and the concentrate smelted a mere 41,000 tonnes.

From then on the performance continued to improve, the sixth campaign being particularly long:

Campaign No	Duration Month	Concentrate Smelted Tonnes
1	10	41,005
2	12	144,761
3	19	441,005
4	27	670,206
5	37	909,002
6	143	5,178,575
7	42	2,085,557
8	20	1,191,575

## Expansion and Improvements

The commissioning in September 1974 of a secondhand oxygen plant, bought from the Gas & Fuel Corporation in Victoria, enriched furnace air to 32% oxygen and increased capacity to 320,000 tonnes of concentrate per annum. This coincided with the availability of concentrate from the Windarra Nickel Project.

A second electric slag cleaning furnace and a third converter were installed in the following year. Continuous slag cleaning commenced about this time, with an improvement in the recovery of nickel from the slag. In 1977, low grade siliceous nickel laterites were introduced as flux.

## The Second Flash Furnace

The original flash furnace, which had been pushed to its limit, was decommissioned in October 1978 and a completely new and larger furnace was commissioned in November. This incorporated flash smelting and slag cleaning in the same furnace, an innovation introduced by Ned Williams after



extensive experimenting, which worked extremely well. At the time the No 1 furnace was shut down the hearth had lifted. In addition the traditional weak areas of the furnace had again failed.

The new furnace had a capacity of 450,000 tonnes per annum concentrate without oxygen enrichment and 550,000 tonnes with oxygen. The higher capacity allowed for the toll treatment of concentrates from Agnew Mining Co, beginning in 1979.

The old electric furnace was used from time to time to smelt converter slag mixed with lateritic ore, together with nickel concentrate, to improve cobalt recovery when cobalt price was high.

In 1980 a laterite crushing and cleaning plant was installed to provide flux for the new furnace.

Improved concentrate burners were installed in 1981 and oxygen enrichment to the converters enhanced overall performance. In October 1981 the new furnace completed its first campaign (three years). On resuming operations in December, powdered coal was added to the flux.

About 1983-84 laterite flux was replaced with a mixture of silica sand and powdered coal, which was more energy efficient. Converter slag was now returned to the flash furnace and the electric slag cleaning furnace was decommissioned.

A coal fired air pre-heater installed in 1985 increased the proportion of coal used at the smelter to about 60% of all added energy, reducing the consumption of fuel oil.

## **Research and Development**

Research carried out at the smelter or sponsored in research establishments such as Australian Minerals Industry Research Association, Western Australian Mining and Petroleum Research Institute, G K Williams Laboratory of Extractive Metallurgy at the University of Melbourne and Ausmelt Pty Ltd over the years included plasma-arc smelting, methods of handling hot metals, operation of converters, effects of mineral composition on combustion in flash reactors, injection of precipitator dust direct into the furnace bath using submerged injection technology, etc.

A number of engineering and operating innovations were made, including replacement of copper furnace cooling elements from the outside while the furnace continued in operation.

Efficiencies and costs and the recovery of nickel in the smelting process were steadily improved.

## **Further Operations**

The next campaign after the furnace re-bricking in December 1981 lasted 11 years and 9 months, until September 1993. This was believed to be a world record performance for a flash smelter. The length of the campaign was aided by establishing a range of on-line maintenance techniques and the re-design of critical areas of the furnace, particularly the reaction shaft transition.

In 1986 Agnew Mining Company ceased operations and annual throughput fell to as little as 360,000 tonnes per annum.

Following WMC's acquisition of Agnew Mining Co in 1988-89, production at Agnew (now called Leinster) was resumed in May 1989 and increased over the next few years.

## Further Expansion and Upgrading

As a part of the expansion and upgrading of WMC Nickel Operations, it was announced in September 1991 that the smelter capacity would be increased to 750,000 tonnes per annum of concentrate feed, sufficient to produce 65,000 tonnes per annum contained nickel, by adding a new oxygen plant and a modern flash furnace control system.

In September 1993 the flash furnace was completely rebuilt, modifications made, and ancillary equipment installed, including a 525 tonnes per day oxygen plant. The rebuilt furnace with a capacity of 80,000 tonnes nickel in matte per annum was officially re-opened by the Premier of Western Australia, the Hon Richard Court, on 15 December 1993 at a modest ceremony attended by some WMC directors, staff, and guests.

The oxygen plant, a new hot slag disposal plant and improvements to the matte tapping floor were in operation by 1994. The lowering of allowable ground level concentrations of sulphur dioxide in nearby residential areas created added problems and a two year exemption was granted to enable the Company to re-examine the practicability of building an acid plant. Even so the amount of down time to comply with the environmental limits caused increasing losses of production.

Concentrate from the Mt Keith deposit, acquired in 1992, was introduced in September 1994. Following the introduction of Leinster and subsequently Mt Keith concentrate the magnesia levels in concentrate, and ultimately furnace slag, were observed to progressively increase.

In March 1995 plans were announced for the construction of an acid plant to meet Environmental Protection Authority (EPA) limits (see below).

By June 1996 all smelter employees were on workplace agreements and the smelter shift roster had changed to a 21 hour shift operation. In April 1997 an explosion in the flash furnace caused extensive damage to the roof of the furnace, disrupting production for 41 days.

Annual output passed 100,000 tonnes for 1998 but early in 1999 a serious furnace leak caused a cessation of production bringing the 8th campaign to an end. The furnace was relined and brought back on line in 63 days.

In summary, the capacity of the smelter has changed during its history as follows:

Timing	Change	Capacity tpa Ni in Matte
December 1972	Smelter installation	30,000
1974/75	No 1 circuit upgrade	45,000
1978	Integrated flash furnace	55,000
1993	No 2 circuit upgrade	80,000
1996/99	Smelter debottlenecking	110,000

## The Acid Plant

Since the smelter commenced operations in 1972, the sulphur dioxide gas from the flash furnace and the converters had been discharged to the atmosphere through a 501 ft high stack. In the dry Kalgoorlie climate this did not affect the surrounding vegetation noticeably, and may have actually improved it because the Goldfields soils are generally sulphur deficient.

With increasing throughput, under unfavourable atmospheric conditions the allowable sulphur dioxide concentration began at times to be exceeded in the built-up areas of K algoorlie-Boulder, K urrawang, and Coolgardie. This required the smelter to cease feeding concentrates while the unfavourable conditions prevailed, interrupting production and the resulting cooling and heating affecting brickwork. The permissible limits were lowered in January 1994, and in 1994-95 the feeding of the furnace was disrupted for 856 hours.

In March 1995 WMC announced that it would install a sulphuric acid plant at a cost of \$145 million. The plant began operations in July 1996, producing approximately 500,000 tonnes of acid per annum and reducing SO<sub>2</sub> emissions by 90%. It cost \$168 million.

The following is an extract from a review of the smelter operation by the operating staff:

### **Process Issues**

The original choice of smelting technology and the selection of flash smelting was strongly influenced by the cost of energy in Western Australia. Utilising the energy value of the concentrate combined with waste heat recovery proved to be a strong argument, although flash smelting of nickel concentrates was only practiced at the Harjavalta Smelter at the time.

The principal process issue to be addressed by flash smelting over the 27 years of operation at KNS has been the magnesia content of concentrate. The impact of magnesia in concentrate on smelting performance was originally under-estimated and the main reason that concentrate throughput was constrained.

The performance of the flash furnace during the first three campaigns was strongly influenced by the need to operate at higher than design slag temperatures. Actions taken during the period to address the magnesia issue included:

- increase in the operating temperature of the flash furnace;
- slag modification through addition of lime;
- high temperature flash smelting;
- acid leaching of Mt Keith concentrate;
- options for addition of iron to the furnace.

High levels of magnesia are now, and will continue to be a feature of furnace operation. Slag modification with lime addition has become standard operating procedure.'

### **Management**

Resident Managers:

C J D (Ned) Williams	1.1.71	-	6.8.79
G G (George) Botica	6.8.79	-	20.8.80
C W (Charlie) Hastie	20.8.80	-	15.2.85
D R T (Don) Hall	15.2.85	-	30.6.87
R G (Ross) Muller	1.7.87	-	1.9.92
R A (Ron) Campain (Acting)	1.9.92	-	1.2.93
D W (David) Rich	1.2.93	-	31.10.96
S (Sandeep) Biswas	24.10.96	-	1.11.98

General Managers:

S (Sandeep) Biswas	1.11.98	-	18.3.00
J P (Jon) Taylor (Acting)	18.3.00	-	7.6.00
S J (Steve) Wickham	7.6.00	-	

## Comment

The smelter achieved its aims of introducing flexibility into the nickel operations and permitting the conversion of the Kwinana Refinery to the more economical matte feed. It also enabled WMC to toll smelt concentrates from other sources in the Goldfields, thus increasing the scale and improving the economics of the smelter.

In addition to being an economic success, the WMC Smelter operators have also substantially improved the technology and the operating procedures. The original developers of the technology, Outokumpu, have been frequent visitors to the Kalgoorlie Nickel Smelter to be updated on the latest developments.

A further benefit became evident when personnel from the Kalgoorlie Nickel Smelter advised and assisted with the introduction of copper flash smelting at Olympic Dam.

## Subsequent Events

In 2000 the smelter produced a record 103,109 tonnes of nickel in matte.

Since the end of 2000, nickel mining operations at Kambalda were gradually sold to other parties, until mining by WMC ceased completely in March 2002. The Kambalda treatment plant continued operating on purchased ore, producing concentrate for the smelter. The treatment plant and remaining activities at Kambalda became managed from the Smelter.



## ***HELPING THE CHINESE***

WMC's endeavours, beginning in 1973, to become established as a supplier of nickel to China were intermixed with an interest in gold mining in China. The events described in *THE GOLDEN THREAD, The China Episode*, are reproduced here in full.

### **Background**

Before the 1970s foreign companies were banned from participating in minerals exploration and production on China mainland. Petroleum companies had been participating in offshore exploration in South China Sea for some time, but were also banned from the mainland.

On 26 July 1973 I attended a dinner in honour of the visiting Chinese Minister of Foreign Trade leading a trade mission to Australia, hosted by the Australian Minister for Trade and Industry, Dr J F Cairns. Speaking through an interpreter, I made contact with the Deputy Director of China National Metals and Minerals Import and Export Corporation Mr Chan Chi-Chuan and told him of our interest in supplying China with nickel and of our plans to exhibit at the Kwangchow Fair towards the end of the year. Mr Chan said 'to do business we have to get to know each other better first' and suggested we should write to Minmetals Corporation in Beijing.

On 24 August I wrote to Dr Cairns, asking him to support our application for WMC representatives to visit China and to commend WMC as a substantial and reliable corporation. On 12 September I wrote officially to Minmetals, sending a copy to Mr Chan.

Dr Cairns did support us, we were asked to submit a quotation to Minmetals and received an order for 600 tonnes of nickel for delivery in December 1973. Our nickel and ammonium sulphate sales people did subsequently visit China, and we had an exhibit at the Beijing Trade Fair in 1974. There were numerous contacts, but the first order was not followed by others.

On 3 February 1978 I met the Chinese Ambassador Mr Chou. He had visited the WMC nickel refinery at Kwinana and said it was most impressive.

On 23 October 1978 a Chinese Metallurgical Mission, some 10 people led by Vice Minister Hsu Chih, visited WMC Melbourne Office. We had an hour's discussion, following which I hosted a lunch at Melbourne Club to which we had also invited Alcoa of Australia representatives. The members of the Club to their credit did not blink an eyelid when some dozen Mao-suited Chinese marched into this bastion of capitalism!

During the visit to WMC I told the Vice Minister that WMC would be interested in applying our long experience and established technology in gold mining to participating in gold mining and exploration in China. A part of the reason for expressing interest in gold was that we regarded China as a large and growing market for nickel and thought that establishing a relationship in gold would assist in becoming a regular supplier of nickel. Mr Hsu expressed particular interest in alluvial gold dredging and we undertook to send him information, which was done through the Chinese Embassy in December.

While I was describing our background and operations the Vice Minister asked how many people worked for WMC. I gave the number (from memory, of the order of 6000) and politely enquired how many employees there were in his Ministry. 'I am not sure', was the reply, 'but I think about 4 million!'

## WMC Mission To China

In January 1979 WMC received an oral invitation by the Gold Corporation, a part of China's Ministry of Metallurgy, to send a technical mission to China, with particular emphasis on gold exploration and production. Subsequently I was visited by the Chinese Ambassador Mr Lin Ping, who confirmed their interest in developing technical ties in addition to trade relationships, and reiterated their particular interest in gold. In a letter to Roy Woodall on 16 February 1979 I said, among other things:

'any involvement ..... in providing technical assistance in gold activities would also be with the ultimate aim of establishing trading relations in nickel,

by co-operating with the Chinese in the technological area we would hope to establish a presence and reputation which would help in becoming a regular supplier (of nickel),

the provision of technological assistance beyond the exchange of general information would have to be on a cost plus fee basis'.

We submitted a programme on 2 March 1979 which included detailed presentations on all aspects of gold production. To show our expertise, it was decided to prepare a comprehensive manual covering gold exploration, mining, and metallurgy. Fifty copies of a copyrighted two-volume 400 page manual were produced; thirty eight of these were left in China. Copies were placed in the National Library.

The delegation consisted of :

R Woodall	Director of Exploration (Leader)
N R Hooker	General Manager Gold Division
J A Haycraft	Consulting Geologist - Projects Division
D J Esdale	Chief Minerals Geophysicist
O A Bavington	Manager - Joint Venture Services

The delegation spent 22 days in China in March 1980, in roughly three parts:

- Visit to Jin Chang gold prospect, Yunnan Province
- Visit to Ertai gold prospect, Shaanxi Province
- Seminars and technical 'exchange' in Beijing.

Owen Bavington, in Report K /2497, summarises the outcome as follows:

The visit was unquestionably well received by the Chinese. Considerable goodwill was generated with a large number of middle and upper ranking technical people in the Gold Corporation .....

It is difficult to judge the exact amount of benefit the Chinese received from our visit. Many of their technical questions were answered, but many of these were only to clarify the seminar material. It was unfortunate that the manuals had not been translated before our arrival as this would have increased their benefit.

We conclude that the visit was of little immediate benefit to WMC but a valuable first step in our contact with and understanding of the Chinese scene.'

The group recommended that WMC should host a visit by a Chinese delegation to Australia and that an early decision should be made regarding whether a WMC delegation would like to visit other locations in China (say May-June 1981). Before another visit efforts should be made to persuade the Chinese to discuss their exploration methods and results, as the so-called 'exchange' during the 1980 visit had been 'essentially one-sided'.

The total cost of the mission, including the preparation of the manuals and all expenses, including salaries, was estimated at \$50,000 - \$60,000.

### **Chinese Mission to WMC**

The Chinese accepted the invitation to send a delegation to visit WMC operations in Australia, which took place in October 1980. They called in Melbourne Office on 10 October and I hosted a dinner for them that night. Ostensibly a delegation from the Gold Bureau, their interest while in Western Australia was, however, focussed on nickel and they particularly went to great lengths to obtain detailed information on our nickel smelter and refinery.

### **Consulting In Nickel Smelting**

It transpired that the China Non Ferrous Metals Import and Export Corporation (CNIEC) had a nickel operation at Jinchuan in Gansu Province in northern China. The Yongchang nickel mine had been discovered in 1958. It consisted of an underground mining operation in very bad ground and a smelter and refinery which they had built using a Canadian textbook *The Winning of Nickel* as their source of technical information! Construction had begun in 1959 and the first electrolytic nickel was produced in 1964. An expansion programme included the construction of a flash smelter. Being very impressed with our Kalgoorlie Nickel Smelter, they wanted WMC to help them design and commission the smelter.

We pointed out to them that we had obtained the know-how for the flash smelting process from Outokumpu and could not do what they wanted without Outokumpu's permission. We also pointed out that we were not consultants, and our relevant staff was fully occupied with running our nickel operations. We advised the Chinese to go to a professional engineering design and consulting firm.

The Chinese insisted that they were particularly impressed with our operation and wanted a smelter 'just like WMC's'.

We then told them that they would have to supply all the manpower for the actual design work, that we would only supervise and advise their team, that we would need all our costs covered and an additional fee of \$1 million, hoping that this would put them off. They accepted without a murmur!

Thus a team of some 20 Chinese draughtsmen and engineers worked in the Belmont Office for some months in 1985 and took their design back to China. There was a delay in constructing the smelter, but some years later we were asked to accept Chinese smelter staff for training in the Kalgoorlie Nickel Smelter and some of our smelter staff went to China to help with their commissioning. As far as we know, the smelter has been a success.

### **Gold Mining in China**

We persisted with our interest in gold mining in China and received an invitation to consider involvement in four existing gold mining operations. The proposal was that we would supply management to increase the output of these operations. We would not have an equity in the projects, but would receive half the net profit from the additional gold produced for an agreed number of years.



We were invited to inspect the operations before proceeding further.

Before doing so, we decided to ask for information which would enable us to assess the practicability of achieving additional production and profit. One of the questions asked was: 'What is the price of gold in China?'.

Our interest in the venture disappeared when we were told that the price of gold in China was a State secret! This was the end of this particular episode in China - WMC relationships.

### **Subsequent Events**

WMC did sell nickel to China from time to time, but our attempts at becoming involved in gold mining in China probably had nothing to do with this. In the government bureaucracy in China different matters are dealt with in different compartments and there is probably no spin-off from one compartment to another.

However, when WMC in 1994 again became interested in gold exploration in China (the ban on foreign companies participating in minerals exploration and production in China had been lifted) our people were told that the Mission to China in 1980 was well and favourably remembered. It had been helpful in establishing WMC's reputation in China as a substantial and enterprising minerals company.

Subsequent WMC gold exploration in China is described in Volume Four, *THE TREASURE HUNT, Beyond the Borders*.

A number of spot sales of nickel matte were made to Jinchuan Group Ltd in 2002.

In early 2003 it was announced that WMC Resources Ltd had secured a long term agreement with Jinchuan Group Ltd for the delivery of 30,000 tonnes nickel in matte over a number of years, beginning in 2003. In August this was extended by a further 90,000 tonnes, to be delivered between 2005 and 2010. China had become as important as Japan to WMC as a nickel customer. Thus the contacts made in 1973 finally produced 30 years later the outcome WMC was looking for. On Chinese time scales, this may well be fast progress. WMC's endeavours, beginning in 1973, to become established as a supplier of nickel to China were intermixed with an interest in gold mining in China.

## ***GREAT BOULDER***

### **Early History of Great Boulder**

Great Boulder Proprietary Gold Mines Limited was floated in London on 20 June 1894 to work leases acquired on the Golden Mile in Kalgoorlie, Western Australia. The Company enjoyed remarkable success during its early years and dividends never fell below 100% until 1918. In the first year of production the average grade was in excess of six ounces of gold per ton.

Production was maintained at a fairly constant rate until 1926 when, owing to exhaustion of the reserves on the main lode and increasing costs of production, large parts of the mine were let out on tribute. The rise in the price of gold in the early 1930s enabled the Company's operations to be re-established and gradually expanded. A new mill was built in 1933, a vigorous policy of underground development was implemented and Great Boulder continued as one of the main gold producers in Kalgoorlie.

Until 30 June 1963 the total amount of ore treated by the Great Boulder Group was 16,561,358 short tons which yielded 6,589,408 fine ounces of gold, a recovery of about 8 pennyweights per ton (or 13.6 grams per tonne). It was one of the most profitable gold mines on the Golden Mile, the second largest producer after Lake View & Star.

### **Transition to Nickel**

With the declining fortunes of gold mining and the limited area of ground available to it, Great Boulder ceased gold mining activities during 1969 and converted its Fimiston gold treatment plant to a nickel concentrator, specifically to treat nickel ore produced by a joint venture between Great Boulder and North Kalgoorlie (1912) Limited from mines at Scotia and Carr Boyd.

By 1970 the Scotia Mine, 72 km north-east of Kalgoorlie, was in production. The Carr Boyd Rocks Mine, 48 km north-east of Scotia, came into production a year or so later.

### **Arrangements With WMC**

On 7 May 1970 WMC entered into an agreement with Great Boulder Mines Gold Limited and North Kalgoorlie (1912) Limited whereby WMC would acquire all the nickel concentrates produced from the Scotia Mine until June 1972, with provision for extension to 1973. This was the first formal involvement between these partners and WMC.

WMC made available to Great Boulder some underground mining equipment to help achieve production by the scheduled dates.

Great Boulder also agreed to toll treat, at their Fimiston plant, WMC ore in excess of the capacity of the Kambalda Concentrator.

### **The Share Swap**

During the early part of 1970 Mr N E (Nils) Nilsen, Chairman of Great Boulder had engaged in discussions with W M (Bill) Morgan and myself in relation to a firm association between the two companies.

WMC was at the time endeavouring to establish a sound commercial basis for a nickel smelter which would complement the refinery at Kwinana and thus round off the development of WMC into an integrated nickel producer. The critical issue was to ensure sufficient feed for the smelter.

The minimum economic size of an Outokumpu type flash smelter was 200,000 tonnes of feed (about 20,000 tonnes of contained nickel) per annum. Expansion at Kambalda had just received a setback when the Durkin orebody was found to have a much lower production potential than expected from surface drilling. While Kambalda production was expected to build up over time, the immediately available feed for the smelter had to be supplemented by buying or custom smelting concentrates from other sources in the district.

The situation was complicated by other possible smelters in the district being under consideration, one by Great Boulder, and an alternative by Selection Trust. Also, AMAX was known to be interested in concentrate feed for its newly acquired nickel refinery at Port Nickel in Louisiana.

Great Boulder's 20% shareholder, Loloma Limited, received at that time a takeover offer and Great Boulder felt itself under pressure. The Chairman of Great Boulder, Nils Nilsen, approached me, and after considering various alternatives, including making a counterbid for Loloma, it was decided that both WMC's and Great Boulder's needs would be met by a share swap.

D P (Doug) McIntyre in his *WMC's Nickel History - The Commercial Aspects* records:

'A proposal was rapidly drafted by the available senior management over the weekend of July 18th and 19th, 1970 and cleared with the company's lawyers on Monday 20th. As WMC's Managing Director, Mr W M Morgan, was on a skiing holiday at Mt Buller, Messrs Parbo and McIntyre trekked to the snow on Tuesday 21st to seek his approval to the Great Boulder proposal. The Company's Chairman (Sir Lindesay Clark) was in Pittsburgh USA visiting Alcoa, together with Sir James Forrest, who was then WMC director and the Chairman of Alcoa of Australia. Their approval to proceed was obtained by telex, and a proposal for a share exchange put to Great Boulder on Friday 24th July.'

The initial proposal was for WMC to acquire about a 40% interest in Great Boulder, and Great Boulder a slightly over 5% interest in WMC. Following further discussion, it was agreed to increase this.

An agreement signed on 29 July 1970 was for an exchange of shares between the two companies, with Great Boulder being allocated 4,370,000 shares of 10¢ at a premium of \$10.60 per share credited as 'fully paid' in Western Mining Corporation Ltd. Westminer Investments Pty Ltd, a wholly owned subsidiary of Western Mining Corporation Ltd, applied for and was granted 10,750,000 shares of 10¢ each in the capital of Great Boulder at a premium of \$4.25 per share credited as being 'fully paid'. All shares ranked equally in all respects with all other issued capital of the companies. An announcement was made to the Stock Exchange and the media on 30 July 1970.

As a result of this transaction WMC held 43.3% of the issued capital of Great Boulder Gold Mines Limited and Great Boulder held 5.8% of the issued capital of WMC.

The proposed share swap was strongly opposed by the Austim Group (a part of Slater Walker Superannuation Pty Ltd). The matter was taken to the Victorian Supreme Court. The basis of Austim's objection went back to the takeover battle between Austim and North Kalgurli for Loloma Mining Corporation which owned nearly 20% of Great Boulder at the time. When the exchange was announced, North Kalgurli withdrew its bid for Loloma and Loloma's interest in Great Boulder fell from 20% to about 11%. A week later the Austin Group through Slater Walker launched legal proceedings

against the swapping parties. On 11 September Mr Justice Lush in the Victorian Supreme Court granted injunctions restraining Westminer Investments from transferring or otherwise dealing in Great Boulder shares. The action was discontinued on 19 November 1970.

In recognition of the change in the nature of its business an Extra-Ordinary General Meeting of Great Boulder Gold Mines was held on 13 May 1971 to amend its Articles of Association, increase its authorised capital and provide for the change of name of the company to Great Boulder Mines Limited.

### **The Great Boulder - North Kalgurli Battle**

During the latter part of 1970 there was a serious disagreement between North Kalgurli and Great Boulder over charges made by Great Boulder for the treatment of joint venture ore. The matter was still unresolved in September 1971 when E D J (Doug) Stewart, Western Mining's General Manager in WA, was appointed to the Great Boulder Board. The disagreement caused some embarrassment to Edgar Elvey who was Chairman of North Kalgurli as well as a director of Great Boulder.

The difficulties between Great Boulder and North Kalgurli (of which John Jones may then have been the Chairman), led to litigation between the two companies in the Warden's Court in Kalgoorlie in 1974. In March 1975 they reached agreement under which Great Boulder paid \$350,000 to North Kalgurli and each company withdrew its claims against the other including Great Boulder's counterclaim for unpaid operating expenses. The agreement also included a termination of all joint venture arrangements between the parties effective from 11 October 1974 and the transfer to Great Boulder of North Kalgurli's interests in those joint ventures. North Kalgurli retained its share of the revenues from the joint operations up to the date of that transaction. Thus from 11 October 1974 Great Boulder owned and controlled 100% of the Scotia and Carr Boyd Rocks mines.

### **WMC's Influence**

In 1972 Doug Stewart became Deputy Chairman of Great Boulder and J A (Jack) Mitchell, who had previously been General Manager of Great Boulder, was appointed Executive Director. In the following year H S (Harold) Amos was appointed an alternate to Doug Stewart. In January 1974 Doug McIntyre was appointed a Director of Great Boulder.

By 1972 the nickel market showed signs of a downturn. Great Boulder continued its enquiries into the construction of an Outokumpu type smelter but realised that it would only be practical if concentrates were available from other operations such as those of Selcast, CRA, BHP, Inco, all of which were operating south of Kalgoorlie. WMC's smelter was well advanced by this time and it was evident that WMC were also anxious to treat all the concentrates produced in the Kalgoorlie region.

Great Boulder subsequently abandoned the idea of building a smelter and in July 1973 signed a formal agreement with WMC for the sale of all its nickel concentrates to WMC.

Great Boulder's involvement with nickel operations had helped it return to profit. In 1968 the Company lost \$455,000. By 1973 it made a profit of \$1,395,000 but when the nickel price fell, Great Boulder posted a loss in 1975.

Operations of Great Boulder became increasingly difficult. There was subsidence at the Scotia Mine on 9 July 1974 which seriously disrupted production and rising costs and poor grades prompted the suspension of mining at the Carr Boyd Mine on 17 June 1975. It re-opened in early 1977, but operations at both mines were suspended in September 1977 and they never resumed production.

## **WMC's Takeover of Great Boulder**

In May 1975 I recommended to WMC directors that the way to resolve the problems with Great Boulder and Loloma was to acquire the remaining shares in Great Boulder.

Negotiations reached a conclusion in November 1975 when the Supreme Court of Victoria ordered a meeting of the Members of Great Boulder (other than Westminer Investments) to consider, and if thought fit, approve a scheme which included an offer under which all Members of Great Boulder Mines Limited would receive one share in Western Mining Corporation in exchange for every two shares held by them in Great Boulder Mines. This proposal, together with a plan to reduce the capital of the Company was approved at a meeting of shareholders held on 21 January 1976. By April 1976 WMC had issued 7,037,400 shares of 50¢ each at a premium of 70¢, (the value of which amounted to \$8,445,000) to Great Boulder shareholders and Great Boulder became a wholly owned subsidiary of WMC.

The value of the initial 43.3% acquired in July 1970 was \$48,507,000, hence the total value of the purchase of Great Boulder amounted to \$56,952,000.

Doug Stewart was elected Chairman of Great Boulder in place of Nils Nilsen and a G H (Gerry) Fewster became Deputy Chairman. The other Directors of the Company were S (Sid) Londish and Alfred (Fred) Watson.

In June 1977 WMC wrote off \$487,000 in respect to the Scotia Mine, plant and equipment and in 1978, \$285,000 in respect of the Carr Boyd Mine and \$177,000 for broken ore stocks at Carr Boyd and Scotia. For the next year or two both mines remained on care and maintenance. The Fimiston Plant was used to treat some siliceous laterite flux for use at the Kalgoorlie Nickel Smelter. Other than that, Great Boulder's activities returned to gold: see Part A *THE GOLDEN THREAD, Rewards on the Eastern Goldfields*.

## **Comment**

The acquisition of Great Boulder was not in itself a financial success, but it did allow the establishment of the Kalgoorlie Nickel Smelter as the undisputed central smelting facility for nickel concentrates produced in the Eastern Goldfields. The value of Great Boulder to WMC must therefore be considered in conjunction with the value of the nickel smelter, the value of its Fimiston gold leases which were sold to Kalgoorlie Lake View Pty Ltd in 1977 and the value to WMC of water allocation from the Goldfields Water Supply.

## ***THE WINDARRA VENTURE***

### **The Poseidon Story**

The Mount Windarra nickel deposit had been found by a prospector, Ken Shirley, in April 1969. In September, when the directors of Poseidon Ltd announced a drill intersection of 12 metres at 3.5% nickel, the market price of their 20 cent shares was \$1.00. By the end of the year they were \$140 and the price reached the incredible peak of \$280 per share on 5 February 1970. This was at the height of the nickel boom - world demand was increasing, supplies were limited and the price was rising.

Poseidon Ltd (named after a racehorse which won the Melbourne Cup in 1906) began as a small listed mining company Poseidon NL in Adelaide in December 1952 to mine tungsten at Hatches Creek in NT. By 1966 when Poseidon was nearly broke, Sydney entrepreneur Boris Ganke gained control of the company. In 1968 they took an option over some nickel claims at Bindi Bindi in WA owned by an Adelaide syndicate headed by Norm Shierlaw and control of Poseidon later passed to this syndicate. Others involved included former WMC Group employees - namely B R (Basil) Lewis and E O (Buzz) Myers. A prominent South Australian on the Board was Sir Norman Young, Chairman of Elder, Smith & Co. He relates in his autobiography, *Figuratively Speaking*, the difficulties faced by Poseidon in securing a satisfactory market for the proposed nickel output from Windarra and the problem of raising finance for the development and construction.

In 1970 Poseidon purchased the Kalgoorlie gold mining company Lake View and Star Ltd to secure a treatment plant, an entitlement to water at Kalgoorlie, and a workforce. It proved, however, impractical to transport ore from Windarra to Kalgoorlie or move the old Lake View and Star plant to Windarra.

This was not the only problem facing Poseidon: the orebody was not as extensive or rich as expected, the price of nickel fell from the 1969 peak, inflation was high, exchange rates moved unfavourably, and financing proved difficult. At the end of 1970 the market value of the shares had dropped to \$39. A proposed share issue was abandoned in 1971 and Poseidon borrowed heavily from the Australian Industries Development Commission (AIDC) to finance the development at Windarra entirely by debt. There had been frenzied exploration activity in the Windarra area after the discovery and in 1971 a consortium of US companies, Union Oil, Hanna Mining and Homestake (UHH) had discovered and proven a relatively shallow nickel deposit at South Windarra, 12 km from Mount Windarra. In October 1971 they formed a joint venture with Poseidon to develop a mine and process the ore, sharing many of the facilities. This venture became the subject of a bitter dispute.

At the Poseidon Annual General Meeting in Adelaide on 30 October 1972 the Chairman, Professor Eric Rudd, announced that the joint venture had been abandoned and that Poseidon had issued UHH 280,000 Poseidon shares for the South Windarra Leases. He also advised that sales contracts had been negotiated with both WMC and Sherritt Gordon, each taking 50% of the nickel concentrate to be produced by Poseidon.

By this time much of the infrastructure (camp, power station, workshop, office, store, etc) and the concentrator had been designed and construction was in progress. The principal construction contractor was John Holland.

The cost of developing the Mt Windarra Mine, building the treatment plant, power house and other services, including the houses and accommodation at Laverton, and upgrading the road and rail links to Kalgoorlie to produce at the rate of 700,000 tonnes of ore per annum at \$112 million was double the estimated \$56 million which Poseidon intended to finance entirely by loans.

## **The Project**

The underground mine at Mount Windarra was developed through a decline which had reached 475 metres below the surface by 1980. Stoping was initially by the longhole method, which caused a high degree of dilution because of the weak ground.

Removal of overburden at South Windarra began in the latter half of 1973 and ore production in 1974.

The concentrator had four closed circuit ball mills in parallel feeding separate flotation banks, giving good flexibility to treat different ores. It was a conventional sulphide ore treatment plant, with the addition of a flash concentrate dryer.

Bone dry nickel concentrates were transported in road tankers 100 km to the railhead at Malcolm and railed to the WMC Kalgoorlie Nickel Smelter.

## **Accommodation**

Initially a small village was established near Mount Windarra to house the construction workforce. It had units for single men and some houses, a shop, Post Office, swimming pool, a variety of sporting facilities and remained occupied until 1992.

Laverton, 25 km south-east of Mount Windarra, was chosen as the principal centre for accommodation of the workforce because it was a long established township with a small population and some infrastructure remaining from its earlier period as a significant gold mining centre.

Laurence Howroyd, who had designed the Shay Gap township in the Pilbara was engaged to design a new town around the old and he changed the former grid layout into one of curved streets based on an outer perimeter road. The former Main Street became a pedestrian precinct. The town was well provided with sports venues, school, hospital, police station, Shire Office, hotel, service station, sports club and numerous shops appropriate to a town with a population just over a thousand.

## **Joint Venture with WMC**

### **Poseidon**

WMC discussions with Poseidon regarding the Windarra Project started in early 1971 at the instigation of one of their directors, Basil Lewis. In April 1971 we advised him that we were interested in taking concentrates, but taking equity in the Mt Windarra Project as then proposed did not meet our usual investment criteria. WMC was interested in discussing a modified proposal, including further exploration before the final project arrangements were decided.

On 30 April 1971 D P (Doug) McIntyre and I wrote a joint memorandum to W M (Bill) Morgan, recommending that WMC should offer to purchase about one third of Poseidon's planned output, some 4000 tonnes of nickel content per annum, on a long term contract. By August 1972 agreement had been reached for WMC to purchase Windarra concentrate containing 5500 metric tons of nickel a year for five years on a back-to-back arrangement for toll smelting by Sherritt. When the smelter capacity had been increased by installation of an oxygen plant, Sherritt would take matte instead of concentrate, improving the return to WMC. The arrangement was subject to agreement by Union Oil, Hanna and Homestake, who had a 50% interest in the Windarra Joint Venture. The issue was, however, resolved by the three companies negotiating out of the venture.

Advised by AIDC in 1972, Poseidon recognised its financial vulnerability and invited offers from companies to take up an equity either in Poseidon, or in a joint venture to develop the Windarra Project. In November 1972 WMC proposed a 50:50 joint venture at Windarra, and offered to toll smelt Poseidon's 50% share of the output which was sold to Sherritt. The AIDC encouraged Poseidon to sell 30% of their shares instead and BHP and CSR were said to be interested. However, we remained firm and our proposal was accepted. The plan at that time was to mine and treat 700,000 tonnes of ore per annum, to produce 11,000 tonnes of contained nickel in concentrate.

On 22 December 1972 it was announced that WMC would acquire a 50% interest in the Windarra Nickel Project by contributing about \$25 million for future development. WMC was equally represented on the Management Committee but Poseidon continued to manage the project.

The Joint Venture Management Committee met for the first time on 24 January 1973 in Adelaide. Representing Poseidon were Basil Lewis (Deputising for Buzz Myers, the Chairman), R H (Robert) Floyd and N (Neil) Draper and for WMC, Doug McIntyre, K F (Keith) Parry and J C (John) Hill.

The revaluation of the Australian dollar by the Whitlam Government by 7% on 30 December 1972 and by a further 10% in February 1973 made the project uneconomic in its original form.

In April 1973 the Joint Venturers announced they had signed an agreement with the John Tonkin Labor WA Government. In an effort to improve the project's viability, the scale of operations would be increased to one million tonnes of ore per annum producing 14,000 tonnes of nickel in concentrate. The Government would contribute to the cost of upgrading the Kalbar-Malcolm railway.

From this point on things moved rapidly; Leightons won a \$3.5 million contract to remove 10 million tonnes of overburden from the South Windarra opencut and Roche Bros Pty Ltd were awarded a \$8.67 million contract to mine the opencut.

## **Production Begins**

Production of nickel concentrates began on 10 September 1974 in a concentrator which had cost about \$10 million. It featured a 200 ft diameter thickener, then equivalent to the largest in the world. Operating problems began: poor ground conditions underground at Mt Windarra resulted in much slower rate of development and production than expected and considerable dilution. Water flows in the South Windarra opencut slowed production and increased costs.

## **Poseidon in Receivership**

Despite the commencement of production Poseidon's financial position worsened, partly due to a massive flood which interrupted the railing of the concentrate. B J (Barry) Goss, who arrived there just as the rain started in February 1975, recalls:

'...we drove along the road, and it started to rain. They hadn't bituminised the road then and it rained for 40 days and 40 nights (from memory). There was also a mouse plague in progress and my wife hated mice. All our furniture and clothes were in the van behind us and that got cut off by the floods. After four days of marital bliss and labour she flew back to Melbourne to be with her mother because none of her clothes had arrived. So, I was there as a bachelor to start with.

I moved out to the single men's quarters and I think it was something like six weeks before the flood waters receded and our bags could get through and we could move into our house. At that stage I used to drive into town and shovel the front lawn back off the road onto the front of the



house because the rain was so heavy that it washed all the top soil off the front of the houses and deposited it in the streets.'

I was approached on many occasions by Poseidon regarding WMC coming to the rescue, but no arrangement acceptable to WMC could be agreed which would have overcome their financial problems.

WMC assumed management responsibility for the project on 16 June 1975 and retained R (Robert) Floyd as Manager until December.

Poseidon's cash flow was inadequate to meet its interest bills. By June 1976 there were discussions with WMC regarding Poseidon selling their equity as an alternative to placing the project on care and maintenance. As Sherritt purchased the Poseidon share of the output, we informed them by telex and telephone at the end of July. It was important to both WMC and Sherritt to keep the operation going, and we were trying to devise a solution where Poseidon would sell their equity for a royalty on future production.

The rumour mills were grinding hard and, when Poseidon shares fell to \$2.05, the Adelaide Stock Exchange queried the company. The Board replied that 'it is clear that (the accounts) will show a loss for the year'. On 7 September, with the shares at \$1.25, the stock was suspended, after which the Board released a statement saying that the Poseidon Group was in a 'difficult financial situation' and that discussions had taken place 'with various organisations seeking an offer for part or all of the group's operations'.

Later in September 1976 the company was placed in receivership by which time their shares were 70 cents. Noel Buckley, a Senior Partner in Coopers & Lybrand Melbourne, was appointed Receiver. Poseidon's 50% interest in Windarra Nickel Project (WNP) was subsequently sold to the Shell Company of Australia in August 1977 for \$31 million, at a time when Poseidon's debt to AIDC had grown to \$33 million.

## **Revival of Poseidon**

Poseidon was relisted on 14 December 1978 and was subsequently revived under the Chairmanship of Professor Eric Rudd, mainly through its sole remaining asset, a 47% interest in Lake View and Star Ltd, which in turn held a 24% interest in Kalgoorlie Mining Associates (KMA). KMA prospered during the early 1980s with the substantial rise in the gold price. In 1987 the control of the company passed through a share purchase to Normandy Resources NL and it became a member of the Normandy Group.

## **Ups and Downs**

Due to depressed nickel prices and to reduce oversupply, production was discontinued at South Windarra opencut in January 1978 and underground at Mt Windarra in June 1978, but underground development and exploration continued at the Mount Windarra Mine. The South Windarra opencut was allowed to fill with water. During this period the Joint Venture reopened and brought into production the Lancefield Gold Mine north of Laverton.

With the recovery of the nickel price the Mount Windarra Mine was re-opened and the concentrator, which was already treating gold ore from Lancefield, recommenced nickel production in May 1981. Work also commenced on the development of a raise-bored haulage shaft at Mount Windarra as an alternative to the costly and slow haulage of ore up the decline in diesel powered trucks from the deeper levels. The haulage shaft alternative necessitated the building of an underground crushing station. Both were commissioned in the later half of 1982.

WMC's joint venture with the Shell Company was not without its frustrations. Their active interest in all matters at WNP was expected. They were kept informed by fortnightly and monthly reports and more frequent letters and faxes. What caused friction, however, was their desire to directly participate in the management of the day to day affairs at the mine. Shell was prone to directly communicate with the Resident Manager on a wide range of topics on which their own experts had come to a different view to that of WMC.

Under the terms of the Joint Venture Agreement, WMC were appointed 'Manager' of the Joint Venture to act under the direction of the Joint Venture Management Committee of which the representatives were, B J (Brian) Hurley (Chairman), C J D (Ned) Williams and R W (Bob) Bourne from WMC and B Wheelahan, J H Landenberg and G Reynolds from Shell. Local Shell management, however, appeared to have little authority and any decisions took a long time; the joke around the water coolers at WMC was that Shell decisions were made by the computer in The Hague.

R A (Dick) Tastula was Resident Manager during the early 1980s when development of Lancefield was being considered and he wrote to Brian Hurley on several occasions describing the difficulties he experienced in responding to Shell's many requests.

### **WMC Buys Out Shell**

On 24 May 1983 WMC acquired The Shell Company's 50% interest in WNP for \$500,000 per annum for the next 10 years plus a royalty related to production. Rumour has it that there were prolonged celebrations at Windarra.

Over the next few years WMC introduced a number of changes to the project to increase the scale of operations and improve performance. At Mount Windarra there was a change from long-hole stoping to sub-level caving. The South Windarra opencut was re-opened in mid 1985 but was suspended after about a year due to adverse economics resulting from low nickel prices. The opencut was again re-opened in 1987 and by the middle of 1988 a decline was commenced from the bottom of the opencut to gain access to a small underground ore reserve.

### **Production Ceases**

By May 1990 all the economically accessible ore had been mined at Mount Windarra and the mine was closed. Total production had been 5.3 million tonnes of ore at a grade of 1.5% Ni.

Nickel production was then limited to the small underground operation below the South Windarra opencut and an increasing proportion of the treatment plant was given over to processing gold ore from Lancefield. By mid-1990 nickel ore from Leinster Nickel Operations was being toll treated on a temporary basis.

Nickel production at South Windarra ceased in July 1991 and the stockpiled ore was treated by the end of August when nickel operations closed. Total production from South Windarra had been 3.1 million tonnes at 1.4% Ni.

The plant continued to toll treat Leinster nickel ore until 1993 and Lancefield gold ore until January 1995.

### **Production**

The total production was 8,050,000 tonnes of ore, averaging 1.16% recovered grade for 93,446 tonnes of contained nickel. The published ore reserves at Mt Windarra and Sth Windarra in 1972 had been

8,900,000 tonnes at 1.92% nickel, with estimated contained nickel of 170,950 tonnes.

## Rehabilitation

After production ceased WMC decided to go far beyond its statutory rehabilitation obligations and to transform the mine site into a tourist attraction, which was named *The Heritage Trail*. Former WMC project engineer J S (John) Willis, who was in charge of the construction in 1971, was recalled from retirement to manage the rehabilitation.

Equipment was sold and removed, the structures demolished and sold as scrap and the ground cleared of all debris, ripped, and covered by topsoil. The dumps were recontoured and revegetated. The only structures left on site were the headframe, some massive foundations, and some buildings for use by tourists and local pastoralists. The Windarra village including the houses, the school, post office and tennis courts was rehabilitated. Particular care was taken to ensure the safety of the public.

Seed collected from local native plants was sown in the wet winter of 1996. Trees were planted by the schoolchildren of Laverton.

WMC paid for the rehabilitation and the Shire of Laverton accepted the operating and maintenance responsibility.

*The Heritage Trail* at the mine site is signposted from Laverton, 28 km away. There is a car park for trailers, caravans, and tour buses, toilets, and an orientation display. It takes about 45 minutes to walk the 1.4 km long main trail and read the information displayed which tells the story of the project 'from cradle to grave'. There are four spur trails - to the original diamond drill site, to a hilltop lookout, to the mine portal and to a diamond drill rig.

The quality of the rehabilitation work was acknowledged by the award of the Greening WA John Tonkin Award in 1997.

## Management

Resident Managers of Windarra Nickel Project, were:

R H (Robert) Floyd	c.1972 to Dec 75
J C (Jack) McDermott	Dec 75 to Jun 78
R A (Dick) Tastula	Jun 78 to Feb 83
P C (Phil) Lockyer	Feb 83 to Dec 85
P M (Peter) Bartlett	Jan 86 to Dec 88
I M (Ian) Letts	Jan 89 to Sep 91
A H (Allan) King	Oct 91 to May 92
C J (Chris) Wilson	Jun 92 to Apr 94
P T (Peter) McIntyre	Apr 94 to Jan 95

## Comment

No financial analysis is available, but WMC involvement in Windarra is unlikely to have been a financial success. As in the case of Great Boulder, a part of the justification for becoming involved was again the supply of feed to the Kalgoorlie Nickel Smelter. Whether this was sufficient justification would be an interesting study, using the benefit of hindsight.

## ***MOVING NORTH: ADDING LEINSTER***

### **Background**

The sulphide nickel deposit near Agnew, 330 km north of Kalgoorlie, was discovered in 1971 by Western Selcast Pty Ltd, a subsidiary of Seltrust Holdings Ltd of UK. The massive sulphide body and three high grade shoots of disseminated sulphides were outlined by diamond drilling in an area near the Perseverance water bore on Leinster Downs Station. Reserves were estimated to be about 45 million tonnes at 2% nickel.

### **Discussions With Selection Trust (ST)**

During February 1974 I had a series of discussions with John Du Cane, a director of Selection Trust (ST). They were thinking of forming a joint venture to develop the Perseverance nickel deposit. Inco, Falco, and Amax were interested but ST appreciated the need for a substantial Australian interest in the project and preferred WMC as a single partner, if we were interested.

I said that if WMC owned Perseverance, we would not attempt to develop it at that time because of the poor market outlook. If ST nevertheless wished to proceed, I thought it should be on a staged basis and trying to get the government to meet infrastructure costs. If WMC was to be a part of it, we would think in terms of a 50% equity because of our experience with Hail Creek. Du Cane said they would want to be the operator, but were relaxed if WMC did the marketing.

On 22 March 1974 I telexed Du Cane, saying WMC was interested in participating in further investigations and development of the Perseverance Project in a Joint Venture with ST, with ST the operator and WMC responsible for marketing. We would seek a 50% interest, strongly favour the least number of participants, and would have serious misgivings about inclusion of competitors. There would be an 'estimating phase' during which the project would be firmed up and commitment would occur at the end of this phase.

Further discussions were held and on 31 May I informed WMC directors of progress. ST were determined to proceed with a 20,000 tpa project for the first 7 years at a capital cost in excess of A\$200 million, then increasing to 28,500 tpa. This, to be economically justified, would require a nickel price 50% in excess of the current price. We preferred a smaller scale initial project based on the 4 million tons of higher grade ore, with a capital cost of A\$120 million. In a letter to John Du Cane on 3 June I said we could not join the project on the basis they outlined. However, in a discussion on 29 May 'we agreed that both companies will continue to seek a project basis which would meet the objectives of both parties..'

A further exchange of letters a week or so later confirmed this and I said I enjoyed the personal relationships which had been formed. This was very sincere - John was one of the people who genuinely answered the description of a 'gentleman'. Shortly thereafter, however, (in July 1974) a ST subsidiary, Western Selcast, formed a 60:40 joint venture with MIM Holdings Limited and proceeded on the basis we had declined, except that MIM was the operator. It became known as the Agnew Project.

Development began in 1976 by a joint venture owned 60% by Western Selcast and 40% MIM Holdings Ltd through Agnew Mining Co which had been formed in 1974. A decline was developed to gain access to the shallower disseminated deposits. Cut and fill stoping commenced in 1978, at a time when there was a surplus of nickel on the world market.

Later a 7.5 metre diameter concrete lined shaft was sunk to the lower levels of the Perseverance Deposit and some lateral development carried out in preparation for stoping.

The Agnew joint venturers approached WMC regarding toll smelting their concentrate (85,000 tpa beginning in 1979, increasing to 100,000 tpa by 1983) in the Kalgoorlie Nickel Smelter. To do so would need a new flash furnace with a capacity of 450,000 tonnes of concentrate per annum. Agnew agreed to contribute \$20 million of the cost of \$25.5 million. The other terms were very satisfactory to us, and the smelter expansion was approved by WMC Board in June 1976.

A conventional concentrator with a capacity of 350,000 tonnes per annum, built adjacent to the Perseverance Shaft, was ready for operation in May 1978. Concentrates were road hauled to Leonora, then railed to Kalgoorlie. The concentrator was enlarged to 500,000 tonnes per annum in 1980 in anticipation of additional production from No 2 Mine. It was again increased in capacity to 750,000 tonnes per annum late in 1984.

In 1985 Seltrust became a wholly-owned subsidiary of the BP Group and as a consequence BP Australia Ltd took over Western Selcast's 60% interest in the Agnew Mine.

Mine production was discontinued on 15 August 1986 following MIM's announcement that increasing losses resulting from a depressed nickel market had forced the partners to suspend operations and place the mine on care and maintenance. At the time of closure MIM reported recoverable proved and probable ore reserves of 900,000 tonnes at 3.0% nickel. An additional 30.4 million tonnes at 2.0% nickel was regarded as a probable in-situ resource.

### **WMC's Acquisition of Agnew Mining**

Kambalda had been in production for more than 20 years and, while it had many years of life ahead of it, the long term future of WMC as a nickel producer depended on acquiring additional ore reserves. This was particularly so if production was to be increased above the about 35,000 tonnes per annum rate, at which it had levelled off.

Because of its established smelting and refining facilities WMC was in a preferred position to bid for the Agnew Mining assets. BP was known to want to divest its minerals interests and had enquired in early 1987 about WMC's interest in Agnew. The initial contact was made by John Austen of BP with me and I passed the enquiry on to Hugh Morgan. Informal discussions found that there were difficulties in agreeing on a price.

Kym Saville, who attended some of Hugh's early meetings with Austen recalls:

'Austen at one stage offered to throw in the Mt Keith interest. At that time, however, it was regarded by both parties as having little value due to the low grade (less than one-third the grade at Leinster, and Leinster was considered low grade compared to Kambalda). When we showed no interest in increasing the price to include Mt Keith, the focus went back to Leinster. ACM<sup>1)</sup> acquired BP's interest in Mt Keith a few months later. This just shows how quickly things can change!'

Paragon Resources NL, created in 1985 out of a Scheme of Arrangement between Seltrust Holdings Ltd and its shareholders, had a 9.5% interest in Agnew's nickel production.

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<sup>1)</sup> Australian Consolidated Minerals

MIM objected to the arrangement making Paragon entitled to 9.5% of Agnew's concentrate production at cost. Legal proceedings resulted, with the courts deciding in favour of the Seltrust/Paragon arrangement.

In late 1987 Paragon had financial problems and approached WMC. In May 1988 Paragon's 9.5% interest in Agnew was sold to WMC for \$6.5 million (\$685,000 per percent).

Concurrently, WMC was negotiating to acquire BP's 50.5% interest in Agnew. An offer on 21 January 1988 to acquire BP's interest in Agnew for \$37.875 million (\$750,000 per percent) was followed by protracted negotiations which were finally concluded on 9 September 1988. The agreed purchase price was \$45 million plus a royalty and some tenement areas were excluded from the sale.

The situation had been ticklish since discussions with BP began because MIM had pre-emptive rights over the BP interests. WMC had to advance the negotiations with both BP and MIM, not finally committing to either until the management situation was settled and without triggering MIM to pre-empt.

The agreement with BP provided that WMC would discuss with MIM the management of the project. If these discussions were not satisfactory WMC could withdraw within 45 days, but would forfeit the down payment of \$5 million.

Because I knew the Chairman of MIM, Sir Bruce Watson, well, H M (Hugh) Morgan and I agreed that I would conduct the negotiations with Bruce. These commenced on a confidential basis on 21 April 1988 when I met with Bruce in my office in Melbourne. He was aware that we were in discussions with BP and I told him that we were anxious to clarify the management arrangements before proceeding further. Previously Agnew Mining had employed its own management. WMC believed that this had not been satisfactory and, if it became the 60% owner of the project and as it was established in the nickel business and in the Eastern Goldfields, WMC should be the manager. WMC also offered to toll smelt and refine MIM's share of the production up to 40,000 tonnes per annum of concentrate and to market or purchase the product.

Bruce agreed that the previous management arrangements had not been satisfactory, but thought MIM should be the manager. We agreed to consider the matter further and I handed Bruce a letter recording our views and proposal.

On 19 May I had breakfast with Bruce at the Meridien Hotel in Melbourne and indicated that management was a very important issue to WMC because of the valuable synergies which could be achieved with the existing WMC nickel operations in the region. To achieve this, WMC was prepared to make an offer for MIM's 40% interest in Agnew.

On 14 September Hugh Morgan and I travelled to Canberra for the specific purpose of continuing the discussions with Bruce over breakfast in my hotel suite.

On 19 September 1988 I wrote to Bruce, offering \$120 million for MIM's 40% of the project.

On 28 September Bruce telephoned me and said that the price was 'acceptable', but that MIM thought there should be an additional royalty if the price exceeded A\$5 per lb for prolonged periods. He faxed three pages describing the suggested arrangement.

On 3 October WMC formally offered to buy MIM's 40% interest in Agnew for \$120 million. The offer was conditional on MIM not exercising its pre-emptive rights over the BP interest. MIM accepted in principle within a few days and a royalty was agreed in addition to the purchase price. A formal

agreement was completed by December.

On 4 October WMC formally advised BP that it wished to proceed with the purchase of BP's interest in Agnew. Settlement with BP took place on 2 December 1988.

Also in December 1988 it was announced that WMC had purchased MIM's 40% interest for \$120 million, plus a royalty for six years if the price of nickel exceeded a certain level. Settlement took place on 6 January 1989.

We had been concerned that, when the MIM deal was announced, there may be some difficulty with BP who had obtained a much lower price for its 60% interest and no royalty. In the event, there was no problem.

On several occasions since then Bruce has reminded me that the WMC/MIM negotiation for Agnew was one of the rare occasions when oral agreement between the principals was faithfully translated into a legal agreement without a hitch. There were none of the attempts by lawyers on either side to 'win' against their opponents which has regrettably become a feature of negotiations today. We both feel nostalgic about the olden times!

### **Reopening Agnew**

WMC moved quickly to re-establish operations. The new acquisition was renamed Leinster Nickel Operations (LNO) after the Leinster township in which the workforce lived, and WMC's Emu Gold Operations about 35 km south of the nickel mine were renamed Leinster Gold Operations. Both were brought under one management which was located at the LNO plant site where there were established facilities.

The first manager was R A (Rob) Dennis on 17 April 1989. He was previously Resident Manager at WMC's Goodall Gold Project in Northern Territory, had earlier been Underground Manager at Windarra Nickel Project and subsequently Production Superintendent at Emu Gold Operations.

B J (Brian) Hurley, General Manager of WMC's Nickel Division took a great deal of interest in re-establishing operations at Agnew and championed the development of an opencut at Rocky's Reward, 2 km north of Perseverance, as a means of quickly getting into production. Work commenced on restarting the concentrator and upgrading it to one million tonnes per annum. It recommenced operation in May 1989 when ore became available from Rocky's Reward.

WMC's geologists examined the available information and carried out further diamond drilling to substantially extend the reserves below and to the north of Rocky's Reward. The ore reserves in the vicinity of the Perseverance Mine were recalculated and the previous resource estimate of 33 million tonnes at 2.0% nickel was thought to be conservative. The plant was re-commissioned and began to treat ore from Rocky's Reward Opencut in May 1989. The success and the unexpected longevity of Rocky's Reward was fortunate, because the commencement of production from Perseverance underground took much longer than expected.

The town of Leinster, named after a province in Ireland, had been developed by Agnew Mining in an ideal location on a sand dune about 20 km north-east of the old Agnew township. By the time WMC became involved, all facilities for a population of about 1000 were well established. There were 226 homes and single person accommodation for 234 people. An interesting feature of the town layout was that all the homes faced into an unfenced park-like area which featured walking/cycle tracks. The roads only provided access to the rear of the houses. The town was well wooded with natural species and the whole provided a very attractive environment for a remote mining town.

## **Expansion and Redevelopment**

In September 1991 WMC announced that, following agreement between the Company and the WA Government on lower rail freight charges, it had been decided to spend \$127 million on expansion of its operations at Leinster.

The annual rate of production would be increased to two million tonnes per annum. This required a major expansion of the concentrator including a new primary crushing plant, a new fully autogenous grinding mill (one of the largest in Australia), additional flotation cells, more filters and a new flash dryer.

Whilst the mill was being enlarged, some ore was road hauled to Windarra Nickel Operations for treatment as WNP had surplus capacity.

Up to that time most of the ore won was derived from the newly developed Rocky's Reward and Perseverance opencuts. A small amount of ore was derived from development work at the Perseverance underground mine. Starting in 1993, after completion of the opencut, Rocky's Reward ore came from underground.

Work at the Perseverance Shaft concentrated on development of the known ore bodies and establishing an underground crushing station, haulage conveyor system and ore handling facilities in preparation for underground production of up to two million tonnes per annum from 1995 using sub-level caving methods.

Further exploration was carried out on the mine leases.

Mining of the Perseverance Opencut was completed in March 1995.

At the No 6 level of the Perseverance Mine a 1000 tonnes per hour gyratory crusher, set in a large underground chamber, was commissioned in March 1995. The crushed rock (less than 250 mm) was conveyed to a skip loading station where the 17 cubic metre capacity skips hauled the ore to the surface.

After a five year development phase the Perseverance underground mine became the major producer at 1.5 million tonnes per annum, with a further 500,000 tonnes coming from the Rocky's Reward Mine for a total production of two million tonnes annually.

Initially ore came from a sub-level caving operation below the Perseverance Opencut. The floor pillar was drilled and blasted into the underground workings. The mine was planned to recover about 38 million tonnes of ore to the 1100 metre level over the next twenty years.

Ground conditions within the orebody were poor and there was some question whether the expected production rate could be achieved and sustained. There were no mining engineers with experience in bad ground within WMC; extensive use was made of overseas consultants until a satisfactory mining method was developed. Among other things, shotcreting and meshing of all drives was found to be essential.

In 1998 an orebody suitable for opencutting, called Harmony, was found by drilling. Recovery in the concentrator improved from 73% to 83% through better process control.

## **Some Innovations**



Upgrading of the Leinster concentrator called for a very large autogenous grinding mill. The contract to design and supply the 9.6 metre diameter 7000 kw mill went to Australian National Industries. The mill produced the desired sized output without the addition of steel grinding balls, with a considerable saving in costs. The new mill began operation in 1993.

In conjunction with Adelaide-based Australian Raise Boring (ARB), LNO conducted experiments in large diameter horizontal reamed holes in 1992-93. Three four-metre diameter holes were drilled over a length of 70 metres using modified Robbins 85R raise drill. *Australian Mining Monthly* reported on the experiments in their September 1992 edition. It said,

The Perseverance project represented the first successfully mining application of horizontal reaming in Australia.

ARB Operations Manager, Kym Anderson, says the development method, which eliminates drill and blast activity, improves worker safety and leaves a smooth and stable tunnel wall finish.'

WMC's R O (Ross) Simmons and T J (Trevor) Connell were assigned to the project which was reported in *Australian Mining* in May 1992 and *Goldfields Mining Journal* in December 1992. Trevor Connell reported that,

In the hanging wall sediment, button bit cutters had given acceptable rates of advance. However, cutting in sediments using disk cutters was extremely slow.

Cutting was done on two shifts per day, leaving one shift to rock bolt the drive - the best daily advance was 15 metres on the two shift basis.'

The work was carried out under the Australian Government's research and development incentive scheme.

## Staff

Resident Managers at Leinster Nickel Operations were:

	R A (Rob) Dennis	17/4/89 - 31/5/92	
	A J (Allan) Quadrio	1/6/92 - 11/3/94	
(Area Mngr)	T M (Tim) Moran	11/3/94 - 13/10/95	
	P A (Peter) Smith	30/10/95 - 1/11/98	... title change..
(Gen Mngr)	" "	11/11/98 - 2/5/99	
" "	H J L (Hamish) Bohannon	01/08/99 - 16/6/00	
	D M (Damien) Marantelli	1/6/00 - 01/04/02	
	L (Luke) Tonkin	11/03/02	

## Production

To December 2001 there were 22.2 million tonnes of ore treated to recover 372,650 tonnes of nickel.

## Comment

The acquisition of Agnew Mining was essential for WMC to continue as a long term nickel producer. It also helped to justify the subsequent acquisition of the Mt Keith deposit. Together, these two major ore

positions more than made up for the inevitable running down of nickel production at Kambalda in the longer term.

D P (Doug) McIntyre in 1988 made a comprehensive list of the advantages of acquiring Agnew:

- ' 1. It more than doubled the amount of nickel in WMC's ore reserves.
2. The large scale bulk mining possible at Agnew is low cost, and it may be possible to produce nickel as cheaply as at the higher grade Kambalda mines.
3. Agnew is a world scale orebody, and with its shaft and much mine development already completed, does not require the continuous and intensive mine development which has been typical of Kambalda. Employee numbers at the mine would be low.
4. WMC's smelting and refining facilities have been under-utilised. Additional production can be processed through both facilities with very low marginal costs. WMC can be assured of a place as a low cost producer in the spectrum of world nickel producers. Agnew can partially replace the high cost Windarra production and take pressure off Kambalda.
5. WMC's significance in the market as a nickel metal producer has diminished in recent years. It now has the opportunity to restore its image and to consider significant expansion of its market position.
6. The nickel industry worldwide appears to be in a sounder position than for the past two decades. The high market prices of 1988 have not brought major plans for increases in production as happened in the 1970s and caused supply and demand to be unbalanced.
7. The Agnew project will be a significant producer quickly, with an opencut at Rocky's Reward available for mining by mid-1989.
8. There is considerable exploration potential for nickel in the leases acquired.'



## ***FURTHER NORTH: MT KEITH***

### **Background**

The following background to the Mt Keith Nickel Project is from a feasibility study for Mt Keith ACM Pty Ltd, a joint venture between Metals Exploration Limited (MEL) and Australian Consolidated Minerals Ltd (ACM), in July 1990.

In 1969, exploration drilling by Metals Exploration Limited (MEL) in the Mt Keith-Kingston ultramafic belt located a low-grade disseminated nickel deposit on the Mt Keith pastoral lease, some 200 km north of Leonora in Western Australia. Detailed studies, culminating in a feasibility study, were carried out in the early 1970s. These were based on an open pit, concentrator and smelter designed to produce about 100 million lbs of nickel contained in matte per annum from 10.5 million short tones of ore. However, the project did not proceed because of the depressed nickel prices of the mid-1970s, together with the project's high infrastructure cost and the unfavourable currency exchange rate prevailing.

ACM held a 16 per cent stake in this early development work and, between 1975 and late 1988, increased its holding to 100 per cent. Throughout this period, the project status was periodically reviewed with regard to changes in the nickel price, infrastructure developments in the area and fiscal changes reflected by a falling Australian dollar against the US dollar, but no further work was undertaken. Several changes occurred during this time. Techniques of concentrating nickel minerals, notably gangue depression, improved, and the size of mining and concentrator equipment increased, making large-scale operations economically more attractive. In addition, the gold boom in Western Australia revised attitudes to plant design and site accommodation: "open-air" plants became the norm, and "fly-in/fly-out" commuting, rather than fully developed mine town accommodation, gained a greater acceptance with mine-site personnel. Both of these developments contributed to lower capital requirements for a large scale project.

In 1988, ACM decided to further evaluate the Mt Keith deposit, including infill diamond drilling to produce fresh core for metallurgical testwork. The objective of this work was to ascertain whether a high concentrate grade could be produced from metallurgically favourable ore types. This would result in the possibility of exporting the concentrate economically and thereby eliminating the necessity to smelt to nickel matte in Australia - in itself, a costly proposition.

This testwork, culminating in an extended pilot plant test program, confirmed that metallurgical improvements could be achieved, and that the export of concentrate could be economically viable.

Following an offer from OMR Oy (Outokumpu Metals and Resources Oy) involving, amongst other things, markets, process technology and process facilities in Finland, the Mt Keith-Kokkola Joint Venture was formed. This joint venture is investigating the feasibility of developing the Mt Keith nickel deposit to produce ferro-nickel.

The equal joint venture between the two parties covers all operations from mining to ferro-nickel production, with each party managing operations within its own country.'

The Mt Keith deposit was a disseminated nickel sulphide occurrence extending over a strike length of 2 km, averaging 100 metres in width and extending to a depth of at least 500 metres, with the then estimated reserve of 132 million tonnes at an average grade of 0.6% nickel.

The feasibility study was based on opencut mining of 130 million tonnes of ore with an average grade of 0.59% nickel over a period of 20 years.

The properties of the ore were unusual in that the resultant pulp was highly thixotropic. Despite this a conventional concentrating process was considered satisfactory. Annual throughput was designed to be 6 million tonnes per annum, increasing by year four to 6.6 million tonnes per annum. Recovery was expected to be 75% with a concentrate grade of 20% nickel.

The accommodation village 13 km south-south-west of the mine was to consist of 30 senior staff houses and 300 motel style units for award personnel. The workforce, estimated at about 300 staff and award personnel, were to commute by air on a roster of two weeks on-site, one week off-site from Geraldton, Kalgoorlie and Perth.

It was intended that start-up would be achieved by 1 May 1992. The total estimated capital cost was \$417.4 million. Estimated operating costs were US\$1.35 per pound of nickel contained in concentrate delivered CIF, K okkola, Finland.

### **WMC's initial interest in ACM**

At a meeting on 4 March 1987 the Board of WMC was informed that Macquarie Bank had advised that it had been authorised by Amalco Limited, a subsidiary of AMAX, to offer its 49% share/option holding in ACM to WMC for \$7.25 per share, the offer expiring on 6 March. This caused considerable embarrassment because WMC had been working for some time on a similar proposal with E L & C Baillieu and Potter Partners, in the belief that they were acting for AMAX.

Following further discussions, WMC purchased just under 20% of ACM in March 1987, 15 million shares at \$6.32 and 2 million options at \$4.82, in an off-market arrangement by the Macquarie Bank in Sydney.

At the beginning of April 1987 WMC sold 400,000 options at \$6.50 and took up the remaining 1,600,000 options thus increasing its shareholding to 16,600,000 or about 20% of ACM. On 3 April ACM made a bonus issue of 1 for 3 which increased WMC's holding to 22,133,333 fully paid shares. On 10 April WMC sold its entire ACM holding at \$8.00 per share, realising a profit of over \$70 million.

### **WMC/Normandy Poseidon's takeover of ACM**

In May 1991 D R L (David) Burt, ACM's Managing Director (an ex-WMC geologist), approached the Company with a request that WMC consider making a takeover bid for ACM. Similar approaches were made to other selected companies.

ACM had 37 subsidiaries, of which 26 were fully owned. It had a direct shareholding in four and an indirect holding in a further three listed companies and interests in Australia, United States, Canada, New Zealand and Turkey.

The WMC Board was fully briefed on 2 June 1991. The options were:

1. Do nothing
2. Offer to acquire 100% of AGM

### 3. Offer to acquire only Mt Keith.

A further Board discussion took place on 4 June. As the only ACM asset of strategic importance to WMC was Mt Keith, a bid for all of ACM was not considered justified. It was recognised that Mt Keith would be a very desirable addition to the Company's nickel business, partly because it would be an open-cut operation, but it was not considered critical.

On 5 June the Board authorised management to negotiate to purchase Mt Keith for up to \$100 million for 100% interest.

The ACM directors were disappointed when informed that WMC would not bid for ACM, although they agreed to negotiate with WMC for the sale of their 50% interest in Mt Keith, the other 50% being subject to a previous arrangement with Outokumpu Oy of Finland (O/K). Discussions with ACM and O/K were inconclusive. O/K was not interested in a 50:50 joint venture with WMC, and the impression was that they were working to exclude WMC from the project.

WMC then learned that Normandy Poseidon (NPL) had also been approached by ACM and that NPL's interest was in the copper, zinc and gold activities of ACM and not in the Mt Keith nickel deposit.

H M (Hugh) Morgan and the Chairman and Chief Executive of NPL, Robert Champion de Crespigny, discussed the matter and concluded that a 50:50 joint bid by WMC and NPL was a practical way of resolving the dilemma. The intention of the parties was that, if the joint takeover was successful, Mt Keith would be transferred to WMC and the 50% of the shares in ACM held by WMC would be transferred to NPL.

A telephone meeting of WMC Board on 22 July agreed to proceed with a joint WMC/Normandy Poseidon bid.

WMC/NPL made an offer of 90 cents per fully paid ACM share on 24 July 1991. This was a premium of 18% over the last sale price of 76 cents per share the day before. The offer valued ACM at \$210 million.

ACM announced a new arrangement with O/K for the sale of the Mt Keith Project on the same date, subject to Foreign Investment Review Board and shareholder approval.

The WMC/NPL offer documents were despatched to ACM shareholders on 14 August and the offer, made by a jointly owned company Resplend Pty Ltd, closed on 25 September. ACM actively solicited higher bids and suggested that the assets were worth more than 90 cents per share. No higher bids were received.

The price of ACM shares rose on the announcement of the offer and for a time exceeded the bid price of 90 cents. On 3 September Resplend increased its offer to \$1.11 per fully paid share. There were some adjustments and further concessions given to ACM shareholders in respect to the dividend announced by ACM and some options. The offer was extended to 23 October.

In a counter move ACM announced that they intended to sell a half interest in the Mt Keith deposit to O/K. Kym Saville recalls:

'Outokumpu badly needed a new source of feed for its nickel smelter. It did not like WMC muscling in on Mt Keith. I was at Stanford University at the time and was accosted by one of my (Finnish) co-students one morning with the business pages from the local (San Francisco) newspaper which featured a lengthy report on the offer highlighting a rather agitated quote

from Outokumpu's President in which he said that the takeover offer was unwelcome and unwanted and characterised WMC as a pirate raiding Finnish property. For the takeover of a relatively small Australian mining company by another Australian mining company to get any coverage in the US press at all was remarkable. I think the press only picked it up because of the strong and resentful language used by Outokumpu.

Outokumpu considered making a competing offer for ACM, and probably would have, had it not been for WMC's willingness to agree to sell half of Mt Keith (Giving it access to 14,000 tpa of nickel-in-concentrate) plus a further 6000 tpa of nickel-in-matte on a long-term contract. A heads of agreement was signed between Outokumpu and WMC in New York in September, and Outokumpu then stood aside and allowed the takeover to proceed.'

The offer for ACM shares became unconditional. On 24 September 1991 ACM directors Alan Blanckensee (Deputy Chairman), Edwin Gorham, Daryle Gore, Ken Fletcher, David Burt and Alan Evans conceded control and urged shareholders to accept the WMC/NPL offer. Two ACM Directors, John Gerahty and Peter Scanlon, said they could not make a recommendation to shareholders.

By 10 October over 90% acceptances had been received and Resplendid proceeded with the compulsory acquisition of the remainder where necessary. It took several months to tidy up the paperwork. The formal settlement occurred in June 1992 when WMC acquired the Mt Keith deposit and surrounding tenements from ACM and sold its 50% interest in Resplendid Pty Ltd to Normandy Poseidon. The consideration for these various transactions was not released publicly.

At the same time WMC announced that it had agreed to sell a 50% interest in the Mt Keith Nickel deposit to Outokumpu Mt Keith Pty Ltd.

Don Morley led the initial negotiations with Outokumpu. He also headed up WMC's takeover team with assistance primarily from S C (Stephen) Foster, one of WMC's Corporate Lawyers. When Kym Saville returned from Stanford in September, he assumed responsibility for negotiations with Outokumpu and finalisation of the takeover, including the purchase of the Mt Keith assets from ACM and the sale of our 50% interest in the takeover vehicle to Normandy, reporting to Don Morley.

## **Development Plans**

WMC appointed R J (Bob) Crew as Project Manager in October 1991. Bob had been at Olympic Dam since 1980 and had been responsible for mine development until 1985 when he became Resident Manager. He had a wealth of experience in on-site management of a major project. Bob was appointed Operations Manager (South) in June 1992 and T M (Tim) Moran, a former Resident Manager at Kambalda, became Project Manager.

Tim was keen on establishing Leinster as a regional base and in an interview in August 1992 said: 'WMC has a long term commitment to the region and rather than fly people in and out we would like to develop the infrastructure that is already there. We don't want Leinster to become a satellite town, we want it enlarged so that ourselves and other companies can use it for future exploration.' The organisational arrangements were that Leinster- Mt Keith would be managed as one unit.

## **The Fluor Daniel Feasibility Study**

The Fluor Daniel Feasibility Study of March 1992 reviewed and updated the former feasibility study by 'incorporating the heads of the current Mt Keith Joint Venture and the concepts and data generated during this Study Review.'

The overall concept remained basically the same as previously described except that the capital cost estimate increased from \$417 to \$450 million.

The overburden ratio was reduced from 3.36:1 to 2.77:1 as a result of improved opencut design of the twenty year mine. The planned production rate rose to 6.6 million tonnes per annum. The concentrate grade remained at 20% but recovery was expected to decline to 73%.

It was proposed that there would be no houses in the Village, only 186 motel-style units with permanent accommodation provided at Leinster. WMC day shift employees would commute daily. Rotating shift workers would commute to site and work two or three shifts of 12 hours.

### **WMC Becomes 100% Owner**

WMC was anxious to proceed, but O/K vacillated. At the end of 1992 O/K approached WMC offering to sell its 50% interest to WMC in return for WMC selling nickel concentrates to them. Although not stated, one of the reasons appeared to be O/K's inability to contribute its half of the capital cost of the project. It was known that they were in financial difficulties.

WMC Board considered the matter at a meeting on 27 January 1993 - an unusual timing, because the Board usually did not meet in January. The urgency arose from the Joint Venture agreement which required the parties to decide by 15 February 1993 whether or not to commit to the project. If one party did not commit, it had to sell its interest to the other party for US\$27 million escalated from June 1992, plus its share of the costs of the Feasibility Study.

The proposed transaction was for WMC to acquire O/K's 50% interest for US\$24 million, plus its half share of the cost of feasibility study (about A\$1 million). The payment by WMC would be deferred, at US interest rates, until the expiry in 2006 of a contract to sell O/K up to 14,000 tonnes a year of nickel contained in concentrate.

To force O/K into a decision WMC, on 11 February 1993, announced its intention to proceed with the \$450 million project. On 22 February O/K agreed to sell its 50% interest in the Mt Keith deposit to WMC and at the same time WMC agreed to the sale of 140,000 tonnes of nickel in concentrate to them over a period of 10 years.

WMC announced that development would proceed forthwith. WMC would also purchase O/K's 50% interest in the Albion Downs exploration area in WA for US\$3 million.

### **Commitment and Construction**

Work began soon after WMC committed itself to the project in February 1993 and the first major contract was let to Leighton Contractors for \$100 million for the removal and extraction of waste and ore for the first five years of the project.

D A (Doug) Marshall, General Manager of WMC Engineering Services (WES), who was responsible for the construction and development said that: 'The 22 month development phase of Mt Keith would employ on peak 450 workers settling down to a steady employment of about 300'. WES at the time employed about 200 staff including engineers, draftsmen, technicians and administrative personnel in Perth on numerous projects for the WMC Group in WA. In addition there were about 60 other persons on site.

The WA Government reacted favourably. The WA Premier, Mr Richard Court, said: 'It is a significant vote of confidence in our local industries and in the new administration. But before the mine is



operational in just under two years we will see as many as 450 people employed on construction at the site and again up to four times that number in the support industries.'

Construction work progressed well and the workforce reached a maximum of 1000 in 1994. Initial work was disrupted by abnormally heavy rain.

Development of the accommodation camp and village was achieved quickly to provide accommodation for the construction workforce and Leighton's employees.

Commissioning of plant and equipment began in October 1994 and production and delivery of concentrates to Kalgoorlie Nickel Smelter and shipments to Outokumpu via Esperance began in February 1995. The production rate was 6.6 million tonnes of ore per annum, yielding 28,000 tonnes per annum of nickel in concentrate.

The project was officially opened by Richard Court, WA Premier, on 30 May 1995.

### **Upgrade to 42,000 tonnes per annum**

Continuing exploration increased the ore reserves to 470 million tonnes averaging 0.6% Ni.

The first stage of a two-stage upgrade programme was completed in June 1996, increasing the feed rate to 10.5 million tonnes per annum and the output to 37,000 tonnes contained Ni per annum. Natural gas became available to the power station. The second stage increased production to 42,000 tonnes contained Ni per annum during calendar year 1998. Process improvements increased recovery at the same time.

### **Environmental**

A Company publication described the environmental aspects of the Leinster-Mt Keith Operation as follows:

**The Leinster-Mt Keith** Nickel Operation lies within a semi-arid environment characterised by mulga wash plains, sand dunes, rocky outcrops and breakaway hills. Summers are hot (averaging in the high 30°Cs); winters range from cool to mild (0°C to 18°C); and the annual rainfall averages from 220 to 250 mm through either summer thunderstorms or winter depressions.

The area supports diverse wildlife flora and fauna species. Hardpan plains with occasional sandy banks support mulga, gidgee and wandarrie grasses while spinifex and eucalyptus species dominate sand plains and sand dune areas. Low hills are often covered in ironstone mantles and support mulga, gowgada and poverty bushes while the tops of granitic breakaways support acacia, cassia, eremophila and callitris species, giving rise to saltbush, bluebush and cotton bush on the breakaway slopes. An endangered plant, the Cue Grevillea (*Grevillea inconspicua*), also occurs in the area and fines of up to \$10,000 are imposed if any plants are damaged or removed.

The Euro or common wallaroo tends to dominate the rocky hills and breakaways while the red kangaroo dominates the mulga shrublands, grasslands and plains. Other fauna include more than 20 species of mammals, 76 species of reptiles, seven different frogs and up to 150 species of birds.

The environmental objective of LMK is to provide expertise and co-ordination to the Operation and to ensure that action is taken to prevent, minimise or rectify any potential or actual environmental concern.

Employees, too, are expected to be environmentally responsible and to take care at all times to prevent any disturbance. Hunting and trapping of animals on any pastoral or mining lease is not permitted and firearms are banned. Employees are also asked to assist ongoing biological studies by reporting any unusual fauna or flora sightings to the Environmental Officer.'

### **Comment**

The acquisition of Mt Keith proved to be an unqualified success. The orebody turned out to be much larger than initially estimated, the addition of a major opencut source of nickel strengthened the overall nickel operations, and the project worked well in all respects.

The concept of a joint takeover with Normandy of ACM and the sharing out of the assets was developed and pursued by Hugh Morgan and Don Morley. They take the credit for taking WMC's nickel operations to a new level of magnitude and longevity.

The identification of Mt Keith as a potentially profitable nickel development arose from the Nickel Resource Study commissioned by Hugh Morgan in 1990 and led by C W D (Bill) Blandy. When WMC acquired Mt Keith, there was considerable adverse media comment because it was thought to be low grade, therefore high cost and risky. Hugh's decision to pursue it was particularly courageous because it coincided with the Seabright and Ernest Henry fiascos.

### **Subsequent Events**

In 2001 Mt Keith produced 47,930 tonnes of nickel in concentrate, the highest annual production for any WMC nickel operation.



## ***NICKEL IN LATERITES***

### **Importance of Laterites**

Known world resources of nickel in laterites - about 150 million tonnes of contained metal - substantially exceed those in sulphide (30-50 million tonnes). However, production of nickel from laterites was only of the order of 35-40% of world production during the 1990s. The costs of producing nickel from laterites have been similar to the cost of production from sulphides.

### **Types of Nickeliferous Laterite**

Nickel laterites are weathering products of ultramafic rocks in temperate to tropical climates with significant rainfall. The weathering forms a layered 'crust' up to 100 metres thick, with the nickel content of the original rock enriched and generally increasing towards the base of the profile.

The full profile includes:

- Red limonite
- Yellow limonite
- Transition zone
- Saprolite/Garnierite/Serpentine
- Fresh rock

The limonite is iron-rich and low in MgO while the saprolite/garnierite/serpentine band is low in iron and high in MgO.

The main feature of the 'dry climate' Western Australian (and Australian) laterites is the presence of abundant free silica in the upper parts of the profile, occurring either as clays or as free silica. It is essentially limonitic or transitional, with the saprolite/garnierite/serpentine layer just above the fresh rock poorly represented.

### **Processing**

There are three main processing routes:

1. High pressure leaching with sulphuric acid (HPAL)
2. Reduction roast ammoniacal leach (Caron process), and
3. Smelting to produce ferro-nickel or matte

Each of these processes is only suited to a part of the lateritic profile.

The HPAL process, used to treat predominantly limonitic laterite, is being used commercially at Moa Bay in Cuba and is the process chosen for the three WA laterite projects, Murrin Murrin, Bulong, and Cawse. It has the highest recoveries of nickel and cobalt. The process economics depend largely on the cost of sulphuric acid. The presence of silica (clays or serpentine) in ores can cause costly slurry handling problems. Pure limonitic ores with low silica are the best for this process. In 1997, 7% of the world's nickel production from laterites was by this process.

The Caron process is used commercially in Cuba at Nicaro and Punta Gorda, in Australia at Townsville

(treating imported Indonesian and New Caledonian ores) and in Brazil at Tocantins. It has slightly lower recoveries of nickel and significantly lower recoveries of cobalt compared to the HPAL process. The economics are heavily dependent on the cost of fuel for drying and the reduction roast. It is used mainly to treat limonitic ores, with toleration for some saprolite. In 1997, 18% of the world's nickel production from laterites was by this process.

The smelting route is used commercially at Soroako in Indonesia, Cerro Matoso in Colombia, Doniambo in New Caledonia, and Falcondo in the Dominican Republic. It treats the saprolite fraction and produces ferro-nickel and sulphide matte. The economics depend heavily on the cost of power; successful projects have their own hydroelectric power plants. Nickel recovery is high, but there is no cobalt recovery into ferro-nickel and minor recovery into matte. In 1996, 64% of the world's nickel production from laterites was as ferro-nickel and 11% as matte.

### **WMC Interest in Laterites**

WMC became interested in nickel laterites in the Eastern Goldfields in 1965, before the discovery of Kambalda (see *Laterites in Eastern Goldfields*).

### **Wingellina Nickel Laterites**

Late in 1970 WMC reviewed an INCO feasibility study of the Wingellina nickel laterites in central Australia, which had been obtained and given to us for comment by Lawrence Baillieu of North Broken Hill and Murray Howell of Broken Hill South. In a memorandum on 7 January 1971 I concluded that the prospect was not attractive because:

1. While there was scope for finding further ore, additional tonnage was not significant unless it was of a much higher grade.
2. INCO's carbonyl process was not available to us.
3. The most economical alternative known to WMC was the Sherritt Gordon Sulphating Roast process, which required large quantities of fresh water. The capital cost of obtaining this water at Wingellina was prohibitive.
4. Because of the low grade and the location, both capital and operating cost would be high.

In summary, there was not a single factor in its favour when compared with other known laterites in Australia and elsewhere.

In November 1977 we were offered rights to the Wingellina deposit, but again declined. The Nickel Resource Study Group looked at it in the 1990s and confirmed the assessment, which has held good - the deposit is still undeveloped.

### **Nickel Resource Study Group**

A Nickel Resource Study Group was formed by WMC in 1993 to look at global opportunities for expanding the nickel business, based on both sulphide and laterite nickel. This work was later taken over by the Nickel Business Development Group.

In lateritic nickel, the group focussed on the potentially favourable economics of acid leaching of limonitic laterites and identified the Pinares de Mayari West deposit in Cuba, the Moramanga deposit in Madagascar, and the Jayapura deposit in Irian Jaya.

The Pinares de Mayari West deposit in Cuba was subsequently investigated by WMC in a joint venture with the Cuban Government, commencing in 1996 (see *In Fidel's Domain*).

### **Western Australian Laterite Projects**

In the second half of the 1990s three hydrometallurgical laterite nickel plants were established in Western Australia, the first such plants outside Cuba since the original development of the technology for producing nickel from laterites at Moa Bay in the 1950s. The enthusiasm for these plants was based on improvements in technology and the expected substantial by-product credits from cobalt which was then experiencing a high price.

The largest and certainly the most publicised of these was the Murrin Murrin plant, a joint venture of Anaconda Nickel Ltd (60%), founded and chaired by the entrepreneurial Andrew Forrest, and Glencore International (40%). Glencore had the exclusive right to market the nickel and cobalt produced. Well before the plant had produced a pound of nickel, Forrest managed to convince the market that the resources under his control would produce increasing amounts of nickel at much lower cost than existing producers and that before long Anaconda would be the largest nickel producer in the world. Some of the low price of nickel in 1998 can be attributed to this publicity, which created an expectation of the market being flooded with cheap nickel. Anglo American became a substantial shareholder and Sherritt, who supplied some of the technology, had an equity interest. WMC was criticised for 'missing out' on this wonderful opportunity but managed to retain its critical faculties.

The tenements had been acquired in 1994 and a feasibility study completed in 1996. The construction of the Stage One 45,000 tonnes per annum acid pressure leach-hydrogen reduction plant had been completed by December 1998 but commissioning problems delayed the declaration of mechanical completion until December 1999. By April 2002 the plant was still not producing at nameplate capacity, which was now expected to be reached during 2003. Anaconda was suing Fluor Daniel, the fixed price contractors, for \$80 million.

Andrew Forrest had been replaced in 2001, initially as the Chairman and then also as the Chief Executive. The new Chief Executive was Peter Johnston, ex-WMC. Forrest retired from the Board in April 2002.

In the six months ended 31 December 2001 Anaconda made an operating loss of \$46 million and wrote down assets by \$411 million, a total loss of \$457 million. The company was negotiating with the holders of US\$400 million bonds to reschedule or defer the debt.

Centaur Mining and Exploration Ltd's Cawse Project in the Siberia area north of Kalgoorlie was based on an orebody discovered in 1993. Metal production from a 9000 tonnes per annum plant began in December 1998. This was the only project producing at somewhere near nameplate capacity (about 85%) in 2000. However, Centaur ran into financial difficulties and went into liquidation. The Cawse Operation was sold to Outokumpu Mooney Group (OMG), a joint venture between Outokumpu and Mooney Company (USA), for a fraction of the estimated capital cost of \$400 million.

At Bulong the 9600 tonnes per annum operation built by Resolute Resources was bought by Preston Resources in July 1998. Construction was completed in 1998 and commissioning in March 1999. Production in the first full year of operation (2000) was 5216 tonnes of nickel. Problems included precipitation of gypsum in the nickel solvent extraction circuit, inability to electrowin cathodes and severe deterioration of the lead cathodes in the nickel tankhouse. Preston shares were suspended in October 1999 following defaults on interest payments to US bondholders and remained suspended in April 2002. Following a restructuring, approved by shareholders in July 2002, bondholders and bankers

were given 95% equity in the project in return for extinguishing a debt of more than \$700 million and taking over all material obligations of the project.

The three laterite projects certainly did not flood the world market with nickel!

### **WMC Nickel Laterite Strategy**

In 1998 WMC remained cautious about the economic viability of nickel laterite projects, mainly because of their mineralogical characteristics which could lead to metallurgical difficulties. It believed that the best was the Goro prospect owned by Inco in Indonesia, with Pinares de Mayari in Cuba probably the next best.

Despite the caution, the Nickel-Gold Division decided that in the interests of the longer term future it should be active in reviewing and evaluating laterite opportunities. The strategy as set out in the 1998 Business Plan was to assess over the next five years at least 15 projects to scoping study level, at least six projects to pre-feasibility level and at least four projects to feasibility level. Of these, two may become commercial operations by 2005. The additional nickel production from these two projects was expected to be 80,000 tonnes per annum.

This was still the broad plan at the time I retired in April 1999.

### **Subsequent Events**

In the Annual Report for 1999 there appeared the following comment:

'As part of an expenditure review program, we have decided to withdraw from the Zarmitan Gold Project, Uzbekistan; the Pinares Nickel Project, Cuba; and the Tampakan Copper Project, the Philippines. At this time they do not meet our investment criteria.'

This, at least for the time being, evidently terminated WMC's interest in nickel laterites.

## ***LATERITES IN EASTERN GOLDFIELDS***

### **WMC Involvement in Eastern Goldfields Laterites**

WMC had become aware of nickel containing laterites in the Eastern Goldfields and of their possible value as a source of nickel before the discovery of nickel sulphides at Kambalda. Exploration tenements for laterites at Comet Vale were pegged in November 1965.

An agreement with the Western Australian Government regarding the construction of a nickel smelter at Kalgoorlie was announced on 4 November 1970. The announcement included the following paragraph:

#### **LATERITE PROJECT AND OTHER AREAS**

The Agreement provides for the retention by the Company under certain limitations of the laterite and other areas in which the company may be prospecting.

As previously reported, scout drilling at 1600 ft by 2000 ft centres has intersected nickeliferous laterites in a number of zones over a wide area in the Ora Banda-Kambalda-Broad Arrow area. The results of the initial drilling yielded a preliminary estimate of a potential of about 120 million tons at a grade of approximately 1% nickel and indicated that a portion of this tonnage might be mined at a rather higher grade.

This is a tentative estimate which prior to commitment of large funds would need confirmation by closer drilling of the deposit.

After the initial drilling, work began on the metallurgical treatment of the laterites. Some of the methods of treatment of this ore require the use of large quantities of sulphuric acid, which could be produced as a by-product from the nickel smelter.

The right to build a private railway north of Kalgoorlie, the availability of water, and the ability to produce by-product sulphuric acid may provide some of the conditions necessary to bring this source of nickel into production. As reported last year, Sherritt Gordon Mines limited has a 49% interest in this laterite project.'

A plan appended to the agreement and titled *Ora Banda Siberia Nickel Laterite Area* shows extensive areas held by WMC.

### **Joint Venture With Sherritt Gordon**

The Joint Venture with Sherritt Gordon Mines into the feasibility of a project to sulphuric acid leach based on laterites in the 'OBK' leases, started in 1968. Drilling showed low grades, studies showed poor economics, In May 1971 there was an argument about how to continue with this project. WMC exploration people wanted to continue drilling, one of the reasons being that the areas were available at a low rental for a limited time, after which the ground holding costs would escalate. Sherritt was against this because they did not think the project was economically justified. In a letter to Roy Woodall in June I reviewed the situation in detail and concluded that a significantly higher grade or a substantial reduction in treatment cost was required to justify continuing with the project. Some metallurgical work was continued, but in effect the project came to a halt. Sherritt terminated the joint venture on 1 April 1976 when nickel and cobalt prices fell.



## **WMC Siberia Ni-Co Studies**

WMC continued the studies in the Siberia area, with emphasis moving to cobalt as the price increased in the late 1970s. A file note in June 1979, after noting that the immediate aim of nickel operations was to consolidate production at 40,000 tonnes per annum while becoming the lowest cost nickel producer in the world, says:

The secondary aim is to continue investigating nickel-cobalt laterites for the purpose of building up sufficient ore reserve background and technology to consider an eventual expansion of nickel production.'

Activities terminated in 1981 when nickel and cobalt prices once again fell.

A part of the WMC studies was investigating the use of the Siberia laterite as flux for the Kalgoorlie Nickel Smelter. After trials in the smelter, laterite flux crushed at Great Boulder was introduced in 1977 and next year 23% of the smelter flux was laterite. After a laterite crushing and grinding plant was added at the smelter in 1980, all the flux was laterite. One pit was mined for silica flux and three high grade pits were mined for cobalt.

Laterite flux was used by the smelter until the mid-1980s, when it was replaced by sand mined near the smelter which was economically preferable.

Subsequently the areas where the lateritic flux was obtained (Sand King, Siberia, Missouri, Majestic) were mined by Kalgoorlie Gold Operations for gold.

## **Bulong Laterites**

The Kalgoorlie Laterite Project was initiated in 1978 to explore within 100 km of the smelter for a project to consume the potential production of sulphuric acid at the smelter.

The nickel-cobalt laterites near Bulong 30 km east of Kalgoorlie, first discovered by Australian Selection Pty Ltd while looking for sulphide orebodies in 1970, were explored by Exploration Division in the course of this project. These extended for a length of 16 km over a width of between 500 metres and 1500 metres. Between 1978 and 1980 WMC drilled over 2850 exploratory drillholes over 40% of the area. The 10 to 25 metre thick ore is covered by 10-20 metres of relatively soft overburden.

Proved reserves were determined as 15.4 million tonnes at 1.33% Ni and 0.11% Co. The resource was, of course, much larger.

Possible atmospheric leach treatment processes were investigated. S A (Stan) Evers was the instigator of the work and T (Tom) Salinovich supplied the metallurgical input. There was difficulty with viscous colloidal solutions and it was decided that the project was not viable. In the nickel industry downturn in the mid-1980s all avenues for reducing costs were followed up. The project became dormant in 1983 and the leases were sold to Resolute Resources Ltd early in 1987.

## **Joint Venture With Resolute Resources**

In October 1990 WMC entered into a joint venture with Resolute Resources under which WMC could earn a 70% interest in the Bulong leases for \$1 million cash and by carrying out at its own cost research and engineering work leading to a bankable feasibility study by late 1995, at an estimated cost of \$10 million. The process to be investigated was acid pressure leach.

The reason for the renewed interest was increasing environmental pressure to reduce SO<sub>2</sub> emissions from the smelter.

The attractions of the project were to establish an outlet for possible sulphuric acid production at the nickel smelter which was now increasingly likely and to show the WA Government that WMC was diligently investigating alternatives to venting SO<sub>2</sub> to the atmosphere. If successful, it was intended that the acid plant would be owned by the joint venture.

Further assessment of the viability of the project was carried out in 1991.

WMC established Laterite Research Company Pty Ltd and appointed Tom Salinovich Project Manager. A test pit at Pinta was excavated in 1992 to provide 33,500 tonnes of test material. The WMC Kalgoorlie Research Plant built for testing Y eelirrie uranium ore was to be used as a pilot plant.

By late 1993 it was clear that the process would be difficult to operate. On Moa Bay experience it could take up to five years to achieve design production, particularly in view of the composition of the Bulong laterite. Resolute wanted to press on with the construction of a commercial plant, while WMC was not prepared to do so.

Under the terms of the *Joint Venture Agreement* WMC was obliged to complete a bankable feasibility study at its cost by the end of 1995. It was evident that the timetable could not be achieved and that the cost would be much higher than initially thought. Resolute were not prepared to renegotiate the agreement.

The agreement also stipulated that WMC would make gases from the Kalgoorlie Nickel Smelter available for the Bulong Joint Venture acid plant. Restrictions imposed on the smelter operation by the more stringent air emission regime instituted in 1993 meant that the construction of an acid plant could not wait.

In June 1994 WMC therefore withdrew from the Joint Venture after spending \$4 million.

Resolute contested the validity of the withdrawal, alleged that WMC was not entitled to retain any information resulting from the Joint Venture work for use in its nickel project in Cuba and claimed that they were entitled to two provisional patent applications.

The matter was settled without going to Court. Resolute retained the patent rights, WMC was bound by the confidentiality provisions of the agreement and retained copies of the technical reports.

Resolute proceeded with the development of the project. The outcome is described in *Nickel in Laterites*.

### **Subsequent Activity**

In 1997 some drilling was undertaken on the Siberia leases north west of Cawse. Results were disappointing.

Drilling also downgraded a potential small laterite resource held in a joint venture with Redback Mining at Irwin Hills south-east of Laverton.



## ***IN FIDEL'S DOMAIN***

### **Background**

After retiring from the early efforts to develop nickel laterites in the Eastern Goldfields, WMC recommenced in the 1990s reviewing the economic potential of nickel laterites around the world and comparing the treatment characteristics.

In 1991 T (Tom) Salinovich and R J (Ray) Willis attended a nickel conference in the Moa Bay area, sponsored by the United Nations, at which they became aware of the opportunities to invest in nickel developments in Cuba. The timing was excellent: the breakdown of the Soviet Union meant that it was no longer able to subsidise the economy of Cuba, which it had been doing for a long time. This was very serious for Cuba, and the Government was forced to solicit foreign investment.

In August 1992 D M (Don) Morley, D M (David) Rose, and J (Jorge) Bernhard visited Cuba as guests of MINBAS (Ministry for Basic Industry), to express WMC's interest in investing in the nickel industry in Cuba. Subsequently a technical group led by R (Ross) Muller, Resident Manager of Kalgoorlie Nickel Smelter, with J H (Jim) Lalor, General Manager Overseas Business Development, A (Arthur) Ottery, Senior Process Technologist, Kwinana Nickel Refinery, and G (German) del Corral, Consultant, visited Cuba to assess the opportunities in more detail.

WMC was also assisting in marketing Cuban nickel and therefore already had a relationship with Cuba.

The Company was offered participation in the Camariocas, Punta Gorda, or Nicaro projects, which it declined. In November 1993 the Board was informed of an interest in participation in the San Felipe laterite deposit near Camaguey 300 km west of Moa Bay.

There was concern about the US legislation against activity on properties confiscated from US citizens and comprehensive advice was received from US lawyers as well as from other sources to ensure WMC was in the clear. I checked with Alcoa that they had no problem with me as a director of Alcoa being involved with a project in Cuba. WMC Director of Operations, K R (Keith) Hulley, a US citizen, was advised not to participate in any activities regarding the Cuban Project.

### **The Joint Venture**

Subsequent discussions with Cuban officials resulted in an agreement in December 1993 to study the San Felipe deposit. Drilling showed that the deposit did not meet our requirements. A nine person team led by A D (Tony) Owens visited the nickel operations in Cuba in April 1994 and recommended WMC participation in developing the Pinares de Mayari deposit near the town of Mayari and Moa Bay. A Memorandum of Understanding was signed in September 1994.

The agreement related to a joint venture with the State-owned company, Commercial Caribbean Nickel SA. WMC had a 65% interest and managed the venture. WMC was to fund the project through to the completion of a feasibility study based on the Pinares de Mayari West deposit and, if commercially viable, was to finance the development.

H M (Hugh) Morgan and several other senior WMC executives met with Cuban officials, including the President, Fidel Castro, in January 1996 and signed the Heads of Agreement.

## The Project

The nickel resource in the joint venture area had been drilled in detail under the supervision of Russian geologists. Check drilling by WMC was in close agreement. The resource was estimated at 200 million tonnes averaging 1.0 % Ni and 0.1 % Co.

In accordance with the joint venture agreement, a detailed evaluation of the project began in 1997. The work was expected to take several years to complete and to include pilot plant testing.

## Visit To Cuba

I had a personal view of this project when my wife and I called in Cuba in September 1997 on our way to an Alcoa Board visit to Brazil. We were received royally, met and farewelled at the airport by the Minister for Basic Industry, Marcos Portal and his senior colleagues, accommodated in a government guesthouse (confiscated from the owners who escaped Cuba after the revolution), flown to the nickel region in a Russian jet and helicopter, and shown extensively the region, a school and hospital in Moa Bay, existing operations, and the joint venture area. On the way back to Havana we stayed a night in a holiday resort at Varadero on the north coast. The *piece de resistance* was a private dinner with Fidel Castro in his Palace in Havana on the following evening.

El Commandante, as he appeared to be often called, received my wife and me and Andrew Michelmore, who was in Cuba at the same time, at 9 pm which seems to be early dinner in Latin countries. He spoke through an interpreter, but I think understood English.

Castro explained that the WMC project was in an area where he grew up (his father had a large property there) and that he disliked the thought of the forest where he had roamed as a boy being destroyed. However, he understood the need for it. I assured him that our experience in Australia would ensure that the land would be restored and the forest regenerated. He asked many perceptive questions about nickel markets and the structure and outlook for the industry. There was no sign of the illness he was rumoured to be suffering from just before our arrival in Cuba. El Commandante was a charming host and the dinner concluded at midnight.

There was no doubt about the wish of the Cubans, including the President, to proceed with the venture as fast as possible. At the same time they seemed to be realistic about the importance of markets and profitability. As in China, the Communist Party did not want to let go of its power but they had no illusions about the bankruptcy of communist economics.

While there was a long way to go to turn the Cuban joint venture into a profitable nickel producer, in April 1999 my feeling was that this was a promising project for the future.

## Subsequent Events

In the Annual Report for the year 1999, WMC announced the termination of a number of projects, including the Cuban Nickel Project, because 'at this time they do not meet our investment criteria'.

## ***YAKABINDIE FOR THE FUTURE***

The Y akabindie deposit was held by Dominion Mining in 1994, when North Ltd took an option to pay \$1 million for every one per cent interest it decided to acquire in the project. A feasibility study in 1995 was based on a mineable reserve of 150 million tonnes at 0.52% Ni and a production rate of 22,000 tonnes contained Ni per annum, increasing to 40,000 tonnes per annum. However, the project did not proceed.

The WMC 2000 Annual Report includes the following comment:

'We recently announced the acquisition of the Y akabindie nickel deposit, located 25 kilometres south of Mount Keith. The deal delivers a well-defined resource of the same geological style, thought to contain 292 million tonnes averaging 0.52 per cent nickel. Access to the whole ore body, part of which lies in our existing leases, will provide security for a more than 25 years for our nickel business, and could underpin the expansion of milling capacity at our northern nickel operations. Small shoots of high-grade mineralisation are known to occur on the leases we have acquired, offering excellent exploration potential.'

Kym Saville has provided the following summary of events:

- Prior to 1994, we had been in discussions with Dominion about possible WMC participation in Y akabindie on and off for several years. I think we had looked at it as part of the nickel study in 1990/91, but eventually elected to pursue Mt Keith instead. Dominion then completed a Pre-feasibility Study and advanced negotiations with (pre Mabo) native title claimants whilst we were developing Mt Keith.
- Dominion had invited us to look at Y akabindie again in about March or April 1994 and we were about to do so (having just signed confidentiality agreements) when they announced that North had agreed to take an option to acquire a controlling interest in the Project. It became apparent to us at that time that our potential interest had merely been used to pressure North to conclude an agreement.
- North completed a feasibility study at considerable expense over a period of about three years, but then decided not to proceed.
- Subsequently, Dominion approached us again about possibly acquiring an interest in the Project. They had enhanced the North feasibility study but had been unable to raise finance for the Project. They initially tried to get us to sell our tenements on the boundary of their Six Mile lease, as the location of the lease boundary severely compromised the optimal open pit design for access to their highest grade ore. When we declined, they sought to explore joint venture options. We maintained the position that we saw Y akabindie as a potential source of nickel ore only in the long term future, if needed to replace Leinster or Mt Keith, but were not prepared to commit to any development timetable. Further, if Dominion insisted on retaining a significant interest in the Project, our interest in developing it even in the long term future would be much diminished, as we would always tend to prioritise our abundant wholly owned nickel opportunities in the area.
- Eventually, Dominion realised that their ambitions to be a major player in the nickel business through a significant interest in a producing mine at Y akabindie would not be fulfilled in the short to medium term. Further, with their own financial resources much diminished from low

gold prices, they reluctantly concluded that they had to sell Y akabindie, and that the property was worth more to WMC than any other potential buyer due to WMC's established nickel infrastructure in the Eastern Goldfields. Dominion approached WMC in mid-1998 seeking an offer to acquire Y akabindie outright. WMC made an offer which we believed Dominion were about to accept, but Dominion then again approached North who made a higher offer which was accepted without further reference to WMC!

- North then approached WMC seeking to acquire our leases or joint venture Y akabindie and were given the same response as Dominion. By early 2000 they were drifting towards a view that they should sell it to us, but were hastening slowly so that they did not appear to be an anxious seller (and we were trying to look even less an anxious buyer!).
- Subsequently, North was taken over by Rio in mid-2000. Rio's more hard-nosed appraisal of the Project led them to conclude that it should be divested as a non-core asset, and they approached WMC, leading to the agreement referred to in the 2000 Annual Report.'

WMC's Executive General Manager - Nickel, A K (Alan) Dundas said in February 2003 that WMC had paid Rio Tinto \$25 million and would pay an additional \$15 million upon gaining approval to mine.

The proximity of the deposit to Mt Keith puts WMC into a preferred position to be able to develop it at the appropriate time.

## ***TO MARKET, TO MARKET***

A more detailed record of nickel marketing is the unpublished manuscript *WMC Nickel History - The Commercial Aspects* (in *Group Historical Information Collection*, Ni Div-1), written in 1987-88 by D P (Doug) McIntyre, on which I have drawn freely for the following summary.

### **BACKGROUND**

In 1950 only Canada and New Caledonia produced nickel in the Western world and Russia was the only important source in the communist countries.

When WMC entered the nickel industry in 1967 it was dominated by the International Nickel Company of Canada (INCO) with about a 65% market share. Two other producers - Falconbridge Nickel Limited of Canada (FALCO) and Societe Le Nickel (SLN) of France were significant, followed by Sherritt Gordon Mines (SHERRITT) of Canada, Outokumpu (O/K) of Finland, and Sumitomo Metal Mining (SMM) at some distance.

Apart from its market dominance, INCO was also the lowest cost producer. It effectively set the world price of nickel (the so-called 'producer price'), which was followed by the other producers. INCO's policy was for steady long term development of the market. Price changes were generally related to changes in production costs and INCO normally regulated the supply and demand relationship by adjusting its own production as required.

INCO produced nickel oxide sinter for the stainless steel producers, electrolytic nickel cathodes for electroplating and foundry applications and very pure carbonyl pellets, also for foundry and plating applications.

FALCO produced electrolytic cathodes and SLN produced ferro-nickel for the stainless steel industry by smelting laterite ores. SHERRITT produced nickel powder and briquettes by a metallurgical process it had developed, which were used across a range of applications and O/K produced electrolytic cathodes. Several Japanese companies produced ferro-nickel from New Caledonian ores, whilst SMM produced electrolytic cathodes from purchased nickel sulphide concentrates.

### **NICKEL MARKETING 1967 - 1974**

#### **Initial Steps**

At the time Kambalda came into production, nickel was in short supply. There were several reasons for this.

The post-war industrial development in Europe and Japan was in full swing, aided by the low price of oil (US\$2-US\$3 per barrel). This had created a fast growing demand for stainless steel. The introduction of the Argon Oxygen Decarburisation (AOD) process in stainless steel manufacture made it cheaper, further encouraging demand.

INCO, dominating the market, had not foreseen the demand growth and had kept the producer price too low to encourage construction of large new nickel production capacity. On top of this, there was an extended industrial stoppage at INCO's Sudbury complex in 1968-69.



While almost all the nickel was still sold at the producer price, consumers were willing to pay higher than producer price to obtain desperately needed additional supplies and were only too happy to deal on this basis with new entrants into the industry. A 'grey' market developed, based on supplies of Russian nickel and some nickel 'leaked' by Western producers. INCO had increased the producer price from US\$0.93 to US\$1.13 per lb, but the 'grey' market price hit US\$7 per lb - in excess of US\$30 per lb in 2003 dollars!

WMC received many approaches from agents and consumers, but was unable to enter the market direct while it was a concentrate producer only. The Company was able to have some of its early production toll refined by SHERRITT and sold this through the British Metal Corporation at the premium price of US\$1.75 per lb while the producer price was US\$0.84 per lb, although a contract for 700 tonnes of nickel over two years was concluded at producer price with the Royal Australian Mint in 1967 as a matter of policy.

The desire to become a nickel metal producer as quickly as possible so as to be able to market direct to customers was an important consideration in the decision in 1967 to build a Sherritt Gordon type refinery at Kwinana, which was able to produce metal direct from concentrates. The refinery started producing nickel powder and briquettes in May 1970. The refinery also produced byproduct ammonium sulphate (amsul), a mixed nickel-cobalt sulphide (mixsul) and copper sulphide (cusul). The marketing of amsul is described in Volume Four, *THE FERTILE ROCK, Fertilizer At Kwinana*.

The broad marketing strategy adopted was to supply Japan for ease of access to this market with partly processed products, initially concentrate and later, when a smelter had been built, matte, while the rest of the world would be supplied with refined nickel from the Kwinana Refinery. Providing partly processed product for Japan would also reduce the capital commitment for refining.

### **Marketing the Sulphides**

The copper sulphide was sold to a refiner in Europe, at a price related to the LME copper price.

There were only a few refineries in the world able to recover the nickel, cobalt, and precious metals in the mixed sulphide.

Initial sales were to SHERRITT. In the 1990s competitive tenders were called and thereafter the sales were 50% to FALCO at their Kristiansand refinery in Norway and 50% to SHERRITT, on much improved terms.

### **Marketing Metal**

A decision was made to market metal from the refinery direct instead of through agents, and R W (Bob) Allard, an ex INCO marketing executive, was engaged in 1968 to develop a sales plan for WMC nickel metal. Toll refined metal from Sherritt would be used for introductory purposes with customers. Whilst the producer price policy was adopted for all sales of metal produced from Kwinana, beginning in 1969 toll refined metal from Sherritt was used for introductory sales to customers including some sold at premium prices. The introductory sales were usually accompanied by a 3 - 5 year contract for larger tonnages after production from Kwinana commenced in 1970.

### **SUMITOMO Contract**

The first contract for concentrate with SMM for 41,000 tonnes of contained nickel over 10 years to 1976 was signed in May 1967, before any shipments from Kambalda began. The market in Japan was expected to continue to grow strongly and, as early as at the official opening of Kambalda in September

1967 Mr Kawakami, the President of SMM, was expressing interest in additional supplies. The practicability of this depended, of course, on additional production from Kambalda.

The negotiations with SMM were all carried out by W M (Bill) Morgan and D P (Doug) McIntyre. This followed the practice established earlier in the negotiations for the iron ore contracts from Koolanooka Hills. There were literally no other staff involved - no lawyers, no assistants, no experts of any kind. There was never any trouble with the contracts or with the relationships between the companies generally, which have remained excellent to the present day.

Morgan and McIntyre were in Japan again in February and May 1969. Agreement was reached with SMM to supply up to 7500 tonnes per annum of nickel in matte from the yet to be built Kalgoorlie Nickel Smelter for a 10 year period commencing in 1972. This meant that WMC was committing a significant proportion of its planned output to SMM, while SMM was relying almost exclusively on WMC for its nickel raw materials, thus cementing an important long term alliance between the two companies.

Supply of nickel concentrate by WMC was particularly attractive to Japanese smelter and refineries because there was a tariff on imports of refined nickel into Japan. The tariff was substantial and WMC was in fact able to negotiate a price which included a share in the tariff.

Another contract with SMM was concluded in February 1970 for 2000 tpa of nickel in concentrates in 1970, with WMC option for renewal in 1971.

Simultaneously a contract was entered into to supply another Japanese refiner, Shimura Kako, with between 2500 and 3000 tonnes per annum of nickel in concentrates for three years commencing in 1970. There was some concern about the SMM reaction when this was announced, but to Morgan's and McIntyre's relief the reaction was mild.

### **SHERRITT and INCO Contracts**

While the SMM contract was a fundamental part of WMC's nickel marketing and has remained so to the present day, concentrate contracts were also concluded in the late 1960s with SHERRITT. These were part direct sale and part toll refining agreements, enabling some sales to be made at premium prices. The additional metal from toll refining was offered even to long term customers at a premium which in 1970 was US\$3.00 per lb, compared with the producer price of US\$1.28 per lb.

After a four month strike at INCO in 1969, two cargoes each of 10,000 tonnes of concentrate were sold to INCO in late 1969/early 1970 at substantially above producer price.

### **Nickel Shortage Ends**

The first shipment of metal from the Kwinana Nickel Refinery was made in May 1970. Deliveries under long term contracts from Kwinana commenced about mid-1970.

The world economic downturn in 1970 brought to a sudden end the nickel shortage which had existed since 1966. In early 1971 there was a sharp reversal in the markets and by mid-1971 consumers were seeking to reduce purchases or defer contracted shipments. Consumption in 1971 declined 12% compared with 1970, while new production came on stream in Australia, Canada, Dominican Republic, and Southern Africa.

## **Market Competition**

In the weak market of 1971 some 6000 tonnes of nickel metal from the total available of 23,000 tonnes in 1971-72 was unsold. There was price competition in the markets and it was decided to introduce a quantity rebate system of up to US4.53¢ per lb for quantities above 1000 tonnes.

Another problem in the oversupplied market was that virtually all WMC production was in the form of briquettes, which were not competitive in a large part of the market. The customers in the largest single application, stainless steel production, preferred the cheaper ferro-nickel or nickel oxide products.

The solution adopted was to package nickel powder into drums and sell it under the name of steelmaking powder (SMP) at US5¢ per lb below briquette price. The elimination of the briquetting step offset the price reduction by 2 - 3 cents per lb. This was successful in achieving increased sales in a difficult market, although INCO and FALCO countered by increasing the differential between their cathode nickel and steelmaking grades.

By 1972 INCO's previous market dominance had been eroded. Expansion by FALCO and SLN, the emergence of new producers including WMC and large expansion plans by producers such as AMAX were threatening a serious oversupply.

In 1973 and 1974 the market improved, world consumption in 1974 being the highest ever. In 1975, however, with the oil price increases depressing industrial activity, consumption fell back to the 1972 level.

## **Establishment of Marketing Offices**

Another marketing initiative in the difficult circumstances in 1972 was the establishment of marketing offices in the main market areas, instead of endeavouring to carry out the work from Australia. These offices were also intended to market WMC products other than nickel from projects then on the drawing board or under development.

The US Office was located in Pittsburgh, managed initially by A D M (David) Green who had been involved in the refinery and smelter studies. The UK and European markets were served from an office in London with Bob Allard, who had been transferred from Melbourne, in charge.

J O (John) Reynolds was recruited from CRA as Commercial Manager - Nickel Operations, based in Melbourne. Sales of concentrate to Japan continued to be handled by W H (Bill) Cunningham and metal sales to South East Asia by Kevin Davies, both based in Melbourne.

The arrangement with John Reynolds in overall charge was resented by Bob Allard, who - justifiably or unjustifiably - thought that he had been engaged to be in charge of all nickel marketing and sales. When, for legal reasons, subsidiary companies were established to formally handle documentation to customers in Europe and he was appointed the Managing Director, he believed that this should entitle him to operate independently from staff in Melbourne. I remember a very tense meeting with him in Duke's Hotel in London.

Relationships deteriorated, and in any case it was felt that the commercial aspects of nickel should be a part of the responsibilities of the Nickel Division. In 1974 the responsibility for marketing and sales was transferred to K F (Keith) Parry in Perth. John Reynolds became Manager - Corporate Planning, reporting to Doug McIntyre as General Manager - Planning and Development. Doug resigned in 1975 because of his wife's illness.

On 11 November 1977 Keith Parry as Director of Operations and responsible for nickel marketing and sales assumed direct responsibility for the European, North American, and Melbourne sales offices.

### **Sales To Japan**

The difficult market conditions had also affected SMM and in November 1971 I had exchanged letters with the President, Mr Kawakami, followed by discussions in Tokyo in April 1972. The terms of the contract (which had been very favourable to WMC) were amended to assist SMM.

Following further discussions in Melbourne, I wrote to Mr Kawakami on 5 October 1972, confirming the understanding recorded in correspondence between Kawakami and Bill Morgan on 10 and 22 April 1971, that WMC regarded SMM as our principal partner in nickel in Japan and SMM regarded WMC as its principal source of supply. We could not simply reduce the price of nickel to Sumitomo because we ourselves were seriously affected by the market, but were willing to change the arrangements to benefit SMM if we could do so without incurring a loss ourselves. We also wanted any arrangements to be economically satisfactory in the long term.

Sumitomo had provided us with their costs and we concluded that there would be considerable savings to SMM if WMC provided all the nickel to SMM in matte instead of concentrate. This would require SMM to shut down its smelter on Shisakajima Island and we appreciated that this was not an easy decision. However, it was fundamental to a successful long term business relationship.

There were numerous other amendments to help SMM weather the market crisis, including foregoing a part of the tariff protection. Negotiations were subsequently carried out by Doug McIntyre and F Kurosu of Sumitomo.

When all had been agreed Kawakami, President of SMM, visited Australia in March 1973 to meet with me and confirm the importance of the decisions taken by the two companies and of the long term relationship between them. He retired as President shortly after this visit and became the Chairman.

There was a considerable delay in obtaining Australian Government approval to the changes in contracts and it was not until 2 August 1973 that I was able to advise Kawakami's successor, Mr A Fujisaki, that the amendments had been approved.

Meanwhile, we had considerable difficulty in bringing the smelter, which had fed the first concentrate in December 1972, up to capacity and had to shut it down for six weeks on 10 September to reline the furnace and carry out modifications. Matte deliveries to SMM were, however, essentially maintained.

Doug McIntyre makes the following comment:

'Over the 20 years from 1967 to 1986, contracted quantities of nickel in concentrates and matte amounted to 157,000 tonnes of nickel content, whilst deliveries totalled 153,000 tonnes, that is within 3% of the contract total. Considering the enormous market and economic problems which existed over much of this period, it is quite remarkable that the performance on both sides has been so close to their initial intentions and obligations.'

Shimura Kako during this period got into increasing difficulties. In 1972 INCO acquired a 34% interest in Shimura and their relationship with WMC met with numerous and increasing difficulties. The last shipment to Shimura was made in March 1980.

## **Export Controls**

In 1973 the Whitlam Government imposed strict controls on export of minerals, including nickel. To WMC this was an administrative nuisance, causing a lot of paperwork, but approval was never denied. The controls remained in force until discontinued by the Fraser Government in July 1979.

## **Buyers' Visits**

In an endeavour to make ourselves different from other nickel producers and to establish personal relationships with customers, we invited in March 1973 a group of customer representatives from the UK, Germany, Sweden and United States to visit our operations in Western Australia. It was judged by Doug McIntyre 'a resounding success'. A number of such visits took place over the years, later also including wives. The practice was discontinued when marketing was moved from Australia to Toronto in February 1992.

## **NICKEL MARKETING 1975 - 1991**

In April 1974 the free market price again exceeded the producer price. However, the year 1975 was the beginning of a prolonged period of difficult conditions for the world nickel industry. The four-fold increase in the oil price in 1973 and 1974 had a severely depressing effect on the world economy. Consumption of nickel in 1975 fell by 25% from its 1974 peak. Several new projects, committed in the expectation of increasing consumption and the producer price of US\$1.33 per lb (equivalent to US\$6 per lb in 2003 dollars), came on stream - Greenvale in Queensland, FALCO's Dominican Republic project, NONOC in the Philippines, and the AMAX refinery in Louisiana.

In 1975 WMC was also still increasing output, with Windarra in full production, smelter capacity being increased from 200,000 tonnes to 350,000 tonnes of concentrate per annum, and the Kwinana refinery capacity being increased to 30,000 tonnes of nickel metal annually.

With plentiful supplies available, a number of WMC customers withdrew from the long term contract system, metal sales declined, and total sales were only maintained by short term sales of matte to other nickel refiners. WMC stocks of nickel increased.

There was a sharp escalation in worldwide inflation and the nickel producer price was increased by 9.5% in August 1975, with Class 1 nickel priced at US\$2.25 per lb. There was, however, widespread competitive discounting and much of the nickel was sold at US\$2.00 per lb.

Nickel consumption increased in 1976, but production continued to exceed consumption and stocks increased further.

In September 1976 FALCO announced a 15% price increase to US\$2.53 per lb. INCO decided on a smaller increase to US\$2.42 per lb, and FALCO was forced to lower its price to match. In reality there was no increase in price because of price protection, discounting, allowances, etc.

Price cutting continued in the intensely competitive market in 1977 which was aggravated by sales of Russian nickel at about 15% discount to the producer price into the Western markets.

INCO and FALCO had seen their market share and profits plummet. AMAX, a new refiner, was desperately trying to obtain market share to meet their feed purchase commitments.

In July 1977 INCO reduced its cathode price by 10% to US\$2.41, announced that it would cease publishing its nickel prices, and warned all producers, particularly AMAX, that they would meet any

price cutting. FALCO followed. By the end of 1977 the market price of nickel was around US\$2.00 or lower.

In August 1977 it was estimated that since 1974 production had exceeded consumption by about 250,000 tonnes, about five months' consumption at the then rate, which represented excessive stocks.

WMC's Japanese customers, advising severe downturn of sales, requested cutbacks in deliveries and renegotiation of contracts.

At August 1977 WMC had a surplus nickel inventory of about \$45 million and increasing.

The Scotia, Carr Boyd, and Fisher mines were closed down in September 1977, accompanied by a reduction in non-gold employees by about 21% from 3700 in August 1977, to 2900 in January 1978. This action was expected to reduce nickel production by 10%, but in fact did not do so as Kambalda had a run of high head grades and productivity increased noticeably during the same period. Substantial reductions in expenditure were, however, achieved.

In November 1977 I went to see the Secretary of the Department of Trade, Jim Scully, in Canberra and asked him to use the government's authority to convene a world nickel producer-consumer meeting to discuss the serious state of the industry. Jim thought this was a great idea and promised to get on with it immediately. It was just as well we did not hold our breath: the meeting was finally convened in 1985!

WMC and Shell agreed to shut down the South Windarra Opencut in January 1978 and suspend production from Mt Windarra underground in June 1978.

INCO and FALCO cut production in 1977-78 in an effort to reduce oversupply. WMC ceased production at Scotia, in some of the lower grade areas at Kambalda including the Fisher Mine, and at Windarra. The total reduction by WMC amounted to about one third of production. Development was reduced to minimum and about 300 personnel became surplus, with further reductions over a period.

The Canadian producers also cut back production substantially in 1978, but excess stocks maintained an oversupply situation and prices were well below US\$2.00 per lb at the end of 1978.

On the advice of Bob Allard who thought this would be well received, WMC endeavoured to lead the market back to a producer price by advising its customers that it would not sell at a price less than US\$2.00 per lb. The argument was that orderly pricing was in the interests of both customers and producers.

In mid-November 1977 I signed the following letter to all our main nickel metal customers, which was hand delivered to them by our sales representatives (Bob Allard, Tom Moorman, and Kevin Davies):

I have decided to write to you personally on a matter which I believe to be of considerable importance to both of us.

In recent weeks, nickel prices in the market place have become increasingly blurred. There is a risk that in the resulting confusion our hitherto good relationships may be strained through no fault on either side.

It is the feeling of myself, shared by my fellow Directors, that Western Mining now has a responsibility to its customers to declare its pricing intentions clearly and unequivocally.

You will be receiving from our European Sales Office (*in other areas from the North*

*American or Melbourne Sales offices respectively*) in the usual way notification of prices for Western Mining nickel products. On this occasion I would particularly ask you to note that our prices are valid until 31st March, 1978, and are firm and non-negotiable.

Naturally I would be very interested to receive your comments on this action, and would be happy to answer any questions.

Yours sincerely,  
A.H. Parbo  
Chairman and Managing Director'

Keith Parry, Bob Allard and I met representatives of our German customers on 9 January 1978 over dinner at Schloss Hugenpoet Hotel in Essen and I confirmed what Bob Allard called 'The Initiative'. The customers were doubtful. There was a similar dinner with our UK customers at the Savoy Hotel in London, where the reaction was also similar.

Keith Parry spent a great deal of time in Europe and North America, trying to make it work. While everyone he spoke to professed to support the initiative, behind the scenes other producers undercut WMC. The Company's nickel sales fell from 42,200 tonnes in 1976-77 to 27,100 tonnes in 1977-78.

As mine production was 48,500 tonnes, stocks increased to an all-time high. WMC's profit fell to \$10.1 million, the lowest in ten years.

This experience was the final nail in the coffin of the producer price. WMC's marketing philosophy thereafter became to sell its production at the best obtainable price.

In 1979 strengthening demand for nickel and a strike at INCO in Sudbury reduced producer stocks (including WMC stocks) to normal levels. Some price stability returned; the price increased from less than US\$2.00 per lb at the beginning of 1979 to US\$3.00 per lb at the end. In April 1979 we warned customers that the production which was turned down in 1977 and 1978 could not be reactivated at short notice.

Also in 1979, nickel (and aluminium) began for the first time to be traded on the London Metal Exchange. The major producers in both industries strongly opposed this on grounds that it would encourage speculation and large fluctuations in the price, but the protests had no effect. It was difficult to advance really convincing reasons against LME trading because other non-ferrous metals, including importantly copper, had been traded for a long time.

The uses of nickel in 1979 were 45% in stainless steel production, 10% in alloy steels, and 20% in non-ferrous applications, from high-nickel alloys to cupro-nickel alloys. The foundry sector consumed about 10% and electroplating, using high purity electrolytic or carbonyl nickel, a further 10%. About 5% was used in catalysts, powder metallurgy, nickel-bearing batteries, etc.

Western Europe accounted for 42% of world consumption, USA about 33% and Japan 19%, with the rest of the free world about 6%. About 60% was consumed in highly refined form (cathodes, pellets, briquettes) and 40% in less refined form (nickel oxide sinter, utility nickel, ferronickel).

The market again became weak in mid-1980 and continued so until 1982. Consumption in 1980 was 10% less than in 1979. Discounting was widespread, with prices less than US\$2.50 per lb by end 1981. The INCO operation in Guatemala was suspended.

In 1982 the Western World's metal mining industry suffered its most severe downturn since the 1930s. Nickel consumption continued to decline and the LME price fell from US\$2.59 per lb in February to US\$ 1.56 per lb in November. At the latter price few nickel producers were able to cover cash costs. WMC was essentially breaking even. Over the three years 1979-82 consumption fell by a total of about 20%, or about 100,000 tonnes per annum. Stocks in 1982 were about eight months' consumption.

Many producers cut back or suspended production. INCO and FALCO cut back sharply and cuts were made in Philippines and the Dominican Republic. Hanna Mining's ferronickel production in USA was suspended. Prices recovered slightly in late 1982.

INCO began to participate in the LME in 1982.

During 1983, 1984, and 1985 consumption was reasonably steady, although still below the 1979 peak. Large excess stocks continued to depress the price. From March 1983 to August 1985 the price of nickel ranged from US\$2.20 to US\$2.50 per lb. However, in September the price fell again and reached US\$1.70 per lb in December 1985.

During this period operations of the Agnew Mine in WA were suspended, the AMAX refinery in Louisiana ceased production, and the NONOC Project in the Philippines cut back sharply. WMC continued to be profitable, but INCO lost about US\$1 billion over the six years from 1981 to 1986. The industry's published losses amounted to more than US\$3 billion.

In October 1985 Bob Allard was asked to take early retirement and C J D (Ned) Williams became the head of the European sales office.

In 1985-86 WMC reduced its nickel production by about 20% by closing five of the highest cost mines at Kambalda and the South Windarra opencut. The closures resulted in a six week strike at Kambalda.

In January 1987 the price of nickel was about US\$1.70 per lb and the outlook was for continued oversupply, partly because of increased deliveries of Russian nickel to the Western markets. However, demand started to firm shortly thereafter. The 1986 demand had been about 1250 million lbs and this increased unexpectedly to an annual rate of 1450 million lbs in 1987. The effective world production capacity was 1400 million lbs and stocks were low. The change in demand was almost entirely due to an unexpectedly high growth in consumption of stainless steel.

The price responded and reached US\$4.00 per lb by the end of 1987. Demand and price continued to firm during 1988, while there was significant loss of production because of a taxation dispute between FALCO and the Dominican Government. The LME cash price reached a record US\$9.46 per lb in April.

While the price subsided from the peak later in 1988, it continued at levels where the nickel producers had their best year since 1969-1970. WMC had its best profit in its 55-year history in 1987-1988. Good market conditions continued, and a new record was set in 1988-1989.

However, WMC was unable to take full advantage of the high prices. During the poor nickel prices and the strikes at Kambalda in the early and mid-1980s, underground development had been curtailed to conserve cash. This limited the flexibility to cope with unexpected production setbacks, such as occurred at the Long and Foster mines.

High rock stresses encountered in the Long Mine required re-development of the lower levels. Difficulties in locating the orebodies at Foster required development of underground drill sites and additional drilling. Nickel production in 1988-1989 consequently fell to 37,570 tonnes.



This led to an interesting interlude. WMC's inability to reach production forecasts made in 1988 and to respond to the increased demand for nickel metal led to questions by Klaus Kilian of Thyssen Edelstahlwerke (TEW), one of our largest customers in Germany. He was also suspicious that the metal customers were taking second place compared to matte deliveries to Sumitomo.

My wife and I were attending the Degussa Annual General Meeting in Frankfurt in April 1990. We were invited to visit Düsseldorf and stay at the home of the Chairman of TEW, Professor Dr Karlheinz Rösener, on 27 April.

Klaus and Mrs Kilian were present at dinner that evening. I expected to be interrogated regarding our production problems, but to my surprise Rösener and Kilian had a different agenda. They foresaw substantially increasing demand for stainless steel in the future and were concerned to secure long-term supplies. They were also concerned about the extreme fluctuations in the price of nickel and wanted to find a way of stabilising this. They were prepared to canvass other consumers and suggested we might talk to Sumitomo. Current problems or Sumitomo matte supplies were not even mentioned, perhaps because of the mellowing influence of the ladies being present.

Nevertheless, I took the opportunity to explain and apologise for our production difficulties, described what was being done about these and confirmed our wish to be a substantial nickel supplier to TEW. Regarding price stability, I pointed out that this was in effect a wish to return to a kind of producer price. Our efforts to do exactly this in 1977 were not supported by customers because there was oversupply and prices were very low. Now that nickel was traded on LME, it was difficult to see how stable pricing could be re-introduced: we could not afford to forego price highs when we had to accept price lows.

The discussion was very friendly and it was agreed to continue when the Röseners visited Australia in October 1990. They drove us to the airport and saw us off next morning.

In the event, nothing happened regarding introducing price stability. There were too many powerful vested interests with a stake in the existing system.

Metal and mineral prices declined in 1990-1991 due to slowing down of world economic activity and increasing supplies from what used to be the Soviet Union. The nickel price, which had averaged US\$4.12 per lb for the year, continued to decline and was US\$3.44 per lb in 1991-1992.

### **Reorganisation of Marketing**

On 18 February 1992 a major reorganisation of WMC's nickel marketing was announced.

The offices in London and Pittsburgh would be closed and activities consolidated into a new wholly owned marketing subsidiary, WMC Nickel Sales Corporation (WNS) based in Toronto, Canada as from 1 April 1992. K V (Kris) Hansen and J (Jorge) Bernhard were appointed in Toronto and R (Roger) McSweeney would be marketing representative in London.

T F (Tom) Moorman, who had headed the Pittsburgh Office, elected to take early retirement. H B (Henry) Muller, who had succeeded Ned Williams in the London Office in 1988, returned to a new assignment with WMC in Australia.

The purpose of the reorganisation was to improve the price WMC received from nickel, which had fallen below the LME price when discounted unsintered steel making powder and briquettes had been introduced in the tough market conditions in the 1970s. The main objective at that time was to be able to place the product; price was an important, but secondary consideration.

Production of steel making powder and briquettes was discontinued and the production of powder was standardised.

WNS combined marketing of WMC nickel with trading activities by Hansen, McSweeney and Bernhard, all of whom had been principals in a firm specialising in nickel trading. The three individuals funded 49% of the US\$5 million capital of WNS and trading profits were shared 51% WMC and 49% by the three traders. In September 1997 it was reported to the Board that the trading profits since April 1992 had amounted to US\$7 million. The Board was assured that WNS did not speculate but did only back to back deals, and that the risks were therefore very low.

Kym Saville recalls that the change also removed the opportunity for the customers to trade in the market against WMC, which had occurred under the earlier arrangements.

### **NICKEL MARKETING 1992 - 1998**

High deliveries of metal to Western markets from the Commonwealth of Independent States (CIS) depressed the nickel price in 1992-93 to US\$2.82 per lb. Demand in Europe and North America actually strengthened a little, but LME inventories climbed from just over 28,000 tonnes to nearly 87,000 tonnes.

In 1993 Kym Saville was appointed Commercial and Marketing Manager, Nickel and Gold.

In 1993-94 world demand for nickel increased, deliveries from the CIS were lower, but LME stocks increased to 132,500 tonnes at the end of June 1994, mostly during the second half of 1993. The nickel price averaged US\$2.38 per lb.

The improvement continued in 1994-95. Consumption exceeded production, CIS deliveries were at stable levels, and LME stocks were reduced to 88,500 tonnes at end June 1995. The price averaged US\$3.39 per lb.

In 1995-96 the nickel price averaged US\$3.73 per lb, with demand and price declining in the second half of the year.

The market continued to weaken in 1996-97, the average price declining to US\$3.27 per lb.

In 1997-98 the nickel market collapsed, the price falling about 50% from US\$3.33 per lb in July 1997 to US\$1.69 per lb in December 1998. In addition to increased Western production and imports from CIS while demand decreased, the perception of considerable additional production from the Western Australian laterite projects under development put further downward pressure on prices. In particular, the founder and Chairman of Anaconda Nickel, Andrew Forrest, developing the largest of the three projects (Murrin Murrin), kept making extraordinary statements about his company's imminent ranking as the largest and by far the lowest cost nickel producer in the world, at a time when the project had not produced even one pound of nickel. What actually happened is described in *Nickel in Laterites*.

### **Voisey Bay Discovery**

In late 1994 the major nickel-copper discovery by a junior Canadian exploration company Diamond Fields Resources Inc (DFR) at Voisey Bay in Newfoundland in north-eastern Canada caused considerable concern to existing producers. Since 1990 the world market had been flooded with nickel from the Soviet Union (and its successor States) and was only just coming again in balance. The early indications were that by-product credits from the Voisey Bay discovery could cover operating costs,

leaving the nickel free of cost. Aggressive early production above the capacity of the market to absorb could depress prices for a considerable time to uneconomic levels for other producers, in effect repeating the experience resulting from the break-up of the Soviet Union.

The discoverers were entrepreneurs rather than mine operators, and very skilled stock promoters. They had a wonderful opportunity for this, because there was great interest in participating in the discovery. WMC exploration people, particularly in Canada, were enthusiastic, initiated early discussions, and visited the discovery site in May 1995. They were openly critical when senior management and the Board recognised that we were being used to bid up the price, had no prospect of entering the project on acceptable terms, and declined to make an offer.

In June 1995 INCO acquired a 25% interest in the discovery and in 1996 it acquired Diamond Fields Resources, for a total of C\$3.2 billion in cash and securities. In 1997 the intention was to construct a mine, mill, smelter, and refinery at Voisey Bay to produce 270 million lbs nickel, 200 million lbs copper, and 7 million lbs cobalt, by 2001.

Subsequent drilling indicated that the geology of the deposit was much more complicated than initially thought and INCO ran into difficulty with the local Inuit interests and the Newfoundland Government regarding royalties. Instead of a smelter and refinery at Voisey Bay, the plans changed to producing concentrate for shipment to Sudbury. This was unacceptable to the Government.

In June 2002 it was announced that Inco could process ore outside the province while it built a C\$1 million plant to acid leach the concentrate, or a smelter if the acid plant did not work. Production was expected to begin in 2007.

### **Subsequent Events**

In August 1999 WMC began trading cobalt on the Internet, opening up this previously 'closed' market to public scrutiny. The move attracted both criticism and praise.

As a result, WMC doubled its cobalt customer base, improved its premiums, and was sold out in cobalt. The success encouraged the Company to launch a similar site for nickel in September 1999. Most nickel continued to be sold on long term contract, but 5000 to 10,000 tonnes per annum was earmarked for spot sales over the Internet.

In 2003 WMC Resources Ltd concluded a long-term contract for nickel matte with Jinchuan Group Ltd in China (see announcement attached).

## ***THE PASTORAL SUITE***

When Kambalda was discovered, the exploration and mining leases were mainly on a pastoral property. The flurry of activity and traffic from and to Kalgoorlie and Widgiemooltha resulted in frequent complaints by the leaseholder about fences being damaged, gates left open, sheep being shot, and the general nuisance caused. Much of it was undoubtedly justified, some of it may have been a negotiating stance.

It was decided to purchase the property from leaseholder Robert Murray, and to lease it back to his son at a nominal rental. Everybody was happy. Bob Murray retired to Esperance; his son had the use of the property and buildings at a modest rental and was much more tolerant of WMC's activities. Widgiemooltha Pastoral Company was formed in 1983 to hold this and other properties which may be acquired in the vicinity.

This set the pattern for the future, not only for the Nickel Operations but also at Olympic Dam and Yeelirrie.

Thus WMC came to own or control numerous pastoral properties in Western Australia, including Yeelirrie, Leinster Downs, Tarmoola, Weebo, Albion Downs, Mt Keith, Yakabindie, Pinnacles and Dandaraga stations, adjacent to Mt Keith and Leinster operations; and Woolibar Station adjacent to Kalgoorlie Nickel Smelter.

In South Australia, WMC has the Roxby Downs, Purple Downs, Andamooka and Stuart Creek stations adjacent to Olympic Dam.

The 14 pastoral properties, valued at \$10 million, add up to a total holding of 3.2 million hectares (32,000 sq km), the equivalent of half the size of Tasmania. Leaving out governments, WMC is one of the top ten land controllers in Australia.

The Yeelirrie property was de-stocked and as a result became of interest to government bodies as a natural regeneration area.

H M (Hugh) Morgan described the situation in October 2002 as follows:

Holding pastoral leases does provide mining companies with some measure of resource security. It lessens disputes about compensation and in some areas enhances access entitlement for our explorers and mine operations. Indeed, outside of acquiring pastoral leases as part of minerals or mine purchases, this is probably the main purpose for miners entering the pastoral industry.

However, the courts will continue to ponder over the differing stakeholder claims on pastoral holdings for many years yet. At least we are a party to these vital discussions and decision making process.

You might well say that if Native Title is not extinguished by pastoral leases, then what is the benefit of owning one as it delivers no advantage. You might argue the other side, saying that if Native Title is extinguished by pastoral leases, then why go to the cost of owning one because any pastoral lease can be accessed for mining.

So we must also look to the capacity of our leases to offset environmental and social costs in the

areas of environment, community relations and public reputation. Initiatives on our pastoral leases have already shown the potential to generate significant benefits, including:

- Partnerships with academic institutions, public bodies and government agencies. Our Arid Recovery Project in South Australia - an internationally recognised initiative - is an example of partnerships in research, feral animal eradication or control, endangered habitat management, species reintroduction and land-type monitoring and management.
- Active environmental management. This contributes to our status and credibility - our corporate reputation - with Federal and State government regulators, with likely financial benefit coming from reduced regulation.
- Community development initiatives. In Western Australia, our Leinster Training Facility - the centrepiece of our Indigenous Employment Initiative - is on Leinster Downs Station. It is a focal point of local community activity.
- Active partnerships and relationships with host communities. Aspects of relationships with indigenous people and other pastoralists (ie: our neighbours) are managed and maintained by our pastoral staff.
- Potential to generate positive cash flow based on biodiversity credits. Currently, we spend large amounts of money in rehabilitating mine sites and tailings retention systems. An alternative may be to invest in cheaper yet far more significant environmental initiatives such as the Arid Recovery Project. The biodiversity credit created by one project may be able to offset biodiversity losses at others.
- Potential for future initiatives including education, tourism, indigenous and local business development, aquaculture, etc - the list is a long one when we really look at it.

Many of these examples are speculative but they do add to the rationale and continued pastoral lease retention. Holding these properties has come at a cost as we seek to establish a low cost base for production from traditional sources - sheep, wool and cattle. It is in this area that we have made some significant gains. Let's take our Western Australia pastoral operations as an example.

In 1997, each of our Western Australia leases was run individually, and at significant losses. In 1998 a review focussed our efforts clearly on better management, cost reduction, income improvement and meeting environmental responsibilities.

Since 1998, all predicted outcomes for our Western Australia leases (not including Y akabindie because we did not control it then) have been achieved or exceeded. Income in 2002 will be just over \$1 million or 288% more than in 1999. Net cost, after allowing for income, will be about \$500,000 or 55% less than in 1999. On its own this is a lousy rate of return, however it is an asset that protects our mining operations and adds to our options of meeting community commitments that benefit the company as a whole.'

In March 2003 the WA properties ran 25,000 merino sheep, with a potential carrying capacity of 45,000. In the 2002 shearing season 500 bales of wool were produced.

Y akabindie was the only station to run cattle in the WA Group, with 500 head of a Brahman strain of breeders and an annual turn-off of 350. There was the potential to build the herd up to 2000.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

***BUSINESSES AT APRIL 1999***

**VOLUME THREE**

***THE BRIGHTNESS OF ALUMINIUM***

***&***

***THE BURNISH OF COPPER***

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# ***THE BRIGHTNESS OF ALUMINIUM***

## **CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>203</b>
<b>Casual Encounters</b> Involvement 1974 - 1978	<b>209</b>
<b>Australian Chairman</b> Chairman of Alcoa of Australia 1978 - 1996	<b>213</b>
<b>In The Big Pond</b> Director of Aluminum Company of America	<b>225</b>
<b>Stepping Up?</b> WMC Shareholding in ACOA?	<b>229</b>
<b>Buying Back The Farm</b> Increasing WMC's Ownership of A/A	<b>231</b>
<b>World Our Oyster</b> The AWAC Agreement	<b>233</b>
<b>In Retrospect</b>	<b>235</b>



# ***THE BRIGHTNESS OF ALUMINIUM***

## **OVERVIEW**

The story of WMC's leadership in proving the bauxite deposits in the Darling Range of Western Australia, the formation of Alcoa of Australia (A/A), and of the events to 1996 has been told in Geoffrey Blainey's book *White Gold*, published in 1997.

It was written at my instigation while Chairman of A/A. Geoffrey's research for it coincided with a periodical downturn in the aluminium industry; there was the usual tightening of belts throughout the Alcoa group and Bob Slagle, the then Managing Director of Alcoa of Australia, questioned whether this optional expenditure should be discontinued. I argued, and it was agreed, that the research should be completed while many of the people involved in the early events were still around, although the publication could be deferred. As it happened, the markets improved and the publication went ahead as initially planned.

The section in this manuscript *Corporate Alliances* in *CORPORATE ACTIVITIES* gives an overview of WMC's relationships with the Aluminum Company of America (ACOA), subsequently re-named Alcoa Inc. Together with *White Gold*, this represents a comprehensive record of WMC's aluminium activities. In this chapter I will only add some further personal recollections to the Alcoa of Australia story from 1974 to April 1999 and describe some events which are not covered in Geoffrey Blainey's book.

Although by then retired from the Alcoa of Australia Board, I was asked by the then Chairman and Managing Director, Roger Vines, to speak at the launch of *White Gold* on 18 June 1997. My speaking notes follow:

It is seldom that I have been asked to do something which gives me as much pleasure as the privilege of launching the history of Alcoa of Australia Limited. The Company was very fortunate in being able to interest the grand master of the art, Professor Geoffrey Blainey, in writing the history. The result, *White Gold*, is a wonderfully written account of a fascinating story. I know I am biased, but I found it hard to put the book down when an advance copy landed on my desk a month or so ago.

### **Recent Materials**

We are not often reminded that some of the materials which help make our lives as comfortable as they are today have been available for only a short time. Thus oil was first found in commercial quantities in Pennsylvania in 1859. Aluminium was first identified as a scientific curiosity in 1807. It was more expensive than gold. One of its early practical applications is said to have been a rattle for Napoleon's son. At the Court of France in the 1850s finely crafted aluminium eating utensils adorned the banquet tables and aluminium became fashionable for jewellery. Emperor Napoleon III presented aluminium helmets and armour to his Marshals as a sign of special favour. After the Civil War in America, a grateful United States Congress awarded an aluminium medal to General Grant. In 1884, aluminium provided the finishing touches for the top of the Washington Monument.

Geoffrey Blainey reminds us that it was the Hall-Heroult electrolysis process developed in 1886 which made it possible for the world usage of aluminium to increase from just a few tonnes to over 20 million tonnes a year today, thus becoming the second most widely used metal in the world.

With my WMC background, I can't resist mentioning that another metal very important to our way of life, nickel, has a similarly short history. While known for a long time as a nuisance in copper ores, it also became a commercial metal as recently as at the turn of last century. Today nickel is indispensable as an alloying element in applications which require metals of high strength, toughness, and resistance to corrosion and heat.

### **Aluminium In Australia**

Coming back to aluminium, Geoffrey Blainey relates the story of the development of the aluminium industry in Australia.

From a government-owned operation in Bell Bay in Tasmania established for strategic reasons in 1955, producing 26,000 tonnes of alumina and 13,000 tonnes of aluminium metal per year from bauxite imported from Malaya and Indonesia, Australia has become by far the world's largest producer of bauxite and alumina and a substantial producer of aluminium metal. This is a unique achievement, with parallels in the development of the Australian nickel industry which has grown from no production in 1966 to the third largest in the world today. Iron ore and coking coal production and export from Australia developed from similarly small beginnings to world ranking industries over a similar time period, but these minerals are not processed in Australia to the same degree.

### **Alcoa of Australia - The Early Days**

Alcoa of Australia, the largest individual alumina producer in the world, is an important part of the Australian aluminium story.

The book captures very well indeed the initial uncertainties and doubts about the project, beginning in 1957 with nothing more than a broad concept and a few samples collected from surface outcrops of what was thought to be uneconomic bauxite in the Darling Range in Western Australia. It was a courageous decision by the then leaders of Western Mining Corporation to use the extremely scarce resources of funds and people available to the Company to pursue what appeared to be a really long-shot prospect. Two other companies - Broken Hill South Ltd. and North Broken Hill Ltd. - joined in the project. Gradually more information was developed, some of the initial doubts and problems were overcome, the options became clearer and were pursued, while new complications and risks emerged.

Looking back today it seems incredible that it took only four years from the very beginning of exploration work in 1957 to the decision in 1961 to begin construction of the refinery and the smelter. This is particularly surprising because the numbers of professional staff engaged on the project until Alcoa of Australia was formed could be counted on the fingers of two hands and none of them, apart from one consultant, had any previous experience in the aluminium industry. Perhaps this was one of the reasons why decisions could be made quickly! I must admit I am sometimes nostalgic for the old days.

What today would be called a preliminary feasibility study (a terminology not in use in 1960) was carried out in a few months by just one man, a retired Aluminum Company of America executive, Ralph Derr. Such a study today would take a year or two, involve dozens of experts, and cost millions of dollars. After all that, the result would not be any better.

The Aluminum Company of America was invited to join in the project in the belief that this company's ethical standards were of very high standing and matched its technical excellence and

financial strength. This proved to be an accurate judgement, which has been vital to the success of the venture.

### **Great Growth**

The formation of Alcoa of Australia Ltd. in 1961 marked the conclusion of the initial period during which the fundamental decisions were made which set the fledgling company on its course to ultimate success.

Without doubt it was the late Sir Lindesay Clark's vision and persistence which was the main driving force. Sir Lindesay had the ability to separate the important issues from the rest and to look a long way ahead. His was the inspiration and the will to carry the project forward in the face of doubts, dangers, and setbacks. But even Sir Lindesay would not have foreseen the way in which Alcoa of Australia grew from the initial concept in 1961.

The initial project of a 200,000 tons per year refinery at Kwinana in Western Australia and a 40,000 tons per year smelter at Point Henry in Victoria has grown over the years into three refineries with a total capacity of 6,700,000 tonnes alumina per year in Western Australia and two smelters with a combined capacity of 500,000 tonnes of aluminum metal in Victoria, of which Alcoa of Australia's share is 327,000 tonnes.

### **Environmental Rehabilitation - The Key**

Geoffrey Blainey deals at length with the environmental concerns about bauxite mining in the Darling Range, which were a major issue in the 1970s and 1980s. These were overcome by developing a rehabilitation technique which is today often held up as a model for how it should be done. Equally important in overcoming the objections was the decision to arrange for tens of thousands of people, both Western Australians and visitors, to go and see the work and its results themselves. Attempts by extremists to continue their opposition collapsed once people were able to form their own opinion. A visit to the mining and rehabilitation areas and a picnic lunch in the forest is still one of the popular weekend recreations of many Perth and Fremantle families.

The Managing Director of Alcoa of Australia in the late 1960s, Joe Bates, deserves the main credit for having recognised the environmental problem and initiating remedial action well before it became a public issue. Clearly, finding a way to overcome the environmental concerns was the key to the ultimate success of Alcoa of Australia.

### **Testing Times**

In the early 1980s the Company went through some really testing times in addition to the environmental challenges.

There had been virtually continuous expansion since operations started in 1963. Most of the cash flow from the operations was ploughed back into expansion, which was progressing at a high pace. Assets were being accumulated at the cost of low immediate returns to shareholders.

The construction of the first stage of the Wagerup refinery and the commencement of the Portland smelter coincided with a downturn in the aluminium markets and with large power cost increases in Victoria. Wagerup was left in mothballs after completion because of lack of demand for alumina. The construction at Portland was stopped after some \$300 million had been spent and the fate of the smelter was uncertain. As Geoffrey Blainey records, the then Chairman of the Aluminum Company, Krome George, out on a visit, contemplated the concrete foundations and a

few sheets of galvanised iron flapping in the wind on the silent construction site and announced that this could well be the "Stonehenge of the aluminum industry".

It took some years before the market turned up, Wagerup was commissioned, and work at Portland resumed. In 1988, twenty seven years after the Company was formed, Alcoa of Australia finally paid its first substantial dividend to shareholders. It is pleasing to record that the shareholders' patience has been rewarded by good profitability and dividends since then.

### **Lessons From History**

History, like literature, is valuable for its own sake, for the enjoyment we derive from a well-told story. But history is also valuable for the lessons we can learn from it.

Looking back today there is no doubt that using the bauxite in the Darling Range as the basis for developing a major participant in the world aluminium industry has been of great benefit to Australia. The question may be asked whether such a development could occur today, given present conditions and community mindset in Australia.

Readers of *White Gold* should form their own opinion. My conclusion is that the answer has to be "no".

In the 1950s and 1960s everyone in Australia was aware of the importance of economic development. Those able to conceive and launch new projects or businesses were universally applauded. Governments and the community generally were doing all they could to help.

Since the early 1970s it has become not only acceptable but even fashionable to protest against and to put all kinds of obstacles in the way of development. Economic developments in particular run into all kinds of objections even after they have been through years of investigations and assessments and received all possible approvals.

Could anyone today obtain permission to explore for bauxite in the Darling Range and be given the opportunity to show, as Alcoa of Australia did, that rehabilitation can restore the mined areas to an excellent environmental condition? I do not think so. And if the bauxite could not be mined, none of the other developments could take place.

This raises the question of whether we, as a community, have lost the ability to do many of the things on which our present high living standards are based, and what this means for our future. But this is a topic for another occasion.

### **Congratulations**

On a more cheerful note, may I congratulate the publishers and printers on producing a very attractive book, and the Company on ensuring that the first thirty-five years of its history is available to the public in Australia and overseas. It is particularly appropriate that the history covers the events up to 1996, shortly after Alcoa of Australia became a part of the Alcoa World Alumina and Chemicals alliance between the Aluminum Company and WMC. This is a natural break point in the governance and affairs of Alcoa of Australia, and a natural end point for the first chapter in its history. I have no doubt that there will be a long life ahead of the Company and perhaps several sequels to its history yet to be written.

May I particularly congratulate Professor Geoffrey Blainey on having added another masterpiece to his long list of successful books.

Professor Blainey was for some twenty years Professor of Economic History and then Ernest Scott Professor of History at the University of Melbourne. He has also held the Chair of Australian Studies at Harvard University. In 1988 Professor Blainey was awarded the Britannica Prize "for excellence in the dissemination of knowledge for the benefit of mankind". Many will remember his televised history of Australia, "The Blainey View", which was shown in ten episodes on ABC television. He has also written weekly columns for a variety of newspapers.

If my information is correct, "White Gold" is his 25th book since the first was published in 1954. A number of these have been histories of industrial and business enterprises in Australia. Alcoa of Australia is fortunate indeed to have its history written by him.'

The pre-1974 events are further described by the following extracts from an address I prepared for a conference in Perth on 21 September 2001 on the life of Sir Charles Court:

'WMC began exploring the aluminium ore bauxite in the Darling Range in 1957. Alcoa of Australia was established and the construction of the first refinery unit at Kwinana to produce alumina began only four years later, in 1961. Today it would probably take that long or longer just to reach the stage of submitting an environmental impact study.

Sir Charles as the Minister for Industrial Development negotiated the agreement and guided the Bill authorising the bauxite leases and the construction of the refinery through Parliament. He was an enthusiastic supporter of the project and one of the few people outside the Company who even at this early stage could visualise that the first refinery unit, a large investment as it then was, was only the beginning of a major new industry. Whether even Sir Charles could predict that it would become by far the largest producer of alumina in the world, today supplying one seventh of the world's requirements, only he can say. I certainly was not able to see that far.

During the debate in Parliament there was little vision by anyone other than Sir Charles, who said that this was a "landmark in the industrial history of Western Australia". Instead of being concerned that the new industry should be encouraged to invest and grow, there was criticism that the State had not extracted enough from the company. Perhaps in the parliamentary system where the opposition feels that it has a duty to criticise whatever the government does it was too much to expect anything else.

In the event, Alcoa of Australia continued to grow beyond what anybody in the Company could visualise at the start. Cash flow from the operations, augmented by rapidly increasing borrowings, was ploughed back year after year to finance the expansion from a capacity of 200,000 tonnes of alumina per year in 1963 to 4.3 million tonnes in the year 1982 when Sir Charles retired as the Premier, an increase of 21½ times in 19 years. The shareholders received very little by way of dividends until 1988, 27 years after the establishment of the Company. Since 1982 the growth has continued. Today, 38 years after production started, the capacity is 7.7 million tonnes a year, just over 38 times the initial capacity.

This growth would not have been possible without the unwavering support of Sir Charles, initially as the Minister of Industrial Development and, subsequently, as Premier. The agreements reached with the State in that period also established the basis for the continued growth after his retirement. The approvals were given against much opposition.

Extremists in the environmental movement gathering momentum in the early 1970s found Alcoa of Australia an ideal project to oppose. The bauxite was covered by jarrah forest and the trees growing over the orebodies had to be removed before mining. Some of the bauxite occurred in

the catchment areas of Perth's water supply reservoirs. Although the Darling Range was not densely populated, the mining and transport of the bauxite inconvenienced some inhabitants. It was not difficult to whip up emotion and construe alarming scenarios.

For a long time there was an energetic and skilful publicity campaign opposing bauxite mining. In 1981 the opponents even applied to a court in Pittsburgh, Pennsylvania, to prohibit bauxite mining in Western Australia. This did not win them any friends in Western Australia, or elsewhere in this country. The U.S. court decided that what happened in Australia was for Australians to decide.

Sir Charles had been instrumental in the Company becoming conscious of the environmental aspects of its operations from the early days of the project, well before caring for the environment became a public issue. Mr. Joseph C. Bates, the American Managing Director of Alcoa of Australia from 1968 to 1971, recalls very clearly Sir Charles pointing out the need to rehabilitate the mined areas, which was not common practice in those days. Joe, with the support of the then Chairman, Sir Lindesay Clark, had to overcome considerable internal resistance and weather criticism from industry colleagues in initiating a rehabilitation and reforestation programme concurrently with mining. The technique was perfected over the years until in 1990 Alcoa of Australia received the distinction of being entered as the only mining company in the world on the Roll Of Honour of the United Nations Environment Program. Since 1989 the Alcoa techniques have also been used for rehabilitating degraded farmland, the greatest environmental problem in Australia.

The opposition to Alcoa gradually disappeared when the Company started inviting people to visit its activities and see for themselves what was happening, following the process through from the earliest stage of removing the trees to inspecting the rehabilitated areas with ten or fifteen years' growth of new forest. A day's outing and a picnic lunch in rehabilitated bauxite mining areas became favourite weekend relaxation for many Perth and Fremantle citizens and their families, some 25,000 people a year. It was not possible to argue any longer that the mining caused damage which could not be made good.

This had not yet been achieved and the opposition and criticism were still at a highly emotional level when Sir Charles on several occasions guided legislation approving the various stages of expansion through Parliament. It was due mainly to his determination that the Company's growth could continue.'

## **CASUAL ENCOUNTERS**

After participation in the events leading to the establishment of Alcoa of Australia in 1961 (partly described in *White Gold* and *Corporate Alliances*), my next involvement was in 1974.

### **Mitsubishi Alumina Contract**

By early 1974 A/A was having problems with the alumina contract with Mitsubishi Chemical Industries (MCI). The original contract of 120,000 tons per annum, which had been the basis for constructing the first unit at the Kwinana Alumina Refinery, had grown by additions to 700,000 and by further options to 1,000,000 tons per annum.

The problem was that the pricing formula in the contract, which had operated well for many years, was no longer satisfactory in the high inflation environment, partly because Mitsubishi had greatly increased the price of their caustic soda sold to A/A. The formula capped the maximum price escalation of alumina to substantially less than the cost increases. Apart from unsatisfactory returns to A/A, the price was well below the world price (US\$64 instead of US\$82 per ton) and the then Whitlam Government in Australia may well have refused an export licence.

Waldo Porter, the Managing Director of A/A, sought my help. During a visit to Japan I first had a private meeting on 26 February 1974 with Mr S Nishida of Mitsubishi Corporation, a real gentleman who had been instrumental in negotiating the contract with W M (Bill) Morgan in 1961. I established my position as not directly involved and having no authority in the matter, but anxious to facilitate a settlement to the satisfaction of both parties. We were then joined by Mr Hasegawa of Mitsubishi Chemical, a rather rough operator who also had been in the early negotiations, and some of his and Mr Nishida's colleagues.

Mr Hasegawa argued that MCI should have a special position because

- their contract had underwritten the establishment of the refinery
- they should get a discount for taking a very large quantity
- the plant supplying Mitsubishi had been substantially depreciated
- A/A had negotiated out of a back-to-back contract for caustic soda and stymied the establishment of a joint caustic plant at Kwinana.

Hasegawa also appeared sore because of what he regarded as an unfulfilled verbal promise by John Mitchell for Mitsubishi Chemical to have an equity in A/A.

In keeping with my neutral status I explained the counter-arguments as gently as possible. Hasegawa took a hard line and talked about going to arbitration, but then said that he was talking about possibilities only and asked me to convey his views to Mr Porter.

That evening Nishida, Hasegawa, and some of their colleagues entertained me and my daughter Ellen, who was studying in Japan, at dinner. There was no further business discussion; Mr Hasegawa concentrated on drinking and flirting with the waitresses.

Following a further discussion with Mr Hasegawa during the Australia-Japan Business Cooperation Committees' meeting in Tokyo on 8 May 1974 I recommended to Waldo Porter that Alcoa's case should be substantiated by extensive documentation and evidence, that it should concentrate on economics and not make too much of a possible Government refusal of export licence, that there should be a 'package' approach and not simply an argument about the price, and that it should be made clear to Mitsubishi that

A/A was an independent company including Australian participants and not simply a part of wealthy ACOA. The negotiations should be conducted as much as possible by Australian members of the staff. I also recommended that Ted Weatherstone should be used extensively as a conduit for passing messages.

I had a further private discussion with Nishida (in the presence of Ted Weatherstone) over dinner on 16 September 1974, again going over all the arguments and concluding that I feared in the absence of reaching satisfactory agreement A/A could not be considered a reliable long term supplier of alumina to Mitsubishi and may well have to declare *force majeure*, as Mitsubishi had with regard to caustic soda.

A somewhat surprising development at Mitsubishi Chemical had been that Mr Suzuki had been appointed President, bypassing two senior Executive Vice Presidents, one of whom was Hasegawa. The latter had resigned and been appointed Chairman of Asia Oil Co Ltd. In October 1974, Mr Nishida was appointed President of Mitsubishi Corporation in New York. (In 1977 he was appointed Chairman of Mitsubishi Light Metals.) There were therefore new faces on the Mitsubishi side.

This may have been relevant to the dispute dragging on. In August 1975 there were suggestions that A/A should force the issue by threatening to give notice of termination of contract. In a note to H O (Hugh) Clark (who was on the A/A Board) on 29 August I said:

'I believe that a legal confrontation should be avoided at all costs .... I get the feeling ... that there have been too many lawyers and not enough practical businessmen involved in advising Alcoa.'

My records do not show how the matter was resolved, but there was no legal confrontation. In April 1977 a file note still refers to 'unresolved problems with Sumitomo and Mitsubishi contracts'.

### **Australian Shareholder Negotiations 1975**

The *Victoria Agreements*, agreed in principle in 1961 but signed in 1965, were designed to enable ACOA to claim the depletion allowance provided for mines by American tax laws. ACOA was given a half-interest in leases containing 48 million tonnes of bauxite. The alumina purchased by ACOA was notionally toll refined by A/A from bauxite owned by ACOA. The refining charge was calculated in accordance with an agreed formula which had not foreseen the very high rate of inflation in the early 1970s.

In August 1974 the Australian shareholders in A/A decided to approach ACOA for a review of the *Victoria Agreements* and some other matters, one of which was a possible increase in the Australian equity in A/A. There was also a suggestion of compensation to the Australians for inappropriate past operation of the *Victoria Agreements*. Don Morley prepared an analysis outlining all the issues and Sir Wilfred Brookes was appointed the leader of the Australians. I was not directly involved, but kept in close touch as WMC had a major interest in the outcome.

In a note to Sir Wilfred on 20 January 1975 I suggested that the negotiations should be confined to the *Victoria Agreements*, on the basis that unprecedented and unpredictable changes in circumstances since 1965 have caused inequities and made a revision necessary. I thought that we were on weak ground arguing the other issues listed by Don and I particularly cautioned against asking for increased equity and compensation which, I felt, would result in a confrontation.

The WMC Board reviewed the issues on 3 February 1975 and on 10 February I wrote to ACOA Vice President International, R Banks Smith, advising him that, while Sir Wilfred will act as the Chairman of



the group representing the three Australian companies, the WMC representative at the coming discussions would be Hugh Clark.

In a memorandum on 19 August 1975 Sir Wilfred recorded the outcome of the discussions, which I told him I thought were 'not only very satisfactory from the Australian shareholders' point of view, but also substantially better than I expected'.

### **The Alwest Project**

Before the WA State elections in 1976 it was announced by Sir Charles Court that A/A would take up a 20% interest in the Alwest Alumina Project, supply know-how, and act as the Project Manager and Operator. The Alwest Plant was to initially draw bauxite from A/A leases close to the plant, to be replaced by comparable quantities in the distant Alwest reserves. We calculated internally that the net effect to A/A would be to obtain a 20% equity in a 1 million tons per annum refinery costing an estimated \$667 million at almost no net cost because the fees receivable by A/A would nearly cover the equity contribution.

In April 1977 ACOA lawyers decided that there was a substantial anti-trust risk to ACOA in A/A participating in the same project with Reynolds. This resulted in the Alwest Project proceeding without A/A, building a 50 km long conveyor belt to transport bauxite from their leases to the refinery, and in A/A initiating planning for its own refinery at Wagerup.



## ***AUSTRALIAN CHAIRMAN***

### **Chairmanship of Alcoa of Australia**

The Chairman and Chief Executive of ACOA, Krome George, and J C (Joe) Bates visited Melbourne in April 1977. One of the matters discussed during a meeting I had with them on 11 April was the Chairmanship of A/A when Sir James Forrest retired in 1978. This was traditionally a Western Mining nomination.

I suggested Sir Ian McLennan after he retired as Chairman and Chief Executive of BHP. Krome said this was essentially a matter for the Australian shareholders. He subsequently agreed that I should approach Sir Ian, which I did in May 1977.

Sir Ian explained that while he was attracted and flattered by the invitation and had the highest regard for Alcoa, he felt that becoming the Chairman of a competitor to steel almost immediately after retiring as head of BHP would leave an unfavourable impression because in his 43 years with BHP he had in a sense become a symbol for the Company. He intended to make his apologies personally to Krome during a coming visit to USA.

In August 1977 Joe Bates proposed to Krome, and Krome in turn to me, that I should succeed Sir James. After obtaining the permission of the WMC Board and the agreement of BH South and North Broken Hill I agreed, and was duly appointed on 24 February 1978.

### **The Blue Book**

As Geoffrey Blainey mentions, one of my first actions was to call a two-day meeting of shareholders in April 1978 to sort out the accumulated misunderstandings and disagreements over the years.

The two main matters of concern and of some friction between the Australian and American partners were the management of Alcoa of Australia and the Victoria Agreements.

The Aluminum Company in the 1960s was a highly centralised organisation, with the head office in Pittsburgh insisting on exercising control over operational details. Thus the various departments in Pittsburgh frequently intervened in the management of A/A without the knowledge or agreement of the Chairman, the Board, and at times even the senior American executives seconded to A/A. This was contrary to the agreed and often stated intention of the Aluminum Company's top management that A/A should operate as a separate company, with the Managing Director responsible to the Board of the company.

The concerns had been brought to the notice of senior management in Pittsburgh from 1963 onwards, but in spite of voluminous correspondence and many discussions the problem remained.

The other issue was whether the Victoria Agreements were equitable. These resulted in 1965 from the desire of ACOA, first discussed at the time of formation in 1961, to have a direct interest in some of the bauxite, to obtain an assured supply of alumina and to obtain the then existing US tax deduction for depletion. A/A refined the ACOA bauxite into alumina on a toll basis. One of the concerns of the Australian shareholders was that high inflation and exchange rate movements, neither foreseen when the Agreements were concluded, distorted the formula for calculating the toll refining fee. Several adjustments had been agreed, but the underlying problem remained.

It was decided to review and discuss all these matters, to establish an agreed record of the intentions of the parties at the time of the formation of Alcoa of Australia, to resolve any differences if possible, and to establish the basis for future cooperation.

Material from files giving the historic views of the parties, their interpretation of events and assessments of the respective benefits flowing to the American and Australian shareholders, as well as a number of other matters, were recorded in what came to be known as the 'Blue Book'. Actually there are two volumes in blue covers which were agreed by the participants to be the official record of the events, to replace any previous records.

At the conclusion of the meetings, Joe Bates on behalf of the Aluminum Company and Sir Wilfred Brookes on behalf of the Australian shareholders exchanged letters expressing satisfaction with the outcome and pledging to work together in a manner equitable to all participants, being prepared to review and correct any inequities should these arise because of circumstances changing in the future.

The 'Blue Books' were filed away, and I recall expressing the hope that there would be no need to open them again. This is what happened: not many people in the three companies today would be even aware of their existence. There was subsequently only one occasion when I had reason to refer to them (with respect to the Hedges Gold Project - see later).

Regarding management, the involvement of Pittsburgh in operational matters gradually diminished over the years until the problems and frustrations in the 1960s and 1970s disappeared. When Paul O'Neill's reorganisation of ACOA came in August 1991, giving business units a great deal of autonomy, it meant virtually no change in Alcoa of Australia's operations which had been functioning in a similar manner for some time.

The question of the Victoria Agreements was finally resolved very simply, following a plan devised by Hugh Morgan and Dick Fischer over dinner in New York.

The initial tax reasons in the United States no longer applied and it was decided to dissolve the Agreements, in recognition of which A/A paid the Aluminum Company US\$30 million. Thereafter the alumina purchased by the Aluminum Company was priced at the average of the arms length alumina sales by A/A. There were no problems whatsoever with alumina sales to ACOA after that.

## **Expansion of Alcoa of Australia**

Almost immediately after my appointment there was also a change of Managing Directors: Waldo Porter retired and was succeeded by George Haymaker.

George was a very able and energetic person and his appointment coincided with a boom in aluminium markets. Following the major oil price increases in the first half of the 1970s and the Club of Rome report *The Limits to Growth* in 1972, there was a perception that all resources, particularly energy, were going to be in short supply.

George initiated a number of studies which predicted a bright future for expanding A/A capacity, much too rosy in my view. A third alumina refinery was to be built at Wagerup. The availability of relatively low cost power generated from brown coal was an important part of expanding smelting. Pittsburgh subscribed to the view that electric power for aluminium smelting would become scarce. In addition to installing a third potline at Point Henry, a second smelter was proposed. There were presentations to the Board, one of which was attended by the President of ACOA, Bill Renner. There was a discussion on whether A/A, already heavily borrowed, should undertake the very considerable capital commitment of

constructing simultaneously another major refinery and smelter, and I clearly recall Bill Renner saying: 'If you (meaning A/A) won't do it, we (meaning ACOA) will'. This settled the matter.

The preferred site for the second smelter was at Westernport, close to the source of power in the Latrobe Valley. There was, however, strong opposition from environmentalists who wanted to preserve the mangrove swamps at Westernport. After much soul-searching Portland, requiring 270 km of twin high voltage powerlines, was chosen. Construction of the Wagerup Refinery and the third potline at Point Henry began and the Portland Smelter was announced, all in 1979.

### **Troubled Times 1980 - 1984**

Geoffrey Blainey describes the shock of the announcement in August 1980, soon after the Portland project had been committed, that the cost of power would be increased in two steps by 40%. A/A made it very clear to the Victorian government that the Portland smelter would not be economic under these conditions and scaled down the construction activity to a minimum pending resolution of the issue. The government commissioned two independent studies into the power tariff for Alcoa which resulted in an interim formula in December 1981. The Board expressed its disappointment that no final formula had been proposed but 'reluctantly' decided to resume construction in January 1982. The statement said:

The company does not want a power price subsidy nor does it want to subsidise others.'

Meanwhile, there had been much public controversy which extended beyond the issue of the power cost to matters such as foreign ownership. As the Chairman and an Australian it fell to me to put the A/A case to the public; the American Managing Director obviously could not do it. I did so on many occasions, in print, on radio, on television, and in my address at the Annual General Meeting of A/A in March 1981 which was attended by the media. The arguments and the responses are summarised in an address I gave to The Public Relations Institute of Australia on 15 October 1981. It is an interesting record of the then public perceptions:

I have been asked to speak about the Portland Aluminium Smelter project and the way it has been dealt with by the media, with particular reference to the supply of electricity to the smelter by the State Electricity Commission of Victoria (SECV). Before doing so, I would like to make some general comments about the mineral industry and the aluminium industry in Australia as background for understanding of the problem.

Much of the news we see, hear or read about the mineral industry, of which the aluminium industry is a part, is ill-informed to say the least. Until recently, reporting of the industry suffered particularly from constant reference to the so-called 'resources boom' which incorporated three widely-held and completely fallacious concepts about the industry:

1. That the world is desperately short of all types of minerals;
2. That Australia is one of very few countries able to supply these minerals; and
3. That the industry is extremely profitable - 'booming'.

There has been some return to reality in recent times, but it has taken a serious downturn in world markets for minerals, and a consequent set-back to the Australian mineral industry, to do so. Even today, despite hard evidence to the contrary, these erroneous beliefs about the industry are by no means dead. An otherwise very realistic newspaper article three days ago still carried the headline *World Hungry For Our Vast Array of Minerals, Energy*. The principle of 'my mind is made up - don't confuse me with facts' seems to have frequent application.

Australia is certainly a very important mineral supplier, being the world's largest exporter of

iron ore, alumina, mineral sands and lead, and the second or third largest exporter of coal, bauxite, nickel and zinc. However, this position has been achieved by being a stable, a reliable and competitive supplier over many years and not because of a monopoly position.

Far from the world being short of minerals and Australia being in a unique position as a supplier, there is severe competition for markets. As the developing countries open up new sources of supply and become more reliable as suppliers, so the marketplace will become even more competitive.

Mineral shortages do occur from time to time because of imperfections in matching supply to demand and sometimes because of political interruptions; but these shortages are invariably followed by surpluses and past experience shows that periods of surplus are longer than periods of shortage.

Australia's aluminium industry also depends on world markets; it does not have a preferred place in these markets. Its future position as a supplier to the world will depend on the same three factors which apply to other minerals: stability, reliability and competitiveness as a supplier.

The aluminium industry shares with the rest of the mineral industry a serious concern about adequate profitability. The very high capital costs mean that even modest returns on the investment appear large in terms of annual profit but such numbers have no meaning unless they are related to the amounts invested. When this is done, it can be seen that the industry's earnings are quite modest.

The public perception of high and even excessive profitability is based partly on the results of a few companies in exceptionally good years or in unusual circumstances and on the politically motivated use of such results out of context, and is partly due to the difficulty of explaining that numerically large profits can, in fact, represent unsatisfactory returns on very large investments.

The profitability of new projects is particularly fragile in today's circumstances of depressed markets, rapidly escalating costs, and very high interest rates.

Turning to the particular case of the Portland Smelter, the reasons for considering Victoria as the location for a new, world scale, aluminium smelter are straightforward.

Victoria has an abundance of brown coal which can be used to generate electricity for the smelter. Further processing of Australian minerals before export is an important policy objective of both the Federal and State governments as well as the Opposition parties. The combination of Western Australian alumina (made from low grade bauxite which is not economically exportable) and Victorian brown coal (which is not exportable as coal, either physically or economically) in the form of electricity could produce exportable aluminium increasing the export revenue more than seven fold when compared with exporting alumina, and creating very considerable direct and indirect employment. It makes eminently good sense to have a smelter - provided that it can be justified in terms of return on the necessary capital investment.

Australia is not well placed in a competitive sense with regard to costs; construction costs tend to be high, productivity in relation to wage rates tends to compare disadvantageously, distance from world markets means high freight costs, and some essential materials for aluminium smelting, such as petroleum coke and pitch (of which half a tonne is required for every tonne of aluminium metal) must be imported. The main thing going for Australia until recently was that

the availability and cost of electric power compared favourably with some (although by no means all) alternative locations.

Taking into account the timing problems in bringing in new electricity sources in alternative locations, this tended to make up for the various disadvantages and overall Australia appeared to be a good place for new smelters in the first half of the 1980s.

Alcoa was additionally encouraged by nearly twenty years' experience operating a smelter at Point Henry in this State, including the excellent past record of the State Electricity Commission in maintaining supplies of power and controlling its costs. For our part, we believed that we had established a record of being a good corporate citizen with a high sense of environmental responsibility and an efficient aluminium producer, a record which again could be factually traced back for some twenty years.

Opinion surveys showed almost universal support - 88% of the adult population - for the encouragement of aluminium smelting in Australia and this result was only marginally reduced - to 82% - once the respondents were made aware of the need for substantial amounts of electricity by smelters. The public's rationale for the support of smelters was primarily employment and economic benefits, and a preference by the vast majority, 87%, for the export of finished products rather than raw material: in other words, an understanding of the value added concept.

As plans for the project unfolded and became public, there were various responses:

- Most of the media reported factually and fairly, without adopting any particular attitude towards the project.
- The usual anti-everything groups mounted the usual noisy campaign against the project and, as always, received a great deal of publicity, far in excess of their relative importance in the community.
- Some reporters, particularly in some television programmes, could not resist the temptation to manufacture a story by the well-known methods of selective editing and judicious use of half-truths and unwarranted generalisation.
- One particular newspaper launched a sustained campaign against power supply arrangements for the smelter project. The deliberate nature of this campaign was so obvious that it was freely commented on and became something of a joke in the business community.

It is instructive to review and comment on some of the main arguments promoted by the opponents of the project.

1. The smelter would use an unduly large amount of a scarce resource - energy.

Various statistics were quoted in a highly biased manner in support of this thesis. In fact the power consumption during the estimated life of the smelter is equivalent to 0.5% of Victoria's known coal reserves. The ready availability of reasonable cost energy is the very basis for further processing of Australia's minerals before export, which has overwhelming public and political support. To quote Mr. Hayden in 1979, 'There is a lot more to be done yet to ensure that Australia capitalises on her energy advantage. We must crystallise our ideas on how we will use that advantage, especially since it will be one of the key factors in our pattern of development for the rest of this century and perhaps beyond. .... The most spectacular medium for turning low cost electricity into marketable export commodities is provided by the aluminium industry.'

2. The cost of power to the smelter would be subsidised.

The company wanted the arrangements regarding the smelter to be as public as possible, and believed that if the cost of power was determined in accordance with the appropriate standard public tariff - available not only to Alcoa but to any other comparable user and stated by the State Electricity Commission to cover all costs - then no-one should have reason for criticism. This belief turned out to be sadly mistaken.

In its most irrational form this argument consisted of comparing the tariffs to householders with the tariff to the smelter, ignoring the vastly different generating and distribution costs, and concluding that there was a subsidy because the smelter tariff was lower. On a more sophisticated level, calculations would be made using various unsubstantiated assumptions to conclude that the tariff would not give the SEC a satisfactory return on investment.

3. The State should participate in some of the excessive profits from aluminium smelting by charging more for power.

This argument was based on the bland and completely erroneous assumption that aluminium smelting is highly profitable. In fact the Australian cost structure is such that returns from new projects are becoming very marginal. The problem is not what to do with the excessive profits, but whether Australian aluminium can compete in world markets.

4. The high capital cost per job created means that aluminium smelting is an undesirable industry.

The capital cost is certainly high, but this is a burden on the shareholders, not on the government or the community. Virtually all the capital cost of the Portland project would be spent in Australia - and most of it in Victoria - on salaries, wages, equipment, supplies and services. The capital expenditure therefore flows largely into the community and a proportion of it accrues indirectly to governments. For the construction period alone we estimate that of the first \$500 million spent at Portland about \$385 million will be spent in Victoria, and further \$45 million spent with contractors in other States, so that the total amount spent in Australia will be about \$430 million. During the operating phase of the smelter, assuming full-scale operation, we will spend annually about \$240 million in Victoria - excluding the contribution our Point Henry operation is currently making and will continue to make to the Victorian economy. In brief, the Portland project will contribute one-fifth of the State's project GDP growth for the next five years. Beyond Victoria, Portland has important implications for work at Wagerup in W.A. and the North West Shelf Gas Project.

5. The large demand for electricity by aluminium smelters jeopardises other industrial needs and increases power costs to other consumers.

In fact, the Portland Smelter helps to make the overall system more efficient because it uses power around the clock, seven days a week, the average cost of power to all users is therefore reduced. Other consumers will face higher costs of power if Portland does not go ahead.

These were the main criticisms. What did we do about it?



We pursued all the normal public relations procedures and these, we believe, were quite effective for normal purposes. I would like to say again that most of the reporting on the project has been factual and impartial. The problem became how to respond to what we believed was unfair reporting by a few reporters and a small section of the media. Our approach was two-fold. We mounted a very substantial effort to inform people directly, and we left the media concerned in no doubt that we were critical of their standards.

Let me make it clear that we are not in any way attempting to stifle criticism or restrict the media's right to canvass issues they believe are important. We fully accept that the media have a watchdog role on major issues of public interest. We believe, however, that this role is not properly fulfilled by one-sided presentation of the issues and by being critical simply to be controversial. We also believe that it is very poor journalism to ignore verifiable information freely available from the Company.

The direct approach to the public took many forms, from advertising and direct mailing of information, to encouraging staff to accept invitations to speak to community groups, inviting reporters to visit and have briefing on the Company's operations, and adopting generally the attitude that we had not only the right but also the responsibility to speak up on what we believe are the facts.

We are committed to the principle of open communication and we believe that the man-in-the-street, our employees, governments, indeed all our publics, have the right to information about what we do and what we plan to do. We endeavour to respond to interest shown in us in a frank and open way, within the limits imposed by the competitive nature of our activities.

We believe that objective analysis of our activities clearly shows that we are making a major contribution to this country. We believe that the Portland project fits exactly what everyone - Governments and Opposition - has been saying for years should be done about further processing, decentralisation, and desirable industrial developments. The issue at stake is no less than the sincerity of these policy intentions and the credibility of Australia.'

The 20th anniversary of A/A was marked by a small dinner at the Australian Club on 12 October 1981. Some of the founding fathers and inaugural members of the Board were present: Sir Lindesay Clark, Sir Wilfred Brookes, and Ralph Burt. The then Chairman and Chief Executive of ACOA, Krome George, was present and spoke. The second Chairman of A/A, Sir James Forrest, and two of the past Managing Directors, Joe Bates and Waldo Porter, were there.

The last three had not come from Pittsburgh to celebrate the anniversary but for discussions because of the stand-off at Portland after some \$300 million had been spent. It was during this visit that Krome George, after contemplating the partially completed foundations on the silent construction site and the sheets of galvanised iron flapping in the wind, famously wondered whether Portland may become the Stonehenge of the aluminium industry. The world aluminium markets were in doldrums. It was a pleasant and friendly, but somewhat subdued dinner.

The ability of A/A to finance its capital commitments had become doubtful. After an unsuccessful attempt to attract partners for the Portland Smelter the completion of the smelter was deferred in July 1982 'due to depressed markets and pending finalisation of a long term power contract' and the start up of the newly completed Wagerup refinery was be deferred 'due to depressed markets'. Jack Diederich, the new Managing Director who had succeeded George Haymaker in May, stripped the Head Office of personnel built up by George in expectation of continual expansion. In November the lenders to A/A were requested, and agreed, that the Company's debt to equity ratio could be increased to 2:1.

Dividends to shareholders from 1981 to 1983 were paid in additional shares, instead of cash. It was a difficult time!

In April 1982 there had been a change of government in Victoria; the Labor Party had won office. The new Premier, John Cain, recalls the Alcoa situation in his memoirs *John Cain's Years* as follows:

'... From the start the signals were clear that we had a large continuing problem with the smelter project. This was not good news to a new government trying to expand the economy and jobs. In the next three weeks we had several meetings with Alcoa and SEC officials. We put in train a number of initiatives to try and resolve the problems that emerged. I said publicly in mid-May that the government would consider being involved in the project if invited. I wanted to give a clear indication of our commitment.

The company was surprised and impressed with the effort we put in in that short period to find a way to prevent a deferment of construction. On 2 June 1982 we met with a number of their key executives. They said they would defer final decision and that they wanted their officers to discuss power tariff and SEC financing with the Department of Management and Budget. Time was being given for a further attempt at resolution.

This concession did not change my impression from mid-April that the decision to defer was taken months before but had not been announced because of the political implications before an election. The new card in the pack was that by 2 June there was a new chief executive at Alcoa, Jack Diederich, and we were to have a very long and fruitful relationship with Jack and his company in the years ahead. Jack and I communicated well. We did not waste each other's time nor did we fail to be frank with each other. I liked him and I think he reciprocated. ....

We put to them a set of proposals for the operation of two potlines, with a flexible electricity tariff; we proposed also to set up a tax-paying company to take up a 25 per cent equity in the project. We indicated that the offers were made subject to a withdrawal of the proposed deferral of construction, the continuation of work at Portland to achieve an early 1984 start-up of the first potline; the government would do its best to find another 25 per cent equity partner. ....

Although Alcoa did not accept our proposals, and did defer the project, the negotiations had not been in vain. They knew we could not reasonably have done more than we had to ensure that construction went on, and the good relationship we had built up was to stand us in good stead in the future. At their suggestion we made a joint announcement of deferral on 19 July 1982.'

On 9 August 1983 there was in Melbourne a march of 500 people from Portland and Geelong who called on me in the Alcoa office on their way to see the Premier. It was non-party-political, led by the Anglican Bishop of Ballarat and the Mayor of Portland, although the Victorian Branch Secretary of Federated Ironworkers Union, Harold Holowell, was the organiser. The Premier and I were both informed of their concern at the delay in completing the Portland Smelter. Demonstrators were orderly and put their case well. It is the only demonstration I can recall that supported what I also wanted!

With the markets improving, the Wagerup Refinery eventually started operations in February 1984. It was officially opened in April.

In Victoria, fuelled by the Opposition in Parliament, there was extensive media speculation that work would also resume at Portland and on 15 March 1984 I took the unusual step of making a public statement, saying that we were negotiating with the Government, and that;

The aim of both Alcoa of Australia and the Government is to bring these negotiations to a successful conclusion as early as possible. It is not practicable to discuss details of the negotiations until they reach finality.

The continued media speculation is not helping the discussions. In fact, the more speculation there is the more difficult the negotiations become.'

I also said we were 'optimistic' regarding the outcome. Surprisingly, the media reported this criticism factually and without getting on a high horse. This would be unlikely to happen today, 20 years later.

Agreements between Alcoa and the Government totalling 1500 pages, enabling construction to be resumed, were finally signed by the Premier, John Cain, and me on 31 July 1984. The State Government would become a 25% joint venturer, with Alcoa having 45% equity and thus leaving room for other partners. There would be a flexible power tariff, related to the price of aluminium, with a floor to ensure cash generating costs were covered at all times. However, under an agreement between the Government and the State Electricity Commission, at times of low prices the Government would make payments to the Commission which would be recouped in times of higher prices.

There was much jubilation, with only minor criticism from the Opposition and some media speculation of the power being subsidised. There was almost a last minute hitch when it was suggested that the Federal Government was contemplating discontinuing the investment allowance. John Cain and I were told of this while travelling to Portland. John telephoned the Prime Minister, Bob Hawke, in my presence, and we both told him that the Portland Project depended on the allowance being continued. The Business Council of Australia was alerted and, after a quick consultation, sent a telex to Hawke, Keating and Button seeking extension of the investment allowance for three years. The allowance was continued and work on the smelter re-commenced in November.

The main credit on the Alcoa side for getting the Portland Project back on rails belongs to Jack Diederich. As John Cain noted in his memoirs, he and Jack respected each other and worked without hidden agendas or trying to be smart. Regrettably, I do not think that Jack was given adequate credit in Pittsburgh. His personality did not fit the attitudes of modern management practices and this did not enable him to fit into the new system; he did not promote himself and was very much the 'quiet achiever'. The first metal at Portland was produced in October 1986. When the smelter was officially opened on 9 February 1987 I made a particular point in my comments of recognising Jack's vital role. The *Portland Observer* got carried away and called it 'World's Largest Smelter' which it, regrettably, was not.

## Settling Down

The 25th anniversary dinner at the Melbourne Club on 2 July 1986 took place in a very different atmosphere from that five years earlier. Sir Lindesay had passed away and there were no visitors from Pittsburgh, but the Portland impasse had been resolved and the world markets were starting to improve. There was no shortage of red wine and it was a merry occasion, Phil Spry-Bailey handing out various awards to people present, commemorating a folly of one kind or another. I was given the Foreign Currency Award for having been abysmally wrong in predicting the exchange rate of the Australian dollar, an accomplishment which I have frequently repeated since then.

A/A was, in fact, at the breakthrough point: next year, in 1987, twenty six years after its formation, it made the first substantial profit of \$150 million for the year. It has never looked back after that.

Jack Diederich was succeeded as Managing Director by Norman Stephen in October 1986, and Norm was in turn succeeded by Bob Slagle in May 1991. A/A was doing very well during Norm's tenure and

the Chairman had, for a change, nothing unusual to attend to. Although the profit varied in sympathy with market conditions, it remained substantial even in downturns. There was nothing but good news for shareholders!

Phil Spry-Bailey calculated that the d.c.f. return to shareholders since the beginning in 1961 to the end of 1992 in constant 1992 dollars had been 11%, compared with an average return on Australian shares from 1937 to 1988 of 5.1%. The good profitability since 1987 had made up for the low returns before then.

### **At Loggerheads with the Government**

In 1992, with aluminum prices at very low levels and the power cost under the flexible tariff system related to the metal price, there emerged various media reports suggesting that the State Government was subsidising A/A up to \$15 million a month. This was apparently related to the payments under an agreement between the Government and SECV, to be recouped in times of higher prices. In all the media comments it was overlooked that Alcoa, while the Manager, was just one of the partners in Portland; in fact the Government itself was a partner. Neither Alcoa nor the other participants in Portland (other than the Government) were a party to this agreement and the payments were not made to them. The reports were probably encouraged by the State Liberal-National Party Opposition as a way to embarrass the Labor Government.

When the Opposition became the Government it sought to re-negotiate a number of agreements made by their predecessors, accusing them of poor commercial judgement. The Treasurer, Alan Stockdale, announced on 10 June 1993 that the Government was seeking to re-negotiate the flexible tariff contracts. A/A said it was willing to discuss ways to improve the operational aspects of the contracts but was not prepared to re-negotiate the agreements because A/A had made large long term capital commitments based on these, and the Government had been fully aware of all aspects of the contracts.

The Government tried to pressure A/A into agreeing to renegotiate through extremely critical public statements by the Premier, Jeff Kennett, such as at the time of the announcement of a 73% increase in profit in January 1994. The increased profit had actually resulted from the alumina operations, the smelters having contributed very little. The Premier managed to overlook this and did not say anything when the A/A profit decreased by 52% in the first half of 1994.

Bob Slagle and I had several discussions with Alan Stockdale towards the end of 1994. I spent a lot of time corresponding with Bob Slagle by fax in between attending to WMC business and travelling to ensure our arguments were correct and clearly expressed. Our argument, supported by analysis, was that the government's payments to the SECV in times of low prices were not a subsidy of operating costs, but a payment to cover future increases in capital costs due to inflation. Any comparisons with tariffs to other large consumers were invalid because the smelter contracts were large and in effect take or pay commitments for 30 years. We offered to modify the interruptability provisions, and to pay a higher rate for any additional power.

On 18 July 1995 Alan Stockdale wrote to me, saying that the Government was 'extremely disappointed' that more than two years of negotiations had not resulted in agreement to 'remove the excessive subsidy that is inherent in the present power contract', and had decided to terminate all negotiations. The Government would however, honour the existing contract.

This was not the end of it. On 27 July, Stockdale published an article in *The Age* and followed this in August by writing to major businesses in Victoria, purporting to show how the A/A tariff was unfair and put them at a disadvantage. It was real strong-arm stuff, I like to think initiated by Stockdale's staff rather than by him, although he signed the article and the letters. When I became aware of this I passed

a message through Chris Leptos, who had been on Alan Stockdale's staff but had since then joined WMC, that if they continued with what I regarded as a misleading and scurrilous campaign, I would break my silence and explain the facts in public. We heard no more after that - but see below.

### **Retirement from Alcoa of Australia**

After the AWAC agreement came into force on 1 January 1995 (see *The AWAC Agreement*), I suggested to Paul O'Neill that there was no longer a need for non-executive directors on the Board of A/A. He agreed, but suggested an outside Advisory Council. I also did not see any need for such a Council and he accepted this. Thus I and all outside directors retired on 6 June 1996. Roger Vines became Chairman and Managing Director of A/A.

### **Subsequent Events**

In July 2003 the Portland power issue again became alive - see appended cutting from *The Age* of 16 July 2003. The familiar fallacy - that the SECV pays a subsidy to Alcoa - was repeated.

While this is not true, the built-in difficulty in the Government-SECV arrangement is that aluminium prices have been low for much of the time and the intended two-way flow of funds has so far been mainly one way.

## ALCOA OF AUSTRALIA LIMITED

PRODUCTION PERFORMANCE  
1963 - 1996

YEAR	ALUMINA PRODUCTION	ALUMINIUM PRODUCTION
	Tonnes	Tonnes
1961	-	-
1962	-	-
1963	20,000	10,982
1964	109,974	33,791
1965	150,082	38,815
1966	247,055	39,097
1967	411,730	40,653
1968	487,362	44,441
1969	781,047	54,357
1970	990,543	55,135
1971	1,269,344	97,702
1972	1,587,124	87,286
1973	1,735,876	84,954
1974	1,996,803	90,081
1975	2,228,040	97,985
1976	3,160,136	99,046
1977	3,460,737	101,160
1978	3,465,593	103,884
1979	3,951,087	104,440
1980	3,681,094	117,726
1981	3,681,342	171,898
1982	3,667,366	172,886
1983	3,971,306	174,302
1984	4,670,128	172,475
1985	4,435,077	169,685
1986	4,368,361	176,649
1987	4,848,295	232,317
1988	5,106,066	284,984
1989	5,210,375	325,649
1990	5,414,410	325,029
1991	5,541,065	326,201
1992	5,487,045	325,066
1993	6,195,510	327,667
1994	6,201,178	300,776
1995	6,491,533	288,702
1996	6,524,748	289,852

## ***IN THE BIG POND***

In February 1980 I was appointed a director of the Aluminum Company of America. The invitation was extended by Krome George by telex in January 1980 after I had been informally approached by the then Vice-President International, Joe Bates with a 'personal thought' by telephone in November 1979. This, the first appointment of someone other than an American to the ACOA Board, was a recognition of the importance of Alcoa of Australia to Alcoa and also an early indication of Alcoa gradually becoming a global, rather than American, enterprise.

My presence on both Boards was a very effective way to ensure there were no misunderstandings, which can so easily arise between the majority shareholder and manager and significant outside shareholders. It did involve a great deal of long distance travel and time, as the ACOA Board met six times a year and I endeavoured to attend most meetings. Including travel time, each visit would take the best part of a week. However, I thought that the benefits to WMC were worth it and tried to reduce the unproductive time by combining the Alcoa commitments with other business in USA and/or Europe.

There were only two instances of a possible conflict of interests during my 18 years on the Board of ACOA: in the case of the Hedges gold find in 1987 and the proposed expansion of the Wagerup Refinery in 1989. Both were resolved amicably and satisfactorily.

### **The Hedges Issue**

The Hedges gold deposit was found in 1987 in an area jointly held by A/A and a fully owned subsidiary of ACOA (the Victoria Aluminum Company) on the basis of the *Victoria Agreements*.

On discovery of gold at Hedges some lawyers in Pittsburgh raised the question of ACOA owning 50% of the gold on the basis of the Victoria Agreements mentioning 'mineral rights' not 'bauxite rights'. WMC disagreed, arguing that regardless of the wording, the intention of the Victoria Agreements was related only to rights to the bauxite.

I wrote a detailed memorandum in December 1987 (copy appended to this section), setting out both arguments and pointing to a letter in the 'blue book' from Joe Bates to Sir Wilfred Brookes following the meetings in April 1987 which clearly said that ACOA had no intention of taking unfair advantage of circumstances that might arise under *Victoria Agreements*. I used this memorandum as the basis for a discussion with Paul O'Neill and Dick Fischer (ACOA's General Counsel) and Hugh Morgan used it when discussing the matter with Harold Evans, then ACOA's Group Vice-President-International.

Paul O'Neill told me I had dissected the arguments 'like peeling an onion' and agreed that ACOA should not pursue the issue, whatever the legal interpretation. We heard no more about it. When I retired from the ACOA Board eleven years later, Krome George gave me a copy of a memorandum he had written in October 1987, recording the intentions of the negotiations in the 1960s and strongly recommending 'forgetting Victoria'.

WMC subsequently advised A/A on the design and operation of the A/A gold plant, and the Hedges operation became extremely profitable; the capital invested was returned in a very short time.

### **Wagerup Expansion**

In 1988 the Board of A/A was keen to expand the Wagerup Refinery. Paul O'Neill wanted to wait,

thinking that the market may not be right to absorb the additional alumina and pointing out that Wagerup had been in mothballs for nearly two years because of inadequate demand when it was first built. He joined me for breakfast at the William Penn Hotel during my visit in January 1989 and appealed to the A/A Board to have patience. I agreed to wait and was able to persuade my colleagues in Australia to accept this, pointing out that it was not an important enough issue over which to pick a fight with the majority shareholder. I have not tried to work out whether in hindsight it was better to wait or not - it is usually impossible to get the timing right, except by accident. Markets turn largely unpredictably and, when it happens, fast, while expansions take considerable time.

### **WMC Shareholding in Alcoa of Australia**

In 1987 WMC nearly made an offer for all ACOA's interest in Alcoa of Australia. This is described under *Buying Back The Farm*.

### **Flooded Markets**

Just before and following the break-up of the Soviet Union in 1991, one of the consequences of this major event was a flood of metal supplies no longer required by the Soviet military to the western markets. Coinciding with a world economic downturn this had a very serious effect on metal prices, including the price of aluminium.

Paul O'Neill took the lead in 1993 in convincing the governments of the main aluminium producing countries, including Russia, to cut back production until demand had caught up with supply. A number of meetings of the governments of European countries, Russia, USA, Canada, Australia and Norway in 1993 resulted in the signing of a *Memorandum of Understanding* in Brussels in January 1994. Subsequently, world smelter production was reduced by 1 million tonnes per annum (approximately 5%). ACOA had cut its smelter production by 24% or about 500,000 tpa in June 1993, including A/A cutting production by 10% (25,000 tonnes) at Point Henry and participating in a 26,000 tpa cut at Portland. It is likely that some other producers cheated.

Paul O'Neill's initiative was vehemently opposed by some. Joseph E Stiglitz, Chairman of the Council of Economic Advisers under President Clinton at that time, and later Chief Economist and senior Vice President of the World Bank, has recorded that it was 'perhaps the most grievous instance of US special interests interfering in trade'. His argument was that Russia was not dumping, their production costs being less than the world price. He chose to disregard that the flooding of western markets with various metals did not happen in the ordinary course of trading but because of political developments, and that 'cost' in Russia at that time was an artificial number. Paul O'Neill's purpose was not to interfere with normal trade competition but to overcome a highly abnormal situation for a limited time.

It is puzzling that an economist of the stature of Stiglitz - a later Nobel Prize winner - could not see the difference. To add to the paradox, Stiglitz was at the same time rightly very critical of the Russian economy having been suddenly thrown completely open - the 'sharp shock' treatment. He was right in that judgement.

Stiglitz has recorded that the decision for the US to sponsor the 'cartel', supported by State Department and the Secretary of Treasury, was made by a 'heated subcabinet meeting' against the opposition of the Council of Economic Advisers and the Department of Justice, who 'were livid'.

By the second half of 1995 LME aluminium stocks, which had been 2,600,000 tonnes in mid-1994, had fallen to 600,000 tonnes and the price had recovered.



**Retirement**

I reached the normal retirement age for ACOA directors (70 years) in 1996, but was asked by Paul O'Neill to stay on for a further two years. Although not said, I sensed that his concern was about who would follow me from WMC. He thought that perhaps we would want my eventual successor as Chairman of WMC to follow me on the ACOA Board. I told him it should be Hugh Morgan, but almost all Paul knew about Hugh was the bad press during the Seabright and Ernest Henry episodes.

I arranged for them to meet and Paul soon formed a high opinion of Hugh. When I retired as a director of ACOA in May 1998, Hugh was appointed to the Board.



## ***STEPPING UP?***

In the late 1980s (probably in late 1987 or in 1988) when WMC was cash rich after having sold its K algoorlie gold interests and raised \$840 million with a rights issue in October 1987, consideration was given to buying a 10% shareholding in ALCOA US (ACOA). Their shares were low after a world economic downturn and the unsuccessful efforts to diversify out of aluminium into 'materials'. Paul O'Neill had become Chairman.

I discussed it with Paul while in Pittsburgh for a Board meeting, assuring him that we would only do so with Alcoa's agreement. Paul discussed it with the other directors in my absence and told me afterwards that the Board was not in favour. No reasons were given, but among these would have been the fear that WMC, a relatively small company, could be taken over and thus provide a stepping stone towards the acquisition of Alcoa, which was of considerable concern at the time. The ACOA Board, in fact, was devising a 'poison pill' provision to make a takeover more difficult.

In the light of later events, a substantial acquisition of shares in ACOA at that time would have been a momentous event for WMC and probably changed the Company's subsequent history. By the late 1990s Paul O'Neill's reforms and judicious acquisitions had greatly improved ACOA's market standing. A 10% equity holding in ACOA would have almost doubled WMC's market value. However, it was unthinkable for us to proceed against the wishes of the ACOA Board.



## ***BUYING BACK THE FARM***

The initial shareholdings in Alcoa of Australia:

-	ACOA	51.0%
-	WMC	20.0%
-	Broken Hill South (BHS)	16.6%
-	North Broken Hill (NBH)	12.0%
-	Cushion Trust	0.4%

remained unchanged until 1979.

On 1 September 1978 WMC and the other Australian shareholders were advised by BHS that it wished to sell some of its shares in A/A at between \$4.00 and \$4.25 each. Our reply on 19 September was negative, but we said that we wished to re-consider our position should BHS decide to sell at below \$4.00 a share.

In November 1978 BHS asked us whether we would join with them in securing quotation of the A/A shares on the Stock Exchanges. Again, WMC declined.

Subsequently South sought to place the shares with institutional investors. Sales were made at varying prices. National Mutual Life (NML) offered \$4.80, which South declined. NML soon realised that BHS shares were a better buy. They bought 15% of South on the market and then the 19% NBH shareholding in South and, in September 1979, made a takeover offer for the rest. As told in, *THE FERTILE ROCK*, a series of events led to a takeover offer by WMC on 11 October 1979, which succeeded in January 1980. BHS then held 13.1% of A/A. In a voluntary winding up of BHS in 1983 WMC received shares representing 10.507% of A/A.

The NBH shareholding of 12.0% of A/A was bought for cash in 1986. The cash was raised by a share placement with institutions, in effect swapping 10% of WMC for 12% of A/A. After that WMC owned 42.507% of A/A.

While Charlie Parry was the Chairman and Chief Executive of ACOA in the mid-1980s, he decided that there was no future in being an aluminium producer (even the largest in the world) because aluminium had become a commodity, likely to yield only modest returns. His solution was to turn ACOA into a 'materials' producer, developing and producing sophisticated high-technology materials.

As a part of this, he was contemplating selling ACOA's interest in Alcoa of Australia which up to that time had not produced attractive returns to shareholders. As a director of ACOA I was, of course, aware of this. WMC was the most likely purchaser of ACOA's shareholding and I had discussed the possibility with WMC directors, both at Board meetings and individually.

By 21 January 1987 the matter had proceeded to the stage where there was a telephone meeting of five WMC directors who formally agreed to form a Board committee of any two directors to progress to a takeover offer to acquire all shares not held by WMC. The basis was 23 A/A shares for 6 WMC shares, plus \$42 cash to be subscribed as six WMC 5% 10 year Convertible Notes at \$7.00 each. The four directors unable to attend had been consulted and had agreed to the proposal.

Most ACOA directors were not happy with what Charlie Parry was doing in re-directing the Aluminum Company and in April 1987, after a special meeting of non-executive directors in New

York City, it was decided to replace Charlie as Chairman and Chief Executive with Paul O'Neill.

The changeover took place on 15 June 1987 and in July Paul asked that the Alcoa of Australia proposal be suspended until he had been able to form a view, which turned out to be the exact opposite to Charlie Parry's. By August Paul had decided not to pursue the A/A matter further. This turned out to be the right decision for ACOA, because almost immediately thereafter A/A became very profitable.

Gradually WMC bought further shares which had been initially sold by BH South and Cushion Trust from new owners such as NML, T & G, and Colonial Mutual and also some 3.3 million shares from Westminster Staff Superannuation Fund in June 1990 and 700,000 in August 1992. The Fund sold because it needed cash and wanted to discontinue investment in a related activity. WMC owned 43.694% of A/A in 1988, 43.862% in 1989, 44.657% in 1990, 48.802% in 1991, and 48.25% in 1992. QBE Insurance was unwilling to sell and remains a 0.75% shareholder in Alcoa of Australia at the time of writing, in November 2003.

## **WORLD OUR OYSTER**

During one of my visits to Pittsburgh, probably in May 1993, Dick Fischer raised with me the possibility of ACOA and WMC combining their alumina and alumina chemicals interests in a jointly owned enterprise, thus eliminating potential conflicts of interests. My reaction was to see all kinds of problems, but I agreed that it should be investigated. However, because of my directorships of WMC, ACOA, and A/A I could not be involved in any discussions and I nominated Hugh Morgan to represent WMC. Within WMC the proposal was codenamed 'Project Sunny'.

Hugh and Don Morley met with Dick on 2 August 1993. In subsequent discussions the various difficulties were overcome and the Alcoa World Alumina and Chemicals (AWAC) agreement was announced on 6 July 1994. WMC's interest in AWAC in terms of relative asset values contributed (in the case of WMC its 48.25% interest in A/A) would have been around 30%, but WMC wanted it to be 40% and on 8 August 1994 a net initial payment by WMC to ACOA to achieve the higher percentage was agreed to be US\$ 348.5 million. (Subsequent payments were to be made if the chemicals business contributed by ACOA exceeded certain returns. This did not happen and there was no additional payment.) Final agreements were signed on 22 December 1994, effective from 1 January 1995.

QBE continued as a 0.75% shareholder in A/A, but had no interest in AWAC. A/A continued to operate as before, but after June 1996 had an all-executive Board and its policies were integrated at the AWAC level.

WMC set up a small unit to monitor its interest in AWAC and participated in the Strategic Council, of which Hugh Morgan was the Deputy Chairman and Don Morley a member. To ensure good liaison with ACOA in the early years an ex-ACOA executive, Harry Goern, joined WMC and became Executive General Manager Alumina, Chemicals, and Industrial Minerals as from February 1995.





## ***IN RETROSPECT***

Events related to WMC, ACOA and A/A since my retirement in April 1999 are described in Volume Six, *CORPORATE ACTIVITIES, Corporate Alliances*. Regrettably, the harmonious relationship which had lasted for 40 years was marred by a public controversy in 2001. At the time of writing (November 2003) a good working relationship had been re-established.

WMC leadership in the activities which led to the establishment of Alcoa of Australia and its subsequent role in A/A have been among the highlights of the Company's history. The value of A/A was a long time in emerging and not understood by, for example, North Broken Hill, who sold its 12% interest to WMC in 1986.

Building up WMC's interest in A/A from 20% to 48.25% and the subsequent purchase of an additional interest in AWAC was in retrospect a real success story. On demerger in December 2002 the alumina/aluminium interest represented more than a half of the Company's value, approximately \$5 billion.

It is somewhat ironic that, apart from the environmental extremists in WA, the only real difficulties in A/A history were caused by two Liberal-National Party governments in Victoria: first, by increasing the power cost to unsustainable levels in the early 1980s and then in the 1990s trying to back out of the flexible tariff contract which had been negotiated with the intervening Labor government as a part of the solution.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**BUSINESSES AT APRIL 1999**

**VOLUME THREE**

***THE BURNISH OF COPPER***

# ***THE BURNISH OF COPPER***

## **CONTENTS**

	Page
<b>Overview</b>	<b>237</b>
<b>The Search for Copper 1957 - 1975</b> In WA & SA	<b>239</b>
<b>Olympic Dam</b> Copper-Uranium-Gold-Silver, SA	<b>241</b>
<b>A Nifty Show</b> Copper Heap Leaching at Nifty, WA	<b>275</b>
<b>High Grade at Benambra</b> Copper-Zinc-Silver at Benambra, VIC	<b>279</b>
<b>In the Philippines</b> Copper at Tampakan, Mindanao	<b>283</b>
<b>Being Ernest in Queensland</b> Ernest Henry Copper Discovery, QLD	<b>291</b>
<b>The Polish Mazurka</b> Possible Joint Venture with KGHM near Lubin	<b>295</b>
<b>Good Decision in Zambia</b> Possible Interest in Konkola Deeps, Zambia	<b>301</b>
<b>In the Marketplace</b> Marketing of Copper	<b>303</b>



## ***THE BURNISH OF COPPER***

### **OVERVIEW**

Following the decision of the Board in 1953 to diversify into minerals other than gold, one of the first non-gold interests pursued was copper. The first copper exploration project at Tarraji River in the West Kimberleys of Western Australia beginning in 1957 was led by R (Roy) Woodall.

Over the next 20 years the search in Western Australia and near Moonta in South Australia was unsuccessful, until economic copper was intersected at Olympic Dam in South Australia in November 1976 (low grade copper mineralisation had already been intersected in August 1975).

Production of copper, uranium, gold and silver from the Olympic Dam Mine commenced 12 years later in 1988 and, after several expansions, reached 200,000 tonnes of refined copper per annum in the year 2000.

Of several other copper projects discovered or investigated, only the Nifty Project in the Great Sandy Desert in Western Australia became a producer in 1994. It was sold in 1998. Olympic Dam, which is capable of substantial further expansion, remained WMC's sole copper interest in November 2003.



## **THE SEARCH FOR COPPER 1957-1975**

Western Mining's search for copper, beginning in 1957 and culminating in the discovery of Olympic Dam in 1975, is described more fully in R (Roy) Woodall's keynote address *Empiricism and Concept in Successful Mineral Exploration* to the Australian Geological Convention in Ballarat in 1992.

The initial effort was to look for surface indications of copper mineralisation in Proterozoic rocks in which major copper deposits occur in Australia and worldwide. Following the discovery of outcrops of copper mineralisation in the Tarraji River valley, exploration commenced in 1957 in the West Kimberley region of Western Australia. The project was abandoned in 1960 and the search moved to the Moonta district in South Australia in a joint venture between the WMC subsidiary Gold Mines of Australia (50%), North Broken Hill Ltd (25%) and Broken Hill South Ltd (25%). It was managed by WMC until early 1971 when North Broken Hill took over the management and carried the cost of further work, acquiring additional equity for this.

It is an interesting comment on the informal way things were done then that in October 1971 I wrote to R L (Lawrence) Baillieu, Executive Director of North and pointed out that there was nothing formal on the file regarding the handover of Moonta from WMC to North Broken Hill. I suggested that a letter recording the arrangements should be drafted 'so that there will be no misunderstandings in the future'.

In 1983 the management reverted to WMC and an Exploration Office was opened in Moonta.

After WMC took over BH South in 1980 the shareholdings became WMC 57%, North Broken Hill Ltd 43%. In September 1987 a deposit of 206,000 tonnes at 6.45% Cu and 1.8 g/t Au had been outlined at Poona and 90,000 tonnes at 2.5% Cu and 0.6 g/t Au at Wheal Hughes, with copper-gold intersections but no tonnage assessments at four other prospects. None were considered economically attractive to the Joint Venturers and it was decided to put the project up for sale.

Four bids were received. In November 1987 the project was sold for \$2 million to Moonta Mining NL who subsequently mined the Poona deposit, both in an opencut and underground.

Meanwhile, there had been other copper exploration projects in the Warburton area of Western Australia from 1966 to 1969 and in the Hamersley Basin of Western Australia from 1967 to 1977.

In the Warburton area the prospects were on Warburton Range Aboriginal reservation, some 950 km by road north-east of Kalbarrie. Non-Aboriginals needed a permit to enter the reservation. We obtained special permission for our exploration project, included in which was a small mining operation quite close to the Warburton Range Mission known as the Tommy Sims Mine, named after the discoverer. The mine followed a narrow but very rich vein of copper ore which averaged about 35% Cu. A tribute party of four miners from Kalbarrie did the mining and natives were employed under their supervision to learn mining skills. The ore was bagged and transported to Fremantle for shipment. A geological team, assisted by a mobile geochemical laboratory on site, explored the reservation.

In the Hamersley Basin there were many showings of copper. We did not find an economic deposit there or at Warburton but the work in the Warburton area indirectly led to the Olympic Dam discovery, described in the next section.

Roy Woodall put it like this at his retirement dinner in Tucson, Arizona, on 23 October 1995:

In 1957 WMC began its search for a sediment-hosted copper deposit in the vast Proterozoic

rocks of Australia, a search which would last 20 years. Our limited vision at the time dictated that we search for signs of copper in favourable host rocks. Only when scientific research opened our eyes to the importance of looking for copper where events may have sourced copper or the energy to drive a major ore forming system, did improved vision enable us to see the potential of the Stuart Shelf in South Australia and find the Olympic Dam ore deposit.'



## **OLYMPIC DAM**

### **The Discovery**

Olympic Dam Operations (ODO) takes its name from a water storage dam on Roxby Downs pastoral station in the north of South Australia which was established in 1956, at the time the Olympic Games were held in Melbourne. It was one of the few landmarks on the otherwise featureless semi-arid plain.

R (Roy) Woodall, then WMC's Director of Exploration, gave an account of the discovery in his keynote address, *Empiricism and Concept in Successful Mineral Exploration*, delivered to the Australian Geological Convention at Ballarat in 1992. Woodall described how WMC had been searching for a major copper deposit in Proterozoic rocks since 1957. This had involved work in the West Kimberleys, Moonta, Warburton Ranges and the Hamersley Basin without success. He recorded that,

'Becoming aware of the geology of the Warburton area had an unexpected benefit. A young geologist on the project, D W (Douglas) Haynes, selected the area and its mineralisation as a basis for doctoral research at the Australian National University. From this research came the knowledge that copper is leached from basalt during oxidation and hence the exploration concept that substantial piles of oxidised, continental tholeiitic basalts can act as a source of sufficient copper to form a major, sediment-hosted orebody. On completion of this research, Haynes commenced a conceptually-based assessment of the Proterozoic basins of the Australian continent as the basis for a renewed copper exploration programme. A study of South Australian geology commenced in 1972 and by October 1973 Haynes had oxidised basalts in outcrop and in drill core. He was joined by Hugh Rutter who began working on aspects of regional geophysics. The study was completed by June 1974 and areas of interest nominated .....

A second line of conceptual thinking that was concerned with the tectonic setting of ore deposits had its birth in the late 1940s and 1950s when E S T (Tim) O'Driscoll was engaged in mapping the Broken Hill ore deposit. During the course of the decade (1946-55) he developed a concept that related particular styles of structural deformation to the effects of differential movements in shear zones. A number of Australian mining companies funded a 3 year research grant (1963-65) to enable O'Driscoll to develop the concept as a PhD project at the University of Adelaide. When applied to the Broken Hill ore deposit, the concept demonstrated that the differential shear could account for most of the peculiar fold forms and rotational phenomena observed in that environment and how an oscillatory shear movement could produce conjugate structural trends such as cross-folds, and cross-fractures. Regional shears were accordingly conceived as controllers of mineralisation which could develop syngenetically or epigenetically at points in and along a shear (lineament) track.'

Woodall went on to describe how these two conceptual ideas were applied to an area extending north and south of Port Augusta in South Australia during 1973 and that by 1974, when ERTS (Landsat) and photomosaic data were available, the study focussed on the Stuart Shelf. At that time D F (Dan) Evans was made responsible for exploration in South Australia and established a base in Adelaide, working under the general direction of J H (Jim) Lalor, the Company's General Manager Exploration. By June 1974 two locations based on the 'oxidised basalt model' were recommended for stratigraphic drilling. About this time Hugh Rutter drew attention to magnetic and gravity anomalies further north on the regional magnetic maps published by the Bureau of Mineral Resources, pointing out that they could be due to basalts concealed beneath sediments. He also noted the coincidence of the Mt Gunson copper deposit, which O'Driscoll had shown to lie on a lineament, to magnetic and gravity highs. Further work by O'Driscoll and D McP (Dave) Duncan identified additional tectonic targets in the Andamooka region.

Lalor summarised the situation at the end of 1974 thus:

The conceptual model clearly could not define targets in regions of flat-lying or nearly flat-lying rocks, and additional target definition criteria were as follows:

- (i) ore would be localised in basins adjacent to major faults intersecting the sedimentary succession above altered basalt piles;
- (ii) regional magnetic and gravity interpretations would define areas which might contain concealed basalt piles;
- (iii) lineament analysis would define major tectonic zones and associated major faults and, more particularly, targets associated with the intersection of such zones.'

Four of the eight geophysical targets coincided with tectonic targets and in June 1975 the first drill site was chosen on a combined gravity-magnetic-tectonic target next to Olympic Dam. In August the rocks intersected by the first stratigraphic drillhole RD 1 beneath 335 m of cover sequence were shown to include a section of 38 metres of 1.05% copper.

Woodall continued his account of the discovery by saying,

The copper values, together with this rock description, excited the exploration team and management. It was just as well, because over a year was to pass and eight subsequent holes either failed to find economic ore or were completely barren. Meanwhile a further \$3 million was spent, bringing the total cost of the Proterozoic copper search to \$30 million. Only belief in the significance of the brecciated, highly altered rocks, with their unusual mineralisation, kept the project alive. This was when the leadership of Lalor and management's confidence in the multidisciplinary exploration team was most critical. Finally, an economic discovery was confirmed by hole RD 10. It was completed at a depth of 529 m in November 1976 after intersecting 170 m assaying 2.1% Cu.'

## Drilling Results

The then Deputy Director-General of S A Department of Mines and Energy, R Keith Johns, recalls (in an unpublished paper *A Mirage in the Desert*) that on 23 March 1976 Roy Woodall, Dan Evans, Jim Lalor and I called to inform the Director-General, Bruce Webb, and Johns that mineralisation similar to that in RD 1 had been encountered in subsequent holes. It was not yet an economic discovery, but highly promising.

The first public reference to the project was in the 1975-76 Annual Report which noted that 'Near Roxby Down Station in South Australia, four drill holes intersected copper mineralisation over widths of from 8 to 92 metres at a depth of about 350 metres, with grades of approximately 1% Cu'. Eight additional holes, including the second stratigraphic hole at the Acropolis prospect, 25 km southwest of Olympic Dam, were drilled between August 1975 and September 1976. (The prospect was named Acropolis after I had objected to its initial designation after the nearby Appendicitis Dam because I had visions of having to live with Appendicitis Mine.) The best intersection was 1.01% Cu over 92 meters. The tenth hole, RD 10, was collared on 21 September 1976.

On 5 and 6 November 1976 Roy Woodall, Chris Porter, Jim Lalor and I visited WMC's oil exploration activity in the Pedirka Basin. We set out by light aircraft from Adelaide.

The plan was to call in at Olympic Dam and stay overnight in Oodnadatta (about 1,100 km north of Adelaide). When we got to the drill site of RD 10 the driller (Ted Whenan) had just pulled core, which

was laid out in core trays on the ground. The section on view showed beautiful sulphides and was obviously much better mineralisation than encountered in the previous holes.

We were naturally all elated and there was much good-natured banter about this having all been arranged for our visit. From that day onwards Olympic Dam had been transformed from an exploration prospect to a likely mine. On subsequent assay, drill hole RD 10 intersected 2.12% copper over 170 metres.

A statement was made to the Stock Exchange on 18 November and in the Chairman's speech at the Annual General Meeting on that day shareholders were advised that 'It is clear that a very big body of copper mineralisation has been discovered, but a great deal more drilling will be necessary to establish the extent and grade of the occurrence'.

More drilling results were reported progressively during 1976-77 and in February 1977 it was reported that the mineralisation also contained uranium. Further work on the drill core showed the presence of some gold and silver and by October 1977 it had been found that the mineralised zone further contained up to 5% of the rare earths of lanthanum, cerium and niobium. The Chairman's speech at the Annual General Meeting on 1 December 1977 advised that 'many companies have indicated their interest in joining Western Mining Corporation in this project. Because of its likely size it is realistic for us to think in terms of eventually having partners, and in due course we will be having discussions with those who have indicated interest'. It was noted, however, that it would be at least a year or longer before sufficient information was available to calculate reserves.

### **Exploration Tenements**

Additional exploration tenements were applied for and by March 1977 these covered 12,530 sq km. The airborne magnetic anomaly containing Olympic Dam extended eastwards into the Andamooka Opalfield and a part of the WMC application for tenements overlapped the Field.

Keith Johns describes proposals to issue strata titles over such areas, with opal mining limited to a depth of 50 metres and exploration for other minerals below that stratum. There were 'animated' discussions between government officials and the miners at Andamooka in mid-1977 and at Cooper Pedy in 1981 when legislation was to be introduced into SA Parliament. The amendments to the Mining Act became effective on 5 November 1981.

### **Background to BP's Involvement in Minerals**

As a result of the oil price increases in the early 1970s all major petroleum companies had very large cash flows and most of them decided to diversify into minerals, which were perceived to have similar characteristics to the petroleum industry. BP formed BP Minerals (BPM), with the objective of becoming a major business generating cash flows of £100 million a year by 1982. In 1977 BPM was authorised to look for suitable candidates for acquisition and in 1978 partnering WMC in the Olympic Dam Project was approved.

It was decided to acquire Selection Trust (ST), and an offer was accepted by the ST Board in July 1980.

There were difficulties in combining ST staff and culture with BPM. ST saw themselves as risk takers who excelled in mining finance house techniques, while BP was strong on corporate planning and bureaucratic. When difficulties were encountered in the Agnew nickel venture, BP was very reluctant to inject further equity. There were stormy encounters between BP and former ST executives.

## The BP Joint Venture

Our first contact at BP was Frank Rickwood, an Australian who had spent most of his working life with BP in North America, most recently (since 1969) as President, BP Alaska. He had just been transferred from the United States as a Director of BP Trading to take charge of BP's coal and minerals interests, exploration and production, and Group research and development. Rickwood had been in Melbourne in 1967 and 1968 as Manager BP Petroleum Development Australia Ltd, at the time when WMC was in the news because of the Kambalda discovery and we were therefore well known to him.

Their Australian organisation had expressed interest in joint activities with WMC. On 21 December 1977 I met Frank in BP's Office in London. I had invited Bob Allard to come with me and Frank was accompanied by E (Ted) Hannington, General Manager - Minerals and A W (Arthur) Smith, Exploration Manager - Minerals.

Rickwood explained the view, then universally held by oil companies, that oil will gradually phase out and BP must acquire other interests to take its place. They wanted to explore opportunities for cooperation with WMC ranging from joint exploration (such as in the Benambra Project), to farming into discoveries such as Yeelirrie and at Roxby Downs, to becoming a shareholder in WMC. Our Exploration Division had a very high reputation and record of success and this was an area where they needed assistance.

I explained that we were unable to talk about Yeelirrie because of exclusive discussions with another party, unless these discussions were not successful. WMC would be interested to consider, without commitment, any other opportunities for cooperation, although the possibility of BP becoming a substantial shareholder in WMC was unlikely to be acceptable because we would lose the advantage of our Australian character. Rickwood repeated their strong interest in discussing a possible farm-in at Olympic Dam.

We then had lunch with Deputy Chairman of BP, Monty Pennell, Managing Director Robin Adam, and Director of Policy BP Trading Robin Belgrave. Pennell confirmed their very strong interest in being included in the short list of companies for detailed discussions on Olympic Dam.

Rickwood left the impression of being straight-forward, down to earth, and probably easy to work with. This impression was confirmed in subsequent meetings but we did not work with him for long because, when detailed discussions commenced, others in BP took over.

When I returned to London on 3 January 1978 after visiting Estonia for Christmas, I was telephoned by Rickwood and invited to join him for the weekend at his country place, about 100 km from London. Regrettably I could not do so because Keith Parry was arriving on Saturday 7 and we had arranged to work on the weekend. I had also contracted the flu and was not fit to socialise. Rickwood confirmed again over the phone their need to form a close relationship with companies with proven exploration expertise, such as WMC, because in his view it would take BP ten years to build up their own exploration department.

Rickwood visited us in Australia in April. Discussions with a number of companies interested in participating in Olympic Dam were led by Hugh Morgan. Most were large oil companies, but BHP was also interested.

On 15 August 1978 I spoke to Brian Loton, the Chief General Manager of BHP and told him that we had decided on the basic terms which were:

1. A cash premium of \$5 million.

2. Partner to carry costs of drilling and metallurgical work in Stage 1 estimated to total \$30 million, for which they would earn 18% equity.
3. Partner to carry further costs of \$20 million in Stage 2 which would complete a feasibility study and for which the equity would increase to 24%.
4. Partner to propose how they would assist WMC to finance its 51% of the development and construction costs for which the equity would increase to 49%.

Although it was not possible to be specific at this stage, I said I thought the project costs could be of the order of \$1 billion.

BHP eventually did enter a bid and Brian Loton came to see me, asking that they be given the opportunity to revise it if need be. However, the BHP terms were so much less favourable to WMC than any of the others that there was no point in going back to them.

Only Hugh Morgan can describe the events in the bidding process over the next year or so because I was not personally involved.

On 27 July 1979 WMC and BP Australia Limited announced that they had reached agreement in principle for further exploration and development of the Olympic Dam prospect. (The name *Olympic Dam* had been first mentioned in the 1976-77 Annual Report.)

The project will proceed as a joint venture managed by WMC in which the equity percentage will be WMC 51% and BP 49%.

The principal terms of the agreement are as follows:

BP is to provide \$50 million in meeting the estimated cost of exploration, metallurgical testing and the other work necessary to complete the feasibility study of the Olympic Dam prospect.

In return for its participation in the project BP will ensure that funds are available for the development of a mine and associated facilities up to a production capacity of 150,000 tonnes per annum of copper with associated products. WMC's share of the required funds will be secured solely against the project assets and be repaid from the project cash flow.

BP will participate in a joint venture with WMC in further exploration outside the Olympic Dam project. This requires BP to spend \$10 million over the next three years. By the end of this period BP may select up to 10 separate areas each of approximately 65 square km, in which BP can maintain its 49% interest by spending a further \$10 million on each area. The remainder of the exploration area reverts solely to WMC.

An override payment of 2.5% of BP's net profit from the joint venture before depreciation, interest, and tax is payable to WMC.

Upon commencement of the joint venture BP will make a payment of \$5 million to WMC as a part of the arrangements.

BP has various rights of withdrawal in the event that it is either unable or unwilling to proceed with development of the project.

BP has granted WMC an exclusive option to purchase 50% of Clutha Development Pty Ltd, a wholly owned subsidiary of BP Coal and Minerals Australia Proprietary Limited.

All dollar amounts mentioned above are in July 1978 dollars and will be escalated.'

The agreement was subject to Federal Government approval; the South Australian Government had already given its approval.

I sent Frank Rickwood a telex of appreciation regarding his role in this, and really meant it.

### **The Labor Government and Uranium**

Keith Johns describes the politics of uranium in South Australia under the Labor Government from 1976 to 1979 (see also Volume Four, *THE GLOW OF URANIUM, For and Against Uranium in Australia*).

The SA Government had blown hot and cold over the subject of uranium, mining and possible enrichment in this State before caving in to a lobby led, notably, by CANE (Campaign Against Nuclear Energy) that had advocated a "leave it in the ground" policy with regard to uranium. On 30 March 1977, the House of Assembly (surprisingly, with the wholehearted support of the Liberal Opposition) passed a motion that "it had not yet been demonstrated to its satisfaction that it is safe to provide uranium to a customer country, and unless and until it is so demonstrated, no mining or treatment of uranium should occur in SA". *The Advertiser* of 31 March 1977, reported that "it was the result of detailed assessments made by the Premier's Secretariat and the Mines Department"!

The last bit could not have been further from the truth, and we were stunned - as were those engaged in uranium exploration and development, particularly at Honeymoon and Beverley. However there had been no loss of appetite for WMC who were reported (*National Miner* 19 September 1977) as "becoming more encouraged by each strike at Roxby Downs". No doubt, time was on their side; and despite Premier Don Dunstan saying that, "stock-piling the uranium could be a possibility", since, even he, had been forced to concede that it would be impossible to mine the copper without extracting the uranium.

Rallies were organised in the city by CANE in support of the policy switch, at which speeches were made by Don Chipp (Democrats) and Chris Sumner (ALP).

The SA Government Moratorium on Mining Legislation was passed by Parliament for the second time on 13 July 1978 when it was discovered that the previous Bill was flawed; again supported by the Liberal Opposition!

Storage of radioactive materials came under scrutiny from FOE (Friends of the Earth) and, with assistance from Health Commission officers, Department of Minerals and Energy (DME) was required to respond - at Port Pirie site of former uranium treatment plant, at DME Thebarton depot, AMDEL laboratory at Thebarton, at Wingfield site of former radium extraction plant, at Moonta tailings dump, at WMC Francis Street core store; on 23 October 1978 WMC was taken to task for storage of drill core (taken from Olympic Dam) at their Lonsdale property.

Premier Don Dunstan went to the UK and Europe on 20 January 1979 to assess safety aspects of nuclear power generation for himself; he was accompanied by Bruce Guerin (Executive Assistant), Mike Rann (Press Secretary), Ron Wilmshurst (AMDEL) and Ben Dickinson (Consultant). Dickinson and Wilmshurst were members of the SA Uranium Enrichment Committee that had reported favourably on uranium enrichment at Redcliff in 1976. The visit

was generally interpreted as clearing the way for a reversal of the Government's uranium policy which would permit development of uranium in SA, including Olympic Dam.

On 26 January 1979, the Mining Act and the Mines and Work's Inspection Act were scrutinised by Bob Smith and George Lewkowicz (of the Premier's Department, Policy Division) to ascertain whether they reflected Government policy; further, that DME activities "weren't at odds" with those of the Department for the Environment. Rob Dempsey of that Department was looking for amendments to be made.

Dunstan returned to Adelaide on 5 February 1979 and declared that uranium would not be mined in SA. The decision came as a shock to most observers and it was roundly condemned. WMC expressed "disappointment" but there was no slackening of activity at Roxby Downs.

When Dunstan quit as Premier, suddenly, on 15 February 1979, he was succeeded by Des Corcoran; the latter was reported (*The Advertiser*, 24 March 1979) as saying, "There have been exaggerated reports about the economic bonanza that would result from the mining of uranium at Roxby Downs". Further, Peter Duncan (Minister of Health) expressed his view that "it was unlikely that uranium would ever be mined in SA" (*The Advertiser*, 4 August 1979).'

### **The Indenture Agreement**

On 18 September 1979 there was a change of government in South Australia. The Labor Government led by Des Corcoran, who had succeeded Don Dunstan in February, was crushingly defeated by the Liberals led by John Tonkin. Development of Olympic Dam had been a major election issue, with the winning Liberals being very supportive. This was on the face of it favourable to Olympic Dam, although the legendary Sir Thomas Playford sent me a personal note in September 1979, warning that the Labor Party had turned much more to the left as a result of the election through losing a good number of its right wing members in Parliament. He recommended early negotiations for the necessary approvals to bring Olympic Dam into operation. He was right!

The Federal Government under Prime Minister Malcolm Fraser was fully supportive and urged us on. We became worried that he did not understand that the project was at a very early stage. I briefed him in Melbourne on 20 December 1979, stressing that a large amount of work remained to be done. My concluding comment was: The magnitude of the task ... is such that even in ideal circumstances two to three years will be necessary before development plans can be drawn up.'

Keith Johns records:

The Government policy on uranium development, enunciated in Parliament on 20 February 1980, provided for the mining and processing of uranium subject to EIS (*Environmental Impact Statement*) requirements being met and necessary procedures being followed to ensure appropriate handling of products and sale of uranium to approved countries. Active support was to be given to conversion and/or enrichment in South Australia, including the possibility of SA Government equity in such projects, utilising Urenco-Centec technology; thus, generating major new manufacturing activity and enhancing the export value of the product.'

The next important step for Olympic Dam was the negotiation and ratification by Parliament of the Indenture Agreement with the South Australian Government, setting out in considerable detail the rights and obligations of the Government and the Joint Venture partners. The process was initiated by a meeting of Joint Venture and Government representatives on 22 November 1979. The BP group was led by Alex Gorrie, Managing Director, BP Australia and I headed the WMC group.

On 5 September 1980 Keith Parry for WMC and Ken Keep for BP wrote to the Minister for Mines and Energy advising that the project had now reached the stage when detailed provisions of an indenture could be formulated. The principals in the subsequent lengthy negotiations were Hugh Morgan and the Minister for Mines, Roger Goldsworthy, with many others participating on both sides.

In the late 1970s and early 1980s South Australia was in severe economic difficulty. The State had the highest unemployment rate in mainland Australia and its manufacturing industries were in deep recession. The Cooper Basin Liquids Project based on the gas discovery at Moomba and the Olympic Dam copper-uranium discovery were the two main hopes of generating new economic activity.

Nevertheless, in June 1981 the Annual State Convention of the Australian Labor Party called for South Australia to be declared a nuclear free zone. This was partly in response to an announcement by the Liberal State Government that it had joined with Broken Hill Associated Smelters, British Nuclear Fuels, and Roxby Management Services (the fully owned WMC subsidiary managing the Joint Venture) in a \$500,000 feasibility study for a uranium enrichment plant at Port Pirie. The Opposition Leader, John Bannon, said he believed uranium mining could be safe, but that an ALP State Government would not go ahead with the enrichment plant.

In September 1981 the National Conference of Australian Democrats, who held the deciding vote in the South Australian upper house, the Legislative Council, passed a resolution that development of Olympic Dam could proceed, 'on the condition that the uranium extracted at the time is returned with the waste fill in a safe manner, with a complete embargo placed on the sale or use of this uranium'. This was of course unacceptable to the Joint Venture.

A Legislative Council Select Committee on Uranium had been set up in 1979 to enquire into uranium mining and the safety of the workers. It comprised three Liberals, two Labor members (one of which was Norm [Stormy] Foster, a former official of the Waterside Workers Federation) and one Democrat, Lance Milne. John Reynolds prepared the Company's submission, having been briefed on radiation aspects by Len Keher of the Australian Atomic Energy Commission. He presented the submission and gave evidence to the Select Committee on 18 April 1981. He recalls that Norm Foster was an aggressive questioner. In November 1981 the three Liberals produced a majority report which supported uranium mining in South Australia. The Labor and Democrat members each produced minority reports which basically opposed it.

The Indenture was signed on 3 March 1982. The Liberal Premier, Mr Tonkin, announced that if the Indenture Bill was defeated in Parliament twice, he would call a State election to resolve the matter.

The Labor party proposed seven amendments to the Bill, which were not acceptable to the Joint Venturers.

In the Legislative Assembly on 9 June 1982 the Bill was passed unamended along party lines.

On 11 June *The Australian* had a headline 'All hope lost for Roxby', on the basis that unyielding ALP and Democrat opposition would sink the project in the Legislative Council (there were 10 Government and 10 ALP members of the Council, and 1 Australian Democrat).

On 13 June, however, the Labor Party's Annual Convention defeated a motion to declare the State a nuclear-free zone by 92 votes to 68. Norm Foster, who had been having further telephone discussions on radiation and safety with John Reynolds, told the Convention that he would be under great trauma and mental strain to cast a vote against the indenture. He said the Party was handing the Liberals an election victory 'on a plate' and he did not want to see the party self-destruct. '.. those who are not



committed to a political line .... are seeing the facts of mining and milling of it (uranium) are not so dangerous as we would lead them to believe'.

At 2 am on June 17 the Legislative Council voted on the Indenture Bill, which was defeated by eleven votes to ten. Norm Foster voted against the Bill.

At 9 am Foster sent a telegram to the State Secretary of ALP, saying he had resigned from the Labor Party.

At 10 am Premier Tonkin called for a special sitting of the Legislative Council to vote again on the Indenture Bill.

In the special sitting on 18 June Norm Foster crossed the floor to vote with the Liberal Government and the Bill was passed eleven votes to ten. John Bannon announced that an ALP Government would amend the Indenture Act only 'with the cooperation of the Joint Venturers'.

John Cornwall in his memoirs *Just For The Record* subsequently claimed that in the debate in the Legislative Council prior to Foster crossing the floor -

'By prearrangement I played the role of agent provocateur with considerable help from Chris Sumner. With John Bannon's fore-knowledge and support, we had resolved to goad Foster wherever possible. The plan was clever and cruel. Ostensibly our "anger" was because of our contempt for a colleague who was wavering on the hardline uranium policy. In fact, we had carefully calculated that the more public scorn and ridicule we heaped on Foster, the more we would reinforce the chances of his defection. We reasoned that it would be easier for him to repudiate enemies than friends.'

## **Aboriginal Claims**

Keith Johns recalls:

'A letter, dated 20 January 1979, had been addressed by Mr G S Coulthard of Port Augusta to Hugh Hudson with, "a reminder to you as Minister for Mines and Energy before you and Mr Dunstan start changing the ALP policy on uranium mining, please take into consideration the Aboriginal People. We as Aboriginals who are opposed to all uranium mining should be given the chance to state our view and claims on all entitlements. Because all uranium is sacred to us Aboriginal People. Roxby Downs deposits are on Kuyani Tribe Territory".

Similar letters were addressed by him to Premier Tonkin (22 September 1979), Minister of Mines and Energy Goldsworthy (8 October 1979) and to *The Advertiser* (11 October 1979), claiming that "Roxby Downs deposits were most important to Tribal Aboriginal Sacred (Dreamtime) Histories for thousands of years".'

This claim overlooked that the deposits were covered by some 350 m of barren rock and had no surface expressions whatsoever.

## **Evaluation of the Orebody**

Following the signing of the Joint Venture Agreement, evaluation of the deposit began in earnest. Up to 15 drill rigs operated at the site on a programme of close pattern drilling. About 500 diamond drill holes were drilled from the surface over an area of about 20 sq km to depths ranging from 600 to 1,300 metres.

Over 250 km of drill cores were obtained from surface drilling and the 200 holes that were drilled later from underground. The cost was approximately \$100 per metre or some \$25 million for drilling alone.

An exploratory vertical shaft, called the Whenan Shaft after the driller who drilled RD 1, was commenced in 1980. (When the shaft site had been selected, a QC on behalf of the Kokatha Aboriginal interests claimed that the claypans adjacent to the shaft were of mythological significance. However, the Government approved the site and assured the Joint Venture of security of tenure.) The shaft was to:

- a) gain experience in mining that particular rock,
- b) produce representative quantities of the ore for pilot plant testing,
- c) enable underground drilling to be carried out, and
- d) enable more detailed examination of the geology and mineralisation.

Commissioned in September 1982, the shaft was sunk to a depth of 500 metres and subsequent horizontal development to 1985 amounted to over 7 km. Three hundred thousand tonnes of ore and 500,000 tonnes of mullock were hoisted to the surface.

The shaft and haulage equipment were set up so as to serve as a haulage shaft in the event of development taking place. As a matter of interest, the sink/service winder had been originally installed as a steam driven winder in 1909 at Kalgoorlie WA on the Edwards Shaft operated by the Great Boulder Proprietary Gold Mines Ltd. In 1959 it was converted to 40 Hz electric drive and it operated until 1969 when the gold operations were closed down. In 1970 the winder was relocated to the Carr Boyd Rocks Nickel Mine, initially operated jointly by Great Boulder Gold Mines Ltd and North Kalbarri Gold Mines (1912) Ltd, and simultaneously the electrics were converted from 40 Hz to 50 Hz. In 1977 the winder was relocated from Carr Boyd Rocks to the Victor Shaft at Western Mining Corporation Ltd's Kambalda Nickel Operations and the electrics upgraded to incorporate an electronic control scheme. The winder never operated at Kambalda and in 1980 it was relocated to the Whenan Shaft at Olympic Dam.

A further major step in the evaluation phase involved building a 5 tonnes per hour pilot plant near the Whenan Shaft. Some 20,000 tonnes of ore from various zones of the deposit were treated in the pilot plant which operated for nine months from February 1984 under the direction of H B (Henry) Muller. The cost to construct and operate the plant was approximately \$20 million.

The plant was used to:

- confirm laboratory test results
- provide design criteria for a full size plant
- produce copper matte and yellowcake for quality assessments
- produce residues for the operation of a pilot tailings retention system
- assess the properties of construction materials
- produce copper concentrates for smelting tests overseas
- train operators for the full size plant.

On 12 October 1982 it was announced that 'The estimated amount of mineralisation so far drilled on a 200 m (656 ft) grid is about 2000 Mt (2200 M st) at an average grade of 1.6% copper, 0.6 kg per tonne, (1.2 lb per tonne)  $U_3O_8$ , and 0.6 grams per tonne of gold, commencing approximately 350 m (1148 ft) below surface'.

## Aboriginal Issues

Keith Johns records that in December 1980 the Government gazetted the formal granting of a number of tenements to the Joint Venture. Aboriginal objections on grounds that "the land contains sites of sacred significance and that there is a dreaming relating to the land which is a viable part of the culture" were lodged to these in January 1981. These were rejected by the Government in February and March 1981 on grounds that the licence conditions adequately provided for identification and protection of Aboriginal and historic relics.

In October 1981 it was claimed by Kokatha Peoples' Committee (KPC) that evidence of damage to sacred sites had been found, notably to what became known as the "dog leg arrangement" during drilling in the Whenan Shaft area. They wanted the drilling stopped. Investigation concluded that the disturbance was limited to "a single excursion across an undistinguished claypan by a single vehicle".

In June 1982 the Joint Venturers proposed that an anthropologist representing the Kokatha interests work side by side with an anthropologist working on the *Environmental Impact Statement* (EIS) for the Joint Venturers. This was rejected because "it did not provide adequate safeguards for confidentiality in identification and for related secret information".

The KPC refused to provide information for the EIS and engaged their own anthropologist who produced the "Hagen Report". It included a number of contradictions with statements by Kokatha representatives who had participated in earlier studies, and by old Aboriginals. There was also uncertainty as to which tribe – Kokatha or Arabunna – could claim previous association with which areas.

## Environmental Impact Statement

An *Environmental Impact Statement* conforming with State and Commonwealth Government requirements was necessary for a project this size. Baseline data for the EIS was collected mainly by specialised consultants. Preliminary designs were prepared for the mining operation, processing facilities, township and services to enable an assessment of the impact of these activities on the natural environment.

Aspects covered by the EIS included:

- a description of the Project, its nature and extent and the services and infrastructure required,
- the biophysical environment including terrain, hydrology, flora, fauna and land use,
- the Aboriginal environment and management proposals for anthropological and archaeological sites,
- radiation assessment, monitoring and protection,
- mining methods, safety and ventilation,
- gaseous emissions and noise monitoring and control,
- tailings disposal techniques, monitoring and control,
- infrastructure and services including water supply and borefield development,
- transportation and communications,
- employment community, town and municipal management, and
- economic impacts and effects.

The 560 page draft EIS was released in October 1982 and remained open for public comment for six weeks.

Comments by Government Departments and the public were responded to by the Company and its

consultants and a supplement was subsequently issued. Environmental approval was granted on 28 June 1983.

### **Return of Labor Government**

Labor had won the State election on 6 November 1982. John Bannon became Premier and Ron Payne the Minister for Minerals and Energy.

Bannon visited Roxby Downs and Olympic Dam on 28 November 1982, met by the Resident Manager Bob Crew, myself and Keith Parry representing WMC and Arthur Smith and Ted Hannington representing BP. The Premier expressed guarded support for the project because uranium would be produced as "part of a general mining process. I am committed to it ...."

### **Feasibility Study**

A feasibility study prepared by Fluor Australia Pty Ltd was submitted to the Joint Venturers in March 1985. The Joint Venturers decided that the project was 'commercially viable'.

The pilot plant was recommissioned and used to determine the optimum route for treatment of copper concentrates prior to smelting. Some further smelting test work was carried out in Finland from July 1984 to early 1985. As a result, a decision was made to include a flash smelter capable of producing blister copper directly from the furnace and a copper refinery to produce refined copper from that blister.

### **The Canegrass Stand-Off**

Disputes with Aboriginal activists led to a group setting up a protest camp on 5 August 1983 at a locality known as Canegrass Swamp on the road being constructed to the Great Artesian Basin, along which it was proposed to construct a pipeline to supply water to Olympic Dam. The protesters claimed that bulldozers working on the road had damaged sacred sites. What happened is described in detail by John Showers in *Return to Roxby Downs* and Keith Johns in *A Mirage in the Desert?*.

It was not until after the Government had commissioned and obtained in November 1983 a further anthropological report by Professor Ronald Berndt of the University of Western Australia that the matter was settled in December 1983 by some re-alignment of the road.

### **The ABC Court Case**

During the dispute the ABC had on 10 August 1983 portrayed the Joint Venturers on its *Nationwide* TV programme in a defamatory and libellous manner. WMC as Managers (through Roxby Management Services) sued the ABC in the Supreme Court of South Australia and the case was heard on 5 March 1984. The matter was settled out of court by the ABC making an unreserved detraction, apologising and paying compensation (from memory, \$150,000) to WMC.

### **The Protests**

John Reynolds, Manager Corporate Affairs at the time, records his recollections of the anti-uranium protests:

'Major protests took place at the site in 1983 and 1984, with estimated numbers of 400 and 700 people gathering there each September, which happened to coincide with school term holidays

in the eastern States. I became involved on the Company side in some respects, particularly in 1984. The Company's tenure in 1983 was that it held an exploration licence only (of 15,000 sq km I recall) on what continued to be a pastoral lease, which as such was open to any person to traverse. Therefore we could not prevent people coming onto the work site where exploration was continuing and the Whenan exploration shaft was in operation, working two shifts per 24 hours.

This resulted in several skirmishes as the protesters tried to stop the mine crew accessing the shaft area, usually when the afternoon shift was arriving. Although their presence was deeply resented by our people our policy was strictly non-violent towards the "visitors" and one of our men was sacked for throwing a stone through a vehicle windscreen when provoked by a particularly aggressive protester. There was comedy one afternoon when we sent off a decoy mine crew to distract the protesters and while its vehicles were being chased, sent in the real crew. Some of the protesters did strange things. One super-glued his hands to the mine fence so he couldn't be dragged off. Our engineers threw a bag over his head and cut off a section of the fence, sending the gentleman off holding on very tightly to two short lengths of galvanised steel tubing.

The 1984 protest was better planned both by the visitors and the Company. By then we had secured a Miscellaneous Purposes Lease under the SA Mines Act on the basis that major construction work was going on. This empowered us to refuse the entry of persons at our discretion. We had also been in contact with the SA police who, foreseeing a major effort by the protesters, decided to send "Star Force", a horse mounted unit, to the site. They were quartered and stabled in the camp area and became popular with the OD children who were provided with free and supervised horse rides. A gate and watch house was established on the road from the south about 8 km from the camp. This prevented unwanted vehicles from entering but could not keep out those who climbed through the five-wire fence and sought to walk through the bush to the operations site. After a little experience, the police decided to let such people complete their walk and then advise them they were trespassing and offer the alternatives that they either walked back or took a lift in the paddy wagon to Adelaide to face a charge in court. During this second protest there were some fairly desperate individuals whose behaviour was not good. In an incident outside the gate near the Andamooka turnoff, a young child was placed on the road, causing a large vehicle to halt. Some protesters then emerged from hiding and proceeded to slash the vehicle's tyres and damage other parts.'

Keith Johns describes the events in detail which I believe is worth repeating here:

'WMC announced on 6 July 1983 that indicated reserves of uranium oxide at Olympic Dam had been reassessed as being 1 Mt, making it the world's largest uranium resource; at prevailing contract prices, its worth was put at \$66,000 M. Such a positive outlook provoked Senator Don Chipp (Australian Democrats) into a call for the Government to put an end to development there. His reaction would further stimulate anti-uranium protesters in threatening a blockade of Olympic Dam: *The Australian* of 11 July foreshadowed "war" as members of CANE were said to be organising secret camps for training in demonstration techniques in an attempt to halt operations for at least a week. A prominent activist of Moonta who claimed to have been opposed to the nuclear fuel cycle attended one such camp; being confined to a wheelchair, he was readily identifiable as one of the *hire-a-crowd* protesters that turned up later at Roxby Downs (31 August) and at Thebarton (23 September).

On 29 July 1983, 14 protesters (members of CANE) were arrested and charged with loitering when they blocked access into WMC premises, Greenhill Road.

Possible Government action to be taken if picketing on site took place was discussed with RMS (Roxby Management Services) representatives; and, on 15 August, officers of concerned Government Departments (Mines, Environment, Crown Law, Police, Aborigines and Premiers) met to consider requirements for response to the proposed CANE picket, from 25 August, 1983. Following a meeting of Ministers Payne, Hopgood and Crafter on 17 August, RMS were advised to consult with the Police Force with regard to crowd control; it was apparent that any restriction of access to the site (either by CANE or RMS) would affect residents and visitors to and from Andamooka also. On 18 August, an RMS letter to Minister Hopgood expressed concern for protection of the environment in the face of the blockade and established that "no damage occasioned would be levelled at RMS".

Up to 1,000 protesters were expected to attend the 9-day blockade, prepared to stop development work by preventing or delaying access of workers, supplies and machinery to the mine area. Their avowed aim was to raise public awareness of the dangers posed by uranium mining and to put pressure on the Federal and State Governments to adopt an anti-uranium policy.

The policy operation (code-named "Operation Protection") deployed a force of 250, together with Star Force, a cadre of police greys, and dogs; use of the greys for crowd control forced their withdrawal from their normal annual commitments at the Royal Adelaide Show. Police administration and command bases were established at Woomera and at Olympic Dam Village. A private security force was also employed by RMS. Barbed wire fences were erected around major installations and heavy boom gates were placed across roads leading into the mine area.

The demonstration/protest/blockade which was orchestrated by CANE at Roxby Downs began in earnest on 27 August 1983. RMS took space in that day's *The Advertiser* to promote their cause through "Roxby and Aborigines" and "Roxby and Australia", and on 30 August, "Roxby and the Blockade". The print and electronic media indulged in a feeding frenzy, giving time and space aplenty to the event.

It was confirmed on 29 August that WMC held a Pastoral Lease over Roxby Downs Station, issued under the provisions of the Crown Lands Act; a copy was forwarded to Crown Law. A map had been previously prepared for the police to show the Roxby Downs Project area, roads, leases, licences, fences and gates. Rights of access to leases and licences were established to assist in preparation of a Government response to a CANE telex addressed to the Premier.

There were reports, on 29 August, that protesters had breached security barriers; they had arrived in force, on bikes and in 4-wheel drive vehicles; the polio-handicapped wheelchair-bound blockader was wheeled aside without fuss. The police contingent soon sorted them out and, on 31 August, again out-witted protesters who had attempted to prevent a change of shift into the mine site - 300 were arrested. The protesters indulged in emotional displays at the scene. Tyres of four mine buses were punctured that evening in Andamooka. Meanwhile, in Adelaide on 1 September, about 130 anti-uranium protesters attempted to stop motorists using a BP Service Station at Parkside and gathered outside WMC premises on Greenhill Road.

Protesters continued to be outwitted at the mine gate in cat-and-mouse games that involved irregular changes of shift. By 6 September the 9-day protest had come to an end, without disruption to work at the Olympic Dam mine site. An estimated 200 protesters gathered in a symbolic wake on the steps of Parliament House - it had all been rather mindless! Those who cared proclaimed that the police had done a sterling job in defending the Roxby Downs Project against the "loonies".

While attempts at a blockade of the mine had come to an end, a hard core of protesters maintained what they described as a "vigil" adjacent to the site in squalid encampments, invoking a variety of issues that related to Olympic Dam and/or the nuclear fuel cycle - including Woomera, Maralinga, Nurrangar, Kokatha Aboriginal mythology, ALP-uranium policy, utterances of the Democrats - and the Government weren't prepared to evict them, nor to be seen to be funding their transfer elsewhere (Andamooka).

As of mid July 1984 tenements held by WMC on the Stuart Shelf and in the Olympic Dam Project area included the following:

- EL 784 (14,412 km<sup>2</sup>) over the Stuart Shelf - granted 16 January 1981
- EL 993 (263 km<sup>2</sup>) strata title, Andamooka Opalfield - 30 April 1982
- EL 1166 (140 km<sup>2</sup>) SML Olympic Dam Project Area - 16 January 1983
- MPL 12/MPL 13, over Roxby Downs Village, airstrip
- MPL 14, over pilot metallurgical plant
- EML 4895, over limestone aggregate supply deposit and quarry
- RL 14, over Whenan Shaft.

Under application by RMS was a "mine buffer zone, within which access may be restricted to safeguard the public, the workforce and the environment in relation to operations under this Indenture". This was seen as a move to upset plans for another anti-nuclear protest blockade of Olympic Dam for which *The Advertiser* of 16 July 1984 reported that 1500 people might be involved for a period of six weeks, from 19 August 1984.

One of the first of the "vigil" group to bear the brunt of the Government's new resolve to enforce a provision of the Crown Lands Act, that no fixed dwelling can be built without ministerial approval, was an "expectant" Annie McGovern. Minister Hopgood issued orders to remove the "dwelling", to give vacant possession to the Joint Venturers. The cause of the squatters deteriorated further when they resorted to sabotage by severing a water pipe connection to the pilot metallurgical plant. Such activity finally led police to take action and arrest those who defied directions to desist from trespass.

On 5 August 1984, the "vigil" by the protesters living on the lease was brought to an end when police forcibly evicted ten adults and three children who were occupying two bush humpies, in contravention of the Pastoral Act, and took them to Andamooka - their "dwellings" were destroyed by a bulldozer. Max Thomas, a KPC elder was reported (*The Advertiser*, 6 August 1984) to be among those evicted. *The News* of 23 August reported on the arrest of a further 39 trespassers within the precincts of the mine. A newsletter titled "The Roxby Vigil 83-84" chronicled what was regarded as "information on the effects of Roxby on the environment up to date and overall effects on a national scale should the mine continue as proposed".

In an open letter to the Commonwealth Minister of Aboriginal Affairs, the KPC, on 21 August, sought a "declaration of all Kokatha sites on the Roxby lease area (as identified in the Hagen Report and supported by the Berndt Anthropological Reports ) under the Aboriginal Heritage Legislation 1984". They were concerned that "the South Australian Government had issued a Special Purposes Lease to RMS without consultation with Kokatha".

On 9 November 1984, the last of the squatters (26 of them) were evicted from a campsite that they had occupied since August and were given orders to move, forthwith, to Andamooka by the police (30 of them). This final action followed the alleged wrecking of a water truck; the makeshift camp was dismantled.

It had dragged on for an inordinately long time but the nonsense was over, at last; the

Andamooka Progress and Opal Miners Association marked the occasion by declaring Andamooka to be a "Nuclear Protester-free Area".'

## Decision to Proceed

Kym Saville recalls that there were two serious debates with BP about the commitment process.

The first was in 1984, and involved a debate about the terms of reference for the feasibility study. Then in the weeks prior to the commitment deadline, BP tried very hard to defer commitment. Underlying both these issues was BP's reluctance to commit until project risks had been minimised. BP's reluctance was centred within BP Finance. Because they were funding 100% of Project Development Costs, they were nervous about committing until long term sales contracts were in place. On the other hand, our view (subsequently borne out by experience) was that uranium customers in particular would not take us seriously as a supply source until construction was well under way and they could see for themselves that Olympic Dam was not a "Mirage in the Desert".

Under the terms of the Joint Venture Agreement, the terms of reference for the feasibility study had to be agreed by the parties (with disputes referred to an independent expert). The Manager (WMC's subsidiary RMS) was then to undertake the feasibility study in accordance with the agreed terms of reference. If in the opinion of the Manager (which opinion could also be referred to an independent expert, if BP disagreed) the feasibility study demonstrated that the project was technically and commercially viable, then BP had 6 months following completion of the feasibility study to commit to the project, failing which it was deemed to have withdrawn.

BP was conscious of these requirements and anxious to avoid being placed in a position where it either had to commit (and finance 100% of) a project it did not like or lose its entire interest. Conversely, WMC was determined not to allow BP to unduly delay progress of the project. When, in early 1984, WMC proposed terms of reference for a feasibility study, BP sought to include a large number of financial and marketing tests of commercial viability. These included not just minimum rates of return, but a range of sensitivity tests, debt servicing capacity tests, and a requirement that long term sales contracts be concluded for a minimum percentage of uranium and copper production. Even the most robust project would have had difficulty meeting all of these tests, and the small scale initial project at Olympic Dam was never considered likely to be robust. Rather, it was seen as a logical first step on the long road to development to a much higher optimum capacity. WMC saw in the proposals the prospect of long delays with commencement ultimately being deferred until BP was ready to proceed. If BP could attain such a position, there was also concern that it would use its power over the timetable as a bargaining chip to renegotiate a better deal. (BP had already succeeded in revamping some of the financing provisions in 1982, as a result of which the interest rate paid by WMC on BP project loans increased by almost 2%.)

A long debate ensued, culminating (as it often did with BP) in crisis negotiations in Melbourne involving Ted Hannington and Hugh Morgan which went all night so they could be completed before Ted returned to London the following morning. I recall a surreal experience after we had given BP a final proposal about 4 am and were waiting for them to get back to us. Hugh, Jeff Smith and I were sitting in the meeting room on the 29th floor at 360 Collins watching a terrible Swedish movie on SBS, all of us half asleep, waiting for the phone to ring. When finally it was agreed I had to drive to Grahme Dixon's house and wake him up at 5.30 am to sign the agreement before driving to the next suburb to similarly rouse the BP Company Secretary so that Ted could take the signed agreement with him to the airport!

In the end, we were able to compromise in a manner that removed all of the prescriptive tests



and ensured that BP could not unduly delay the process. Nevertheless, as you will well recall, when the commitment decision was finally upon them in late 1985 they tried very hard to defer it.'

On 8 December 1985 the Joint Venturers notified the SA Government of their commitment to proceed with the project to produce 55,000 tonnes of copper, approximately 2,000 tonnes of uranium oxide, and about 90,000 ounces of gold per annum, commencing in mid-1988. The capital cost was estimated at \$800 million, including \$157 million pre-commitment expenditure.

## **Construction and Commissioning**

Construction commenced in March 1986.

A design and procurement team was established in Adelaide.

The probable in-situ ore reserve at June 1987 was estimated at 450 million tonnes, containing 2.5% copper, 0.8 kg uranium oxide, 0.6 grams gold and 6.0 grams silver per tonne. There was an additional gold ore reserve of 2.3 million tonnes at 5.8 grams/tonne gold.

Extensive underground development included a service decline from the surface giving access to the 450 metre production level, equipping the Whenan Shaft for hoisting ore and waste rock, a drilled 4 metre diameter ventilation raise, a major pump station, a workshop complex, stope access and preparation, and ore transport drives (see diagrams).

The metallurgical plant flowsheet is shown in an attachment.

The township of Roxby Downs (see plan) contained 440 houses, a caravan park, single quarters, a shopping centre, civic and government facilities, motel, and a tavern.

Water was piped approximately 100 km from borefields in the Great Artesian Basin to the north. A desalination plant supplied potable water. A transmission line from Woomera connected Olympic Dam and Roxby Downs to the Electricity Trust of South Australia grid at Woomera.

Production commenced in June 1988 at an annual rate of 45,000 tonnes copper and 1,000 tonnes uranium oxide per annum. The mining rate was 1.5 million tonnes per annum.

## **The Opening**

The project was officially opened by the Premier of South Australia, The Hon John Bannon, on 5 November 1988. Some 650 people attended, including a number of overseas guests (mainly customer representatives) from Britain, Belgium, Sweden, Germany, and Japan.

*Johnny Green's Journal* of January 1989 commented:

The organisation of the "air lift" of guests to Roxby Downs, the site tour and the celebratory luncheon were superbly organised and a great credit to all concerned.'

Keith Johns recalls:

The official ceremony on site, 5 November 1988 was conducted with the precision of a military operation and guests were issued with colour-coded badges to facilitate seating on aircraft, on buses, at lunch. As they approached the State's newest town (population numbering 2,350)

from the air, the motel (with its distinctive high, brilliantly white, conical roof sail) provided a prominent landmark. On behalf of the Liberal Party, a leaflet was distributed which depicted the Premier as one who had lost face, and questioned "How can Bannon open what he tried to close?".'

Saima and I attended an informal dinner the previous evening at the Adelaide Hyatt and travelled to Roxby Downs in a chartered aircraft with the Premier and Mrs Bannon. On arrival there was a bus tour of the operation.

The opening took place in a marquee erected near the smelter. I spoke on behalf of WMC, Patrick Gillam on behalf of BP, and John Bannon performed the official opening. Amongst the invited guests were Norm Foster and his wife Betty.

I pointed out that the project was at a very early stage, the orebody was immense, the deposit we already knew was sufficient to support production for several hundred years, and that the opening marked only the beginning. I also said that:

'...it is now strange to recall that there was for a time considerable opposition to the opening up of Olympic Dam. Looking around here today, speaking to the people who work and live here and their families, and considering the benefits arising from the project, it is very hard for me and my colleagues to understand how any rational person can oppose such development.

On the positive side, I would like to acknowledge the strong and unwavering support from the very large majority of the community. The joint venture has been supported unequivocally by successive Federal Governments. The various South Australian Governments have been fully supportive and cooperative during the thirteen years. The Agreement under which we operate was negotiated with a Liberal government and the relationship has continued in the same spirit with subsequent Labor governments. Bipartisan support is essential for large long term minerals projects such as Olympic Dam.'

Patrick Gillam could not resist a dig at my prediction of a life of several hundred years, saying that it was a 100 year mine 'equivalent to some of the great oilfields of the world'. The implication was that it was remarkable for a mere minerals project to be in the same class. Time will tell which of us was right!

John Bannon could not help throwing a sop to his anti-uranium party colleagues by emphasising that his Government, while fully supportive and laudatory of Olympic Dam, had no intention of permitting a uranium enrichment industry.

There was unintended excitement at the end of the opening ceremony, just as the guests were embarking on buses to the concluding lunch at the Sports Hall in Roxby Downs. There was a leak of molten metal at the nearby smelter, resulting in flames and billowing clouds of smoke. It was a heaven sent opportunity for the TV cameramen who, perhaps disappointed that there had been no demonstrators, made the most of it!

At the lunch there was another unintended happening; the order for 10 kilos of fresh crayfish had somehow become 100 kilos! The guests could not speak highly enough of the magnificence and abundance of the seafood 500 km from the sea.

The final word was by Norm Foster, who had penned a special poem for the occasion:

I was the Member abused to excess  
 Supporting a project to be truly assessed  
 No appreciation at the time  
 By all now taking credit for Roxby Mine  
 Remember those who risked their stake  
 To make once more South Australia great!

After the lunch Saima and I accompanied a group of uranium customers (mainly Japanese) to Ayers Rock where we stayed overnight at the Sheraton Yulara resort, travelled around the Rock by bus, and attended a champagne and crayfish supper in the bush (arranged by Ian Duncan) to view the Rock at dusk. It was tough duty, but someone had to do it!

The uranium customers enjoyed it.

### **Shipments of Yellowcake**

The first shipment of yellowcake left Olympic Dam for Adelaide on 28 November 1988 in a convoy of ten semi trailers carrying 120 tonnes of the product in drums inside shipping containers. They were accompanied by recovery vehicles in case of a spill and by police escort.

On arrival at Port Adelaide in the early hours of the morning (deliberately timed to avoid heavy traffic), about 100 anti-uranium demonstrators attempted to block the convoy by standing in its path or sitting on the roadway. Police quickly cleared the road after television cameras had recorded the events to the satisfaction of the demonstrators, who were unhappy with WMC because they had been given inadequate notice (24 hours!) to prepare for the event. No arrests were made.

The second shipment on 13 January 1989 met with only a handful of protesters, possibly because the television cameras no longer thought it newsworthy. The third shipment on 8 June 1989 resulted in an equally half-hearted protest and thereafter everybody lost interest.

The protests were briefly renewed on 7 November 1990 as a part of a campaign to raise concerns about radiation safety at Olympic Dam (see below).

### **BP Retirement from Minerals**

A review by BP Group Internal Audit in October 1986 showed that, instead of generating a strong cash flow, the minerals business cash flow had been a negative \$700 million. Overhead costs had risen from \$8 million in 1981 to \$27 million in 1985.

The audit concluded that, like other cash-rich oil companies in the 1970s, BP's critical faculties had been blunted by the wish to diversify, leading to decisions without understanding the key factors for success. It was seen to have been an error to go from virtually nothing to a major investment in an industry the company knew little about. The difficulties from the acquisition of ST were seen to have arisen from the failure to incorporate it in BP in a way which was understood by all. The strategic objectives of entering the minerals industry had not been achieved.

Again in common with other oil companies which had diversified into minerals in the 1970s, BP decided to retire from this industry.

### **The BP - RTZ Deal**

On 14 December 1988 BP announced that it was negotiating 'on an exclusive basis' for the sale of its

worldwide minerals interests to RTZ.

On 5 January 1989 BP announced that RTZ had agreed to buy these interests for US\$4.3 billion. RTZ said that the deal was 'subject to shareholder approval, government clearances, and, in some instances, pre-emptive rights'.

On 24 May 1989 RTZ announced that the purchase was to be completed on 30 June, 'with the exception of the Roxby Downs holding' over which WMC had a pre-emptive right. If WMC exercised its right, the purchase price of US\$4.3 billion would be reduced by US\$601 million.

While WMC had still not been advised by BP, this indicated the valuation of BP's 49% share in the Olympic Dam property, although RTZ said that if they did purchase the 49%, BP would continue with its funding obligations.

On 12 July 1989 BP gave WMC notice under the Joint Venture agreement that it wished to assign its interest in Olympic Dam to RTZ and gave WMC the right of first refusal for 90 days.

Hugh Morgan wrote to Patrick Gillam, Managing Director of The British Petroleum Company plc on 19 July, informing him that WMC was advised the notice was not valid for a number of reasons. He sought early discussions to explain the concerns and indicated that I would participate.

On 24 July 1989 there was a meeting at Belgrave House in London attended by Hugh, Colin Wise, Kym Saville and myself for WMC and Ted Hannington and two BP staff for BP. Typically, Patrick Gillam did not attend and did not even explain his absence. The discussions at this and subsequent meetings were agreed to be 'without prejudice'.

WMC's position was that the BP notice should be withdrawn and amended, a valid notice should be issued, and the 90 day period would then start. One of WMC's principal concerns was that the BP loans obligation would be terminated if WMC exercised its pre-emptive right.

There was a further meeting between Ted Hannington and the lawyers on both sides on the morning of 25 July while Hugh and I called on Derek Birkin and Bob Wilson, the Chairman and Managing Director of RTZ respectively.

Hugh and I met with Colin and Kym at lunch time to inform them of the RTZ discussions. In summary, RTZ said they had had difficult negotiations with BP, had not been involved in the drafting of the agreement, had been assured by BP of the legality of the arrangements, understood that in certain circumstances WMC may have to take legal proceedings, and wished to maintain the good corporate relationships between WMC and RTZ. They said WMC had negotiated a 'fantastic' deal with BP, implying RTZ would not be prepared to assume the BP lending obligations.

The afternoon meeting with BP included Hugh and myself. There was a proposal by BP to remain a lender even if not a participant. During the afternoon the parties adjourned to confer amongst themselves, and Hugh and I met with Hannington for 20 minutes.

The proposal at the end of the day was that as Hugh and I had to return to Australia that evening, BP would suspend the notice for seven days to enable continuing discussions with Colin Wise and Kym Saville regarding the arrangements for BP remaining a lender while WMC was a 100% owner. The understanding was that the rest of the Notice would remain unchanged.

In a subsequent discussion among WMC people at the hotel, it was concluded that WMC would achieve very little by accepting BP as a lender without an interest in the project. The real issue was that the BP

deal with RTZ circumvented the assignment provisions of the Joint Venture Agreement and BP had therefore been able to negotiate a higher price with RTZ (\$601 million) than otherwise possible. The effect of this, if WMC was to treat the proposed assignment as valid under the JVA, would be to increase the purchase price which WMC would have to pay under its first refusal rights. WMC already enjoyed the BP obligation to lend, and therefore did not receive value comparable to RTZ from owning the remaining 49% of the project.

Kym Saville adds:

' ... the other aspect of the price which concerned us was that it lacked credibility. It did not arise from a normal arms' length negotiation. The only price which was properly negotiated between RTZ and BP was the \$4.3 billion price for the whole package. From the point of view of RTZ, the higher the price of Olympic Dam within that package the better, as Olympic Dam was the only significant asset subject to a pre-emptive right. So you would have had an unusual situation where it was in the interests of the buyer to talk the price of Olympic Dam up (to reduce the likelihood of being pre-empted) whilst the seller would have been largely indifferent.

With respect to the question of BP retaining the financing obligation, it was always our contention that the Joint Venture Agreement did not allow the financing obligation to be separated from the joint venture interest. BP never acceded to this view, but they must have recognised its merit because the final arrangement with RTZ included a rather complicated but transparent option allowing RTZ to call on BP to provide the financing if it so elected. This was clearly farcical because RTZ was never going to not exercise that option. It was purely a legal device to allow the separation of the financing obligation from the joint venture interest in substance, if not in form.'

Kym also points out that:

' ... the negotiated high price for BP's OD interest did not just act as a disincentive to pre-emption. From RTZ's perspective, if WMC nevertheless pre-empted, it would be compensated for its trouble by receiving a large deduction from the total price negotiated for all of the BP minerals assets. This deduction would also apply if WMC successfully challenged the validity of the sale notice and caused the sale of Olympic Dam to fall through. This helps to explain why RTZ was relatively passive in responding to WMC's legal challenge - it had very little to lose either way.'

It was agreed that, instead of returning to Australia, HMM would remain in London and participate in the discussions next day.

On 26 July Hugh read out a prepared statement. After an adjournment Hannington responded with a prepared statement. The meeting then closed.

Subsequently Hugh called Derek Birkin, advised that the discussions with BP had broken down, that WMC may have to go to court, and that RTZ may become involved. Derek said he understood the position and that there was no reason why litigation should adversely influence the good relations between RTZ and WMC.

On return to Melbourne I had a telephone call from Patrick Gillam, who was on a holiday in an out-of-the-way place. He said he could not understand why WMC did not want to accept BP's offer to continue the loans if WMC exercised its right of first refusal. It was arranged that there would be a further telephone conversation with Hugh Morgan on the following Monday.

The call took place on 31 July 1989 between Hugh Morgan and Patrick Gillam, who was still on holiday. Colin Wise and I were present at the Melbourne end but could only hear what Hugh said.

Hugh explained the WMC position in some detail. A basic requirement was that BP should withdraw the notice while the matters at issue were resolved. WMC could not negotiate with a gun at its head.

Gillam accused WMC of wanting to go to litigation and the discussion ended by Gillam hanging up the phone.

In a letter later that day to D A G Simon, Managing Director of BP handling this matter in Gillam's absence, Hugh advised that if BP's Notice was not withdrawn by 2 August WMC would have to refer the matter to the Court. A Statement of Claim and a Stock Exchange statement were drafted. There was no response, and on 2 August WMC sought an injunction in the Victorian Supreme Court to restrain the sale and a declaration that the BP notice was invalid.

Following the legal process known as 'discovery' of documents by the parties, on 11 September 1989 BP called the proposed sale of its Olympic Dam interest to RTZ off and withdrew its notice of 12 July. It asked that the legal proceedings be discontinued, with BP paying WMC costs.

### **The Hiatus**

On 14 September 1989 BP said it would negotiate with any interested buyers, including WMC.

For a long time there were no takers. The financing obligation must have been an important obstacle. Another reason no doubt was that potential bidders knew that WMC was likely to exercise its right of first refusal, thus making it unattractive to put the necessary effort into preparing a thoroughly researched bid.

Here the matter rested for three years. Kym Saville records:

'... the matter was not inactive during this three year period. Approximately 15 parties signed very strict confidentiality agreements and were provided with a comprehensive information memorandum which had been approved by WMC. Six parties undertook site visits. WMC carefully supervised the provision of information to these parties, many of whom were actual or potential competitors. Specific information concerning sales contracts and operating costs in particular was withheld until very late in the bidding process. Only Minorco was given access to the sales contracts, limited to a small number of approved personnel under close supervision viewing but not copying the documents and agreeing not to disclose the contents to other personnel but only to certify that they were appropriate to underwrite the revenue assumptions in their valuation model.

The other thing that happened during this three year period was the negotiation of an agreement between WMC and BP called the "Deed of Assurances". This agreement, which ran to some 500 pages, essentially comprised the rules of engagement under which we agreed that if BP sold its interest on certain terms, we would not challenge the legality of the sale even if it did not comply strictly with the requirements of the Joint Venture Agreement. BP had by now worked out that, because of the financing obligations and pre-emptive right, it would be very difficult for them to sell on terms that strictly complied with the Joint Venture Agreement. We had assured them that it was not our objective to prevent them from selling, only to ensure that if they did so, WMC's interests were not prejudiced. Principally, we were concerned to protect the sanctity of our pre-emptive right and to ensure that the financing obligation could not be separated, in form or substance, from the joint venture interest. This was simple enough in

principle, but in effect we ended up negotiating all of the detailed terms (apart from the actual price) of the agreement for the sale of BP's interest with BP before they presented it to interested parties. Comprehensive changes to the existing financing documentation, the joint venture management agreement and other ancillary agreements were also required.

This arrangement took many months to finalise, but was worthwhile for both parties. From BP's perspective, it gave them certainty about the sales process and additional flexibility as to the terms of sale. From WMC's perspective, it gave us confidence that the terms of any sale agreement presented to us under the pre-emptive rights provisions would be acceptable and that our key commercial interest would not be prejudiced by the sale. Conclusion of the Deed also smoothed the passage of necessary approvals for the First Optimisation. It was because of the Deed that WMC was ultimately given the option to discharge the existing loans at a discount of US\$83 million whether or not it exercised the pre-emptive right to acquire BP's interest in Olympic Dam.'

### **The Safety Issue**

In mid-1989 there began a concerted campaign on alleged radioactive dangers at Olympic Dam, as a part of a campaign within the ALP to limit uranium mining.

On 15 May 1989 two authors of a Health Commission report to the parliamentary Select Committee on Roxby Downs which they said had been suppressed by the then Minister of Mines, Roger Goldsworthy, in 1982, tried to present a submission to the ALP National Committee on Uranium which was visiting Adelaide. They said there would be deaths as a result of radiation exposure to miners at Roxby Downs.

The Committee's proceedings were delayed by 'at least 90 minutes' while about 150 demonstrators 'swarmed around the ALP and Trades Hall entrances, abusing ALP national organiser Ian Henderson for refusing them entry'. A rally organised outside by Nuclear Issues Network, which included Greenpeace and Friends of the Earth, 'erupted into a noisy demonstration'.

Subsequently there were complaints that WMC had failed to make public annual reports on the impact the mine was making on the environment. WMC pointed out that the legislation covering Roxby Downs specified that the reports were to be given confidentially to the State Government.

On 21 June 1989 Senator Richardson (Federal Minister for the Environment) said he would discuss the question of Federal Government's involvement in monitoring. The State Minister of Mines and Energy rejected this as 'creating unnecessary duplication of effort and costs'.

On 13 December the Australian Ionising Radiation Advisory Council (AIRAC) tabled a report in the Federal Senate saying they had inspected and investigated the safety procedures at Olympic Dam. They found that:

- work practices to ensure workers were protected from the effects of ionising radiation had been introduced and maintained in a competent and professional manner
- ionising radiation monitoring arrangements had been introduced to ensure radiation was well within statutory limits and workers were properly instructed on the hazards of radiation
- monitoring and regulatory arrangements by the State Government appeared adequate to ensure the project conformed to standards

There were predictable howls of disagreement.

On 14 February 1990 the Premier, John Bannon, announced jointly with WMC that the confidentiality provisions of the Indenture agreement would be waived and all reports would be in the future made public in their entirety. To overcome the problem of disclosure of the medical records of identifiable individuals, which had been a major issue, these reports would be published in an aggregated form.

On 24 April 1990, in a letter to shareholders (see copy at end of this section), I dealt with the radiation safety issue at Olympic Dam and pointed out that a British study regarding the Sellafield Nuclear Reprocessing Plant in Cumbria which had been cited by the critics dealt with conditions very different from those at Olympic Dam.

The decision to make the Olympic Dam monitoring reports public effectively resolved the issue. The antis had lost their ability to insinuate that something was being covered up: one of the media headlines - *Key Roxby secrets to be unveiled* - said it all.

### **First Optimisation**

On 19 February 1991 it was announced that the capacity of Olympic Dam would be increased from 45,000 tonnes per annum Cu to 66,000 tonnes per annum Cu at a cost of \$66 million. The output of uranium oxide would increase from 1,200 tonnes per annum to 1,400 tonnes per annum.

Ore hoisting capacity would increase from 1.6 million tonnes per annum to 2.2 million tonnes per annum.

The expansion was opened by the Premier, John Bannon, on 2 June 1992, having been completed three months ahead of schedule and \$6 million under budget.

### **Bannon Resigns**

Born in Bendigo, Victoria, John Bannon was educated in Adelaide. During the 1960s he took degrees in Arts and Law at the University of Adelaide, becoming President of the Australian Union of Students in 1968. During the early to mid-1970s he held a number of advisory positions including in the Whitlam Government's Ministry of Labor and Immigration. In 1977 he was elected to the House of Assembly in South Australia and within a year had been elevated to the Dunstan Cabinet. Labor's election loss in 1979 saw Bannon elected Opposition Leader. Guiding the Labor Party to victory in the 1982 election Bannon became Premier and Treasurer, positions he would retain for almost a decade. The Bannon Premiership was characterised by an emphasis on careful budgetary management, offset by attempts to expand the state's economic foundations via the attraction of ambitious, large scale projects. The most notable of these included a multimillion dollar submarine contract, the Formula One Grand Prix and the controversial Multi-Function Polis initiative. Despite winning a third term in government at the 1989 election, Bannon's Premiership became increasingly tenuous as he was forced to announce in February 1991 a billion dollar bail-out of the troubled State Bank of South Australia. Further revelations of the magnitude of the State Bank disaster and Bannon's role in this led to his resignation in September 1992. He did not contest his seat of Ross Smith in the 1993 election.

### **WMC Repurchase of BP's Interest**

On 4 December 1992 WMC was advised that BP had reached conditional agreement with Minorco for the sale of BP's 49% interest in Olympic Dam. In accordance with the Joint Venture Agreement and by further agreement with BP, WMC had the following options, exercisable within 90 days:

- purchase the BP interest for US\$240 million, and



- whether or not WMC elected to purchase the BP interest, to fully discharge all its obligations to the BP Group in relation to loans made for US\$215 million. The balance of the loans outstanding at 30 June 1992 was US\$293.7 million.

Both amounts were subject to adjustments for movements since 30 June 1992.

A major study was undertaken to assist the Board in its decision. Information began to be distributed to directors in January 1993.

On 2 March 1993 WMC announced that it had decided to purchase BP's 49% in Olympic Dam for US\$240 million (subject to minor adjustments) and BP's loans of US\$273 million for an adjusted US\$190 million. Cash held by WMC exceeded borrowings and after meeting all known capital commitments, the debt to equity ratio in 1993-94 was not expected to exceed 20%. As it happened, the announcement came exactly on WMC's 60th anniversary.

The media reported the purchase favourably. Barry Fitzgerald of *The Age* added the wry comment that RTZ must also have been celebrating in London, because they had in 1989 offered about US\$600 million for BP's share in Olympic Dam.

The purchase was completed on 1 April 1993.

### **Change of Government**

Dean Brown led the Liberal Party to a massive election victory in 1993, he himself being elected to the seat of Finnis. He served as Premier and Minister for Multicultural and Ethnic Affairs.

Dean Craig Brown was educated at the University of New England in NSW and worked in the South Australia Department of Agriculture before his entry to politics in 1973 as the Member for Davenport. He served in Tonkin's ministry holding the portfolios of Public Works and Industrial Affairs, before a term in opposition during Bannon's Premiership. After losing the seat of Davenport in the 1985 election, he worked in business for six years before re-entering politics as the member for Alexandra in 1992. Two days after re-joining Parliament, Brown was elected Leader of the Opposition in 1992.

A leadership challenge in 1996 saw his loss of the Premiership to John Olsen. He became Minister for Human Services in the Olsen Government.

### **BP and WMC**

Just as there had been a clash of cultures in amalgamating Selection Trust and BP Minerals, there was also a very considerable cultural difficulty between WMC and BP in the Joint Venture. Looking back, there were several reasons for this:

- WMC was very short - probably too short - on formal processes and procedures and not used to dealing with equal partners.
- BP, by contrast, was very bureaucratic and inclined to deal with WMC in a somewhat patronising manner
- The Chief Executive of BP Minerals, Bernard Smith, did not hit it off with senior WMC operators. The BP internal audit report of 1986 was also critical of Smith and listed his shortcomings from their point of view as:

- inflexible commitment to an exploration-led strategy
- inability to provide the positive leadership required to motivate his staff and generate confidence amongst BP management
- inability to produce concise, coherent plans
- inability to produce results anywhere near those predicted.

His visits to Olympic Dam were characterised by carping criticism, some of which was no doubt justified, but presented in a way which caused resentment rather than inducing co-operation.

He did not endear himself to Keith Parry and me by suggesting that, for a fee, he was able to arrange for WMC access to technology which would improve the recovery of precious metals at the Kwinana Refinery, but that this was a personal matter and BP need not know anything about it.

Bernard was replaced in June 1985 by John Jump, who was much more constructive and well accepted.

### **Optimisation Project No.2**

On 8 April 1993 it was announced that Optimisation Project No 2 would proceed, to lift capacity from 66,000 tonnes per annum Cu and 1400 tonnes per annum uranium oxide to 84,000 tonnes per annum Cu and 1500 tonnes per annum uranium oxide by 1996 at a cost of approx. \$75 million. Co-products were 30,000 ounces of gold and 400,000 ounces of silver a year. The ore production capacity would increase from 2.4 million tonnes per annum to 2.9 million tonnes per annum and a second shaft would be sunk to enable increased development and mining rates for this and future expansion.

### **The Reginald Dodd Claim**

Following the High Court Mabo native title decision, a High Court writ was issued on 22 July 1993 by Mr Reginald Dodd, claiming to represent the Arabunna Tribe.

The Arabunna was an Aboriginal community based in Marree on the old Ghan railway, about 160 km north-east of Olympic Dam. Mr Dodd was seeking a declaration that the Arabunna held native title to a very large area of land in outback South Australia, covering all or part of 13 pastoral leases. No-one was sure when this was reported on 31 July whether the claim covered the Olympic Dam orebody but it did include the Special Water Licence and the pipeline to Roxby Downs.

The South Australian Government promised to take whatever action was necessary to protect the Olympic Dam project. In the event, Mr Dodd did not proceed with the High Court action.

### **World Heritage Listing**

In November 1993 there was concern about a possible World Heritage Listing of Lake Eyre. Keith Hulley wrote to the Premier, Lynn Arnold, suggesting that the State Government had not recognised the threat to Olympic Dam Operations and that, unless they took a strong stance, they could lose control of the situation.

In February 1995 WMC became aware that the World Heritage unit in the Federal Department of Environment, under left-wing Senator Faulkner as Minister, was doing a 'desk top study' of Lake Eyre as a world heritage site. This was seen as an attempt to get the green vote in the coming election. It was suggested that either a carbon tax or the Lake Eyre listing would be necessary to achieve that.

Besides Senator Faulkner, the leader of the NSW Left in the Labor Party, an important participant in this was Simon Baulderstone, Prime Minister Keating's Senior Adviser, who was thought to set the agenda and the pace.

At the 1996 Federal election the Coalition stated in its platform that no area would be nominated for World Heritage listing without the support of the relevant State government and without both the funding and a management plan being in place prior to nomination.

Labor lost the election on 2 March when John Howard was swept into power. It was clear that World Heritage listing of Lake Eyre did not have State support. A Great Artesian Basin Consultative Committee was formed to provide advice on managing that broader area and continues in 2003, with WMC Resources represented on the committee.

### **Water Leak**

On 14 February 1994 WMC announced that regular monitoring had revealed a localised increase in the water table at Olympic Dam, believed to have been caused by water seepage from the tailings retention system. The problem was limited to about 6 per cent of the mine lease area and sampling had shown there was no dissolved metals content, radioactivity, or acidity above background level. There was no adverse effect on employees, residents of Roxby Downs, the public, or the environment.

This was a great opportunity for anti-uranium and anti-Olympic Dam activists to create public concern and accuse WMC of inadequacies. They did their best to whip up fears and sentiment but failed because WMC, through the General Manager of Olympic Dam, I J (Ian) Duncan, adopted the policy of being completely open and kept the public fully informed about the investigations and the remedial work. The *Weekend Australian* encapsulated it in the headline: 'WMC decides honesty best policy to stop toxic rumours'.

### **The Sacred Picnic**

In March 1994 it was reported that five employees, four of whom worked for a contractor, had been dismissed by WMC. In February they had cut through a fence to go swimming in the Bubbler Mounds Spring, a pool 150 km north of the mine site, considered a sacred aboriginal site. The Company had an obligation to protect aboriginal sacred sites.

The men were charged, but in September 1994 a magistrate dismissed the charges because the prosecution failed to prove the men knew the area was sacred.

### **Radioactive Waste Depository**

In November 1994 there was a media report that State and Federal government officials were considering depositing low level radioactive waste in worked out areas at Olympic Dam, transferring it from a temporary dump site at Woomera where about 10,000 drums were said to be held. The report emanated from comments by Dr John Bell of the Department of Industry, Science and Technology.

According to the *Adelaide Advertiser* of 22 November the Premier, Dean Brown, had in the previous week 'vowed to oppose the creation of a permanent dump in SA, and said he was unaware of any plans regarding Roxby Downs'.

According to the *Advertiser*, in 1991 'WMC put a proposal to the Federal Government that disused shafts at Roxby be considered as dumping site'.

Hugh Morgan, questioned the next day, said WMC would consider this, but it required approval of Commonwealth and South Australian governments and had to fit in with the Roxby Downs operations.

## **The Expansion**

A \$7 million feasibility study into a major expansion at Olympic Dam was announced by South Australian Premier Dean Brown on 18 August 1994. P M (Pearce) Bowman had been appointed General Manager of Olympic Dam Operations, while Ian Duncan became General Manager Olympic Dam Marketing. The W S Robinson Shaft was opened in September 1994.

On 15 July 1996 it was announced that the production capacity of Olympic Dam output would be increased to 200,000 tonnes per annum copper, 3,700 tonnes per annum uranium oxide, 75,000 ounces of gold and 950,000 ounces of silver from 8.5 million tonnes of ore per annum by 2001, at an estimated cost of A\$1.25 billion (1996 dollars). The decision was based on a \$8.5 million feasibility study over the previous two years.

At a real copper price of US\$1.00 and an exchange rate of US\$0.75:A\$1.00, the estimated real incremental after-tax discounted cash flow rate of return was 15.4%.

An application would be made for the existing environmental approvals for a production of 150,000 tonnes per annum copper to be increased to 350,000 tonnes per annum.

The investment in the Olympic Dam Project at 15 July 1996 was \$1.1 billion. The estimated cost of the expansion at \$1.25 billion was the biggest single capital investment in the Company's history.

Key elements of the expansion included:

- a third haulage shaft - the Sir Lindesay Clark Shaft
- a new crusher station and a rail-based automated ore handling system underground
- a new autogenous mill
- expansion of the hydrometallurgical plant and copper refinery
- a new smelter complex
- a new 275 kV powerline from Port Augusta to Roxby Downs
- expanded town and facilities
- expanded Tailings Retention System.

## **Construction**

Construction started on 1 January 1997. In June 1997 there were 900 construction personnel on site and 300 engineers in Adelaide and Melbourne.

In the 1997 Annual Report it was recorded that the board had approved a revised construction schedule to cost \$1.48 billion (in as spent dollars) to bring the achievement of the 200,000 tpa production forward by 18 months.

Maintaining operations at Olympic Dam while completing the expansion proved a major challenge; production was disrupted by construction throughout the mine and processing plant. Considerable sub-assembly work was done at a specially prepared construction site at Port Augusta and trucked to Olympic Dam for final installation.

During 1998 some 2,500 construction people worked on site. The cost of the expansion increased to

\$1.94 billion due to 'further accelerating the construction schedule, building additional scope for increased production into the expanded plant and lower construction productivity'.

It was estimated that the capacity could be increased to 230,000 tonnes of refined copper per annum at a minimal additional capital cost.

The key indicator for completion of the expansion - feed to the new smelter - was achieved in January 1999, three months ahead of schedule.

At a mining rate of just over nine million tonnes per year, Olympic Dam became the largest underground mine in Australia. This was a big step from 1937-38 when the Lake View and Star Mine in Kalbarrie was the biggest Australian underground mine, producing 620,000 tonnes per year.

### **Environmental Impact Statement and Community Consultative Forum**

In May 1997 an Environmental Impact Statement to secure Federal and State approvals for an annual production of up to 350,000 tonnes of copper per annum was released for public comment. Approval was given in December 1997.

In June 1997 the Federal Government announced that a Community Consultative Forum comprising representatives of the conservation movement, local residents and landholders would be formed to meet twice a year, one of which would be at Roxby Downs. WMC had committed to an annual independent audit of the environmental management of Olympic Dam. Meetings of the Forum will be linked to meetings of the Olympic Dam Environment Consultative Committee, made up of representatives of Federal and South Australian Governments and WMC.

### **Official Opening**

The expansion was opened by the Prime Minister, John Howard, on 26 March 1999.

### **The Environment**

Summers in the Olympic Dam area are hot, with highest temperatures recorded in January and February. Maximum summer temperatures average about 35°C (with occasional days of over 40°C). In the winter the average maximum is 17°C and minimum about 7°C. Rainfall is low, averaging about 160 mm annually which often occurs in heavy falls. Droughts are frequent. Winds are mostly from the south and south-east with occasional dust storms from the north, particularly in summer.

The land surface consists mainly of sand dunes separated by corridors or swales. Claypans are common and provide the natural drainage points for rainfall. There are no natural water courses in the area. The access route for the water pipeline from the Great Artesian Basin crosses generally similar country. In the southern section of the powerline route from Woomera, gibber tableland is the predominant land form. Most soils in the area are susceptible to wind erosion.

The predominant vegetation comprises Native Pine, Mulga and Sandhill Wattle on the sand dunes; and Myall, Saltbush and Bluebush on the clay swales. Annual grasses dominate in summer, while in winter the countryside changes into a profusion of wild flowers such as Sturt's Desert-pea, Blennodia and Senecio. All vegetation is important in preventing sand movement and soil erosion. Protected plant species are found in the area.

Red kangaroos are the most commonly sighted native mammal. Small nocturnal mammals include the Native Mouse and the Fat-tailed Dunnart.

Eighty three bird species have been recorded in the Olympic Dam Project Area, the largest species being the Emu and Wedge Tailed Eagle. Numerous flocks of Corellas, Galahs, Mulga Parrots and Blue Bonnets are present throughout the year.

Reptiles are numerous in the area, notably Gould's goanna (the Olympic Dam Emblem) and the two venomous snakes the Western Brown and the Mulga snake.

One amphibian - the Trilling Frog, occurs on the project area. This burrowing species breeds in clay pans during wet periods. Tadpoles are often sighted in pools of water together with the primitive Crustacean Shield Shrimp.

In favourable seasons rabbits can reach very high numbers and exert a grazing pressure that is detrimental to the growth of natural vegetation. There is an ongoing vermin eradication programme, principally directed at rabbit control.

### **Protecting the Environment**

Environmental management and protection of the Olympic Dam Project came into effect with the approval by the South Australian Government of the Olympic Dam Project Environmental Management Programme in March 1987.

Eight major environmental parameters are monitored at Olympic Dam.

- Meteorology
- Vegetation
- Mine Site Rehabilitation
- Fauna
- Terrain
- Soil Salinity
- Hydrogeology
- Wellfields

Off-road travel within the Project Area is not permitted. Outside the Project Area it must be avoided unless absolutely necessary. In wet weather, travel on unmade tracks must be limited so as to avoid making wheel ruts that encourage erosion.

Existing trees and vegetation are retained to the maximum extent possible. Individuals must avoid unnecessary removal of trees, shrubs and dead wood.

The hunting and trapping of animals within the Project Area is not permitted. Firearms are also banned. Venomous snakes can be a serious problem especially near dwellings. Accumulated rubbish tends to attract mice which in turn may attract venomous snakes. It is everyone's responsibility to keep their property tidy and free of rubbish.

### **Mound Springs and Great Artesian Basin**

The mound springs north of Olympic Dam are natural artesian wells from which waters of the Great Artesian Basin escape. They occur in a great arc around the southern edge of the Basin.

The waters of the springs vary in quality, nearly all are alkaline and saline. However, most free running spring water is suitable to drink.

The Great Artesian Basin (GAB) is one of the world's largest artesian basins and the source of the Olympic Dam Operations water supply. The GAB has a total area of 1,700,000 km<sup>2</sup> of which 350,000 km<sup>2</sup> are in South Australia.

The Great Artesian Basin is regularly replenished by rainfall occurring on the western side of the Great Dividing Range.

Water is discharged from the GAB through:

- i) Natural vertical leakage, which accounts for 50% of waters discharged.
- ii) Mound Springs around the edge of the basin.
- iii) Man-made artesian and sub-artesian bores.

The Olympic Dam Project draws its water from borefields in the GAB.

### **Aboriginal Sites**

There are two types of Aboriginal sites: archaeological and anthropological sites.

Archaeological sites are evidence of past occupation by Aboriginals. They include engraving sites, quarries, stone artefacts and rock paintings. They are common throughout the region. Campsites occur mostly in sand dunes near to claypans able to hold water after rainfall. Quarries tend to occur near sources of raw material such as rock outcrops. Sites are infrequent on the gibber tablelands.

Anthropological sites are concerned with the relationships of Aboriginal people with the land. They include initiation and ceremonial sites, and can indicate tribal boundaries. Sites in the area claimed to be significant are registered with the State Government.

Twelve Anthropological sites have been lodged with the Heritage Conservation Branch of the Department of Environment and Planning. Nine Archaeological sites of special scientific value have been recorded and researched by the Curator of Relics of the South Australian Museum.

### **The Community**

The township of Roxby Downs was built on natural scrub land in just two years. Land servicing began in 1986 and by the time ODO was officially opened, its workers and their families had a town they could be proud of. Today it is a thriving and energetic town, with a population of about 2,500.

Roxby Downs is continuing to grow and develop with the expanding mining operations and can boast a range of commercial, educational and recreational facilities, at least equal to any country town of similar size.

By 1992, 423 houses and duplexes had been built for employees and 49 houses and units for municipal and government employees. In addition, 37 private residences had been built and occupied. A well equipped school caters for students from reception to year 12, and there is a kindergarten, TAFE College and library for school and community use. The large recreation centre includes a sports stadium and three squash courts, and there are facilities for playing golf, football, tennis, cricket, basketball and many other sports. The attractive town centre provides a swimming complex, the Roxby Downs Motor Inn (with its landmark Kevlar canopy), the Roxby Tavern and a full range of shopping facilities to cater

for locals and tourist alike. A modern caravan park with serviced amenities and onsite vans also helps to cater for visitors to the area.

The Roxby Downs township and ODO have become one of South Australia's tourist attractions.

## Management

### Olympic Dam Operations

(also Roxby Management Services and Olympic Dam Project)

Manager (RMS)	J K (John) Copping	09.01.80 - 29.06.84
General Manager (East Ops)	A J (Tony) Palmer	29.06.84 - 31.12.87
General Manager (East Ops)	G J (Graeme) Sauer	31.12.87 - 14.02.92
General Manager ODO	I J (Ian) Duncan	12.05.88 - 01.03.94
EGM - Copper - Uranium Div	P M (Pearce) Bowman	15.08.94 - 2000
EGM - Copper & Fertilizer	Peter Johnston	2001
.....		
Project Manager	R J (Robert) Crew	29.06.84 - 01.01.85
Resident Manager R J (Robert) Crew		02.01.85 - 09.10.91
" "	I W (Ian) Lawrence	09.10.91 - 09.03.95
" " - Mining OD	I K (Ian) Smith	28.04.97 - 31.10.98
" " - Processing OD	T M (Trevor) Peters	08.09.97 - 31.10.98
General Manager - Mining OD	I K (Ian) Smith	01.11.98 - 30.06.00
" " - Processing OD	T M (Trevor) Peters	01.11.98 - 30.06.00
General Manager, Operations	I K (Ian) Smith	01.07.00
General Manager, Production	J M (Jim) Beyer	01.07.00
Divisional Mgr, Bus Strat & Techn	D E (Dave) Thomas	01.07.00

## In Retrospect

The Olympic Dam orebody is undoubtedly one of the major minerals discoveries of recent times and the operation is technologically and in terms of efficiency in the forefront of the world industry. However, as at November 2003 it has not yet fulfilled its promise in terms of financial returns.

Underground mining and the extensive metallurgical process required to separate the four metals and eliminate any radioactivity in the copper, gold and silver produced imposes a high capital burden on the operation. The substantial capital overruns during the expansion concluded in 1999 did not help.

The expansion study was based on an average copper price of US\$0.90 per lb. At the time of the official opening in March 1999 it was US\$0.61 per lb, a 12 year low. Since then the price has been generally in the low US\$0.70s per lb. Hopefully, this will be rectified in the future. (On 11 November 2003 it was US\$0.94.) On the other hand, the US\$:A\$ exchange rate has been well below the 0.75¢ assumed in the study.

The thickness of 350 metres of barren rock covering the deposit has so far precluded opencut mining, which is technically feasible but has been discarded in favour of more capital intensive underground mining for a number of reasons. Should a further major capacity increase take place, the opencut method may yet be adopted in the future.



**Subsequent Events**

In December 1999 there was a major fire in the solvent extraction plant.

On 31 January 2001 Olympic Dam produced its one millionth tonne of copper.

In 2000-01 ODO was by far the largest South Australian exporter.

On 21 October 2001 there was another fire in the solvent extraction plant, causing damage estimated initially at \$170 million and later at \$240 million.

In 2001 the ore throughput was a record 9.3 million tonnes. Copper produced was 157 tonnes per full-time employee.

The cost of re-building the solvent extraction plant escalated greatly above initial estimates and was assessed at \$375 million in July 2003.



## ***A NIFTY SHOW***

### **Background**

WMC's Exploration Division began exploring in the Throssel Range region of Western Australia in 1971. The Throssel Range is within the Great Sandy Desert, 1250 km north-north-east of Perth, 460 km east of Port Hedland and 70 km west of the Telfer Gold Mine. It is a remote, desolate region covered by drift sand. There are few outcrops. The first tenements were taken up in 1975.

The Throssel Range Exploration Project was established in 1979. The first mineralisation was discovered in a gossan in 1981 by Mark Neville whose nickname was *Nifty*, presumably (because of his Labor sympathies) after the then Labor Premier of New South Wales, Neville Wran. The project was also named Nifty. Mark subsequently became a Labor member of Parliament in Western Australia.

### **The Discovery**

The high-grade copper deposit was discovered by drilling in May 1983. Delineation of the copper carbonate zone was completed within a year or two but the deposit was not considered economic at that time. Further drilling of the sulphide zone continued over the next few years.

Regional exploration continued under the direction of P (Paul) Mazzoni, a senior geologist with wide experience in many fields. In 1984 encouraging zinc-lead values were obtained from drilling at the Warrabarty Prospect, 55 km north of Nifty, but subsequent drilling was unsuccessful in proving economic mineralisation.

The area was the subject of an agreement between the Company and the WA Government in December 1985 and the Company was issued a lease of 6000 sq km. Efforts to attract a joint venture partner were not successful.

By 1989 the Exploration Division had defined a measured resource of 4 million tonnes of oxidised ore averaging 3% copper and 5 million tonnes of sulphide mineralisation at a grade of 5% copper. This was the subject of a number of feasibility studies over the next year or two, during which further drilling and assessment resulted in the oxide resource being increased to 6 million tonnes at 3% copper. A later feasibility study determined that this latter reserve could be developed by an opencut followed by heap-leaching, solvent-extraction, and electrowinning to treat 600,000 tonnes of ore per annum to recover 16,500 tonnes of high grade copper cathode.

### **The Project**

In the latter half of 1992 agreement was reached with the WA Government on the terms and conditions of development and an announcement was made on 3 September, indicating work on the \$60 million project would commence immediately. The Department of State Development supported the project with a \$2 million loan towards infrastructure costs. A royalty rate of 2.5% was agreed.

The initial project was to treat the copper carbonate ore to produce 16,500 tpa of LME grade 'A' cathode copper. The primary sulphide orebody could be developed later, should favourable economics prevail for the various treatment options that were being considered.

Opencut mining was followed by heap leaching, solvent extraction and electrowinning.

Design, procurement and construction of the Nifty Project was carried out by WMC Engineering Services Pty Ltd under the direction of its General Manager, D A (Douglas) Marshall.

About 150 people were on site during the construction phase and a permanent workforce of about 100 people would be required to maintain operations. The latter would commute from Port Hedland or Perth on a roster basis; single accommodation only would be provided on site.

Construction was completed by October 1993. Commissioning was completed by March 1994.

### **In Production**

WA School of Mines metallurgy graduate, P (Phillip) Dunstan, was Project Manager. He had worked for Gold Mines of Kalgoorlie Ltd from 1966 to 1971 and later at Kambalda Nickel Operations as Metallurgical Engineer before going overseas for 12 years in copper operations in North and South America, including Manager of the 60,000 tonnes per annum Cuajore Mine in Peru.

Some difficulties were encountered with organic contamination in the solvent extraction section of the plant, which limited output. After modifying the process and improving the recovery of copper, quality accreditation of the product was achieved.

The heap leach operation was based on the premise that the ore was predominantly hard siliceous carbonate which, when crushed, would allow sulphuric acid solutions to effectively permeate and leach the copper. Some associated shale was known in a separate flat secondary orebody in the hanging wall. For this a washing plant was proposed, scheduled for construction and commissioning in 1996-97.

Some time after the orebody was first encountered in the pit it was realised that there were significant shale lenses in the carbonate zone, locally up to 40%. Additional ore which had been located was shale hosted ore, and the orebody could be seen as shale hosted rather than siliceous carbonate hosted. This was the reason for extremely poor percolation within the heaps and an unprofitable operation.

The ore reserves in 1996 were determined as

7.5 million tonnes of oxide ore at 3.0% Cu, containing 222,500 tonnes of Cu  
23.0 million tonnes of sulphide ore at 3.4% Cu, containing 782,000 tonnes Cu

In August 1996 it was decided to build an agglomeration plant to improve the leachability of the ore and thus make the operation profitable. This was done, and resolved the problem.

### **Sale of Nifty**

In 1998, with the Olympic Dam expansion under way and various assets being sold to help finance it, it was decided to sell the Nifty operation. On 13 July 1998 it was announced that the project was sold to Straits Resources Limited for \$50 million, of which \$32 million was payable on settlement and \$18 million in four annual instalments of \$4.5 million, the price subject to working capital adjustment. The transaction was to be effective from 1 July 1998 and was expected to be completed in the third quarter of 1998. An abnormal loss of \$12 million would be incurred on the sale.

The settlement took place on 18 November 1998. Straits Resources commenced ownership and management of the project on that date.

## **With Hindsight**

The Nifty sale followed the previous experience that WMC was no longer capable of managing small operations profitably.

In my view the reason was that WMC tried to manage small and large operations in the same manner. The feeling in Head Office was that this had to be so - the legal and other responsibilities were such that everything had to be standardised. I did not, and still do not, agree.

Another experience, also reinforced by Nifty, was that heap leaching is a much more touchy and sensitive operation than we appreciated. The experience at Carson Hill and Hog Ranch should have warned us, but it is a melancholy fact that when staff changes rapidly, as it had at WMC, and there is no continuity at a project or operation, the corporate memory suffers and can even be lost. New people can make the same mistakes all over again.

Kym Saville points out that Nifty was small, remote from other operations, involved unfamiliar technology and the expected rate of return barely met the requirements. It was thus questionable whether it should have been developed. There was, however, another consideration.

There was the potential for further discoveries in the large exploration tenements held in the Throssell Range. The Nifty operation was seen as generating income and establishing facilities which would make the ongoing exploration of the large area more economical and practicable. This depended, of course, on the Nifty operation being successful.

## **Subsequent Events**

Straits Resources invested \$40 million over 10 years in cooperative research with CSIRO to develop heap bioleaching, which was applied successfully at the Nifty Operation, including the sulphide (transitional and chalcocitic) ores. This improved the recovery and speeded up the recovery rate.

In March 2003 Straits sold Nifty to the Indian conglomerate Ashitya Birla Group. The price was \$79.8 million cash and the transfer of \$69 million project finance debt.



## ***HIGH GRADE AT BENAMBRA***

In 1978 the discovery of high-grade copper mineralisation with associated zinc and silver at Wilga near Benambra, Victoria was announced by WMC jointly with BP Mining Development Australia Pty Limited in a 51:49 joint venture. A second area of mineralisation was discovered at Currawong, 4 km east of Wilga, during 1979.

In 1980 drilling of the Wilga Prospect was completed and a reserve of 4 million tonnes assaying 3.3% copper, 4.0% lead, 5.4% zinc and 29.6 grams per tonne of silver was outlined. Drilling continued on the Currawong Prospect where two zones of mineralisation were outlined.

### **The Discovery**

The exploration and discovery of the Benambra deposit was described by D (David) Barr, Senior Supervising Geologist at Western Mining's Exploration Division, in an article which appeared in the December 1980 edition of *Victoria's Resources Journal*. The following is an extract from that article:

'Our (WMC) exploration in north-eastern Victoria was initiated by the concept that base metal mineral deposits of a particular type have formed in volcanic rocks during several period of geological history. The Benambra area was selected for exploration because favourable host rocks were known to exist in that part of Victoria.

Our concept has led us to potentially favourable rocks which covered an area of about 1,000 sq km and from which there were no reported mineral showings of significance.

Our first action was to inspect the area ... The results of earlier work by another exploration company were found in the records of the geological survey of Victoria and these indicated that possible existence of base metals within the area. These developments were a considerable bonus to the potential of Benambra and we immediately applied for mineral exploration licences to cover the ground. The time was October 1972.

The first technique we apply in mountainous countries such as that at Benambra is to sample the silt in beds of creeks and streams.

The information from the stream sediment sampling survey is presented as a plan showing which stream catchments have anomalous values. This is the first rough guide to which parts of the area may contain an orebody.

The second phase of the exploration process is to sample the soils. A mineral body which is being weathered and eroded will shed particles will be most abundant close to the body and will gradually disburse down hill or away from the orebody.

The level of metal content which is regarded as anomalous may be as low as 100 parts per million, but can be as high as 4,000 parts per million or more.

The results of a soil sampling survey is usually a series of areas 0.5 - 1 sq km in extent, each containing several anomalous metal values. The total extent of these usually amounts to less than 5% of the area initially selected for exploration. The small areas are usually referred to as prospects and each requires much more concentrated investigation.

Having established the survey group the soils are then resampled in much more detail than in the first stage. This produces many thousands of samples, the analysis from which are often processed by computer.

The third phase of work on the grided areas is geophysical survey which is the "black box" department of mineral exploration. Geophysicists use a variety of instruments to measure the variation in the strength of the earth's magnetic and gravitational fields and various electrical properties. Anomalies in any of these may be caused by a concentration of metallic ore beneath the surface.

Having completed the detailed sampling, mapping, and geophysical work on the grid the geologists, geochemists and geophysicists concerned with the work then consider the results carefully and select the best sites to drill holes.

The drilling is usually done by a diamond drill which produces a core or a cylinder of rock about 3 cm in diameter as a sample.

At Benambra we have been successful in intersecting three ore horizons but in only one case was the success gained in the first drill hole. At others success came only after old data had been reappraised and new techniques had been applied and the latter took place over a period of two years.

Our drilling intersections have indicated thick zones of mineralisation with promising grades but it remains to be established that there is sufficient extent to the ore to permit the development of a mine.'

## **Working Conditions**

This locality was unlike anything encountered before by WMC exploration people. Sub-zero winter temperatures and snowfalls and ice were in strong contrast with the dry desert or savannah country conditions in most locations WMC operated in elsewhere in Australia. Mountain streams crossed the project area. The tall eucalypt forest with dense undergrowth, combined with the need to cause minimum disturbance to the environment, posed problems in access for surveying, surface sampling, and drilling.

In March 1979 I took Dr Jack Birks, a director of BP from London, to see Benambra. We flew out in a light plane and landed in a cow paddock outside the township which served as the local airstrip. The pilot was not too impressed with it and, on return, decided to take off from one of the streets. I think that Dr Birks was somewhat surprised, to say the least, but to his credit he maintained a stiff British upper lip and said nothing.

## **WMC Sells The Deposits**

Numerous feasibility studies did not give a result sufficiently attractive to warrant proceeding with development. Also, the conditions set by the Victorian Government, particularly with respect to land use, conservation and the then obsolete Mining Act, were considered too restrictive.

In October 1986 the assets of the Benambra Joint Venture were offered to Roche Brothers Ltd. They declined, but aided in negotiating a sale to Macquarie Resources Limited in 1988. The terms of the sale were that on commencement of mining an annual royalty, initially 10% of the net cashflow was payable to WMC and BP, reducing to 5% after payment of \$15 million.



Denehurst Limited took a 50% interest in 1990.

### **Development And Production**

The Benambra deposit was subsequently developed by Macquarie Resources and Denehurst Ltd.

Government approvals were obtained in 1991 and a mine and a 200,000 tonnes per annum mill came into production in 1992, officially opened by the Premier of Victoria, Jeff Kennett, on 9 December 1992.

Initial operations concentrated from 1993 to 1995 on the copper-rich Wilga deposit, with zinc concentrates being stockpiled from 1994. The copper concentrates were transported to Pt Kembla for smelting and refining. Some 60 people worked on the project.

In 1995 Denehurst purchased Macquarie's 50% interest and became the sole owner.

Depleted reserves and falling metal prices caused cessation of mining in July, 1996. Mobile plant and equipment was sold, and in January, 1997 the property and fixed plant were sold to Benambra Minerals NL for \$3 million.

### **The People**

Long time WMC staff on this project were David Barr (Officer In Charge), P J (Peter) Shugg, L (Lee) Chenoweth, and M J (Mickey) Thompson. Besides their exploration work, they were (privately) involved in wine bottling under the name of Tambo Wines to raise money for charity.



## ***IN THE PHILIPPINES***

### **Background**

WMC's presence in the Philippines dates back to 1987 when a group of exploration staff headed by J H (Jim) Lalor visited the country to assess the political, economic, and security risks (see Volume Four, *THE TREASURE HUNT, Beyond The Borders*). Exploration activity commenced in 1988.

### **Exploration and Mining Rights**

Legislation before 1995 restricted non-Filipino equity in minerals projects to 40%. The 1995 Mining Act stipulated three kinds of ground holdings:

**Exploration permits** for exploration purposes only, granted for 2 years and renewable for up to 6 years. Ownership can be 100% foreign.

**Mineral Agreements** for exploration and mining. Exploration for 2 years, renewable for up to 6 years; mining for 25 years, renewable for 25 years. Must be at least 60% Filipino ownership.

**Financial and Technical Assistance Agreements (FTAA)** for exploration, mining, and large scale development requiring a commitment of at least US\$50 million. Exploration for 2 years, renewable for a further 2 years, feasibility 2 years, mining 25 years renewable for 25 years. Can be up to 100% foreign.

Implementing Rules and Regulations were passed in September 1995 and revised in December 1996 after a lengthy review including public hearings throughout the Philippines. Long bureaucratic delays were (and are) a fact of life in the Philippines.

Before any FTAA's could be issued under the 1995 Act, there was in March 1996 a spill of tailings into the Boac river at the Marcopper operation on the island of Marinduque. A review of the Rules and Regulations under the Act, as well as the fiscal regime, commenced in December 1996.

### **The Issues**

Besides the usual challenge of locating an orebody of sufficient size and grade and other characteristics to support economic development, the project was subject to a large number of other issues which at times gave the impression that finding the ore was the least of the problems. *WMC In The Philippines*, Information Paper No 1 issued in October 1997 is an excellent record of these. The following summary draws freely on that paper.

#### **Opposition to The Mining Act and Foreign Investment**

The Government's objectives in introducing the 1995 Mining Act were:

- establishing a legal framework for re-vitalising the minerals industry, which had suffered from lack of foreign interest under the previous regulations
- restoring minerals production to a level commensurate with the Philippines mineral potential
- building an export industry generating wealth for the Filipino people
- providing the Philippines minerals industry with access to the best technology.

In the Philippines in 1996 there were some 25,000 Filipino and international Non-Government Organisations (NGOs) of diverse fields of interests, ideological obsessions, and varying professionalism, including church organisations. A number were vehemently opposed to government policies and programs, including the 1995 Mining Act. Charges levelled covered the full range from environmental destruction to violation of indigenous peoples rights, exploitation of natural resources, endangering social and cultural structures, human rights abuse, economic colonialism, and so on.

### **Nationalism**

The Mining Act was described by some NGOs as a 'sell-out for thirty pieces of silver' by the Government, completely ignoring the question of the ability of Filipino companies to provide the capital and expertise to develop the industry and the fact that foreign companies were contractors to the government, never owning the land or the minerals.

### **Constitutional Challenges**

The constitutionality of the Mining Act was challenged in the Supreme Court by an affiliate of Friends of the Earth, together with a number of other NGOs and some individuals. This outcome of this challenge was not resolved by April 1999. However, WMC had pointed out that its FTAA had been issued before the 1995 Mining Act under legislation which had been previously declared valid by the Supreme Court.

### **Environmental and Social Issues**

In the Philippines there are extensive, generally mountainous, volcanic areas which are environmentally difficult, often covered by the last vestiges of forest. The archipelago straddles two active plates and earthquakes are common. There are several active volcanoes.

There is high rainfall, high erosion rates, landslides, mudslides, and flooding. Several mine disasters, some due to one or a combination of these factors and others to poor engineering, or both, had created an adverse public opinion environment for the industry.

Some activist groups viewed minerals development and a healthy environment as mutually exclusive and argued that the interests of indigenous people would be swept aside by foreign companies. There was also the view that while the national government gained revenue, the host communities bore the environmental and social impact and received few of the benefits.

### **Mineral Rights**

Under Philippine law the State owns the minerals. Some indigenous people, not only in the Philippines, believe that their ancestral domain includes rights to the minerals.

Small scale mining for gold, which is extensive in the Philippines, has been often conducted without adequate attention to the effects on the environment and the community and inadequate rehabilitation and has resulted in an adverse reaction amongst the public.

### **Small Scale Mining**

A further objection is that introduction of large foreign companies will displace small scale mining operations which are Filipino-owned, provide more employment, are socially and environmentally less damaging, and provide more benefits to the local community. Apart from

the validity of some of these contentions - for example the ultimate environmental impact - this concern overlooks that most, if not all the projects suitable for large scale mining could not be worked economically in a small way. Alternatively, deposits suitable for small scale mining are almost always of no interest to large companies.

### **In Summary**

While some of the NGOs no doubt were sincere in their beliefs and objections, many were engaged in blatant misinformation campaigns to discredit the companies and the government. Large foreign mining companies were an attractive target of such activists through media campaigns, public rallies, and other publicity.

The companies were being blamed for virtually everything as a convenient outlet for people's frustrations and as a means for enhancing the influence and the power base of the activist groups.

### **The Tampakan Prospect**

The Tampakan copper-gold prospect on the island of Mindanao was brought to the Company's attention by a Filipino company in 1990. Following initial geological investigations, an Option Agreement was signed in April 1991.

Further geochemical and geophysical work and reconnaissance drilling encountered extensive low grade mineralisation. The exploration people were anxious to follow up the initial indications and had to be dissuaded from doing so too enthusiastically until the legal situation regarding ground holdings was clarified.

### **The FTAA**

The FTAA granted to WMC and signed by the President in March 1995 was not under the new Mining Act, but was issued under a provision in the 1987 Philippines Constitution.

It was in essence a contract with the Philippine Government. The ownership of all land and minerals remained with the Government. If an economic deposit was discovered and developed by WMC all capital and operating expenditure incurred in finding, evaluating, developing, constructing, and operating the project would be recouped by WMC first, after which the pre-tax revenue would be shared 60% to the Government, 40% to WMC.

The FTAA No 02-95-X1 covered exploration access to 89,669 hectares near the municipality of Tampakan north of General Santos City, spanning four provinces (South Cotabato, Sultan Kudarat, Cotabato and Davao Del Sur) and two governmental regions (X1 and X11). The exploration area was subject to annual reductions and the area would be reduced to a maximum of 5000 hectares (or an appropriate area) when development began.

### **The Environment**

The FTAA contained a wide range of commitments regarding the environment.

The project site was in mountainous country, dominated by the nearby extinct volcano, Mt Matutum. Opencut mining dictated by the low grade and the shallow mineralisation and the provision of surface facilities meant a large visual impact during construction and operation, before rehabilitation. WMC was well aware of this being a vital issue in proceeding with the project and took great care with the

environment from the earliest exploration activity. Besides real environmental issues, it was also necessary to counter the alarmist claims of those opposing the project.

Much effort was directed to explaining what would happen and how the environmental effects would be managed, concurrently with practical actions.

Logging in the area for many years and slash and burn agriculture had resulted in deforestation and environmental degradation. WMC set about repairing some of the damage, including

- establishing plant nurseries in the exploration area to supply trees and plants
- planting more trees than possible eventual mining activities would remove
- assisting local farmers to introduce more appropriate farming practices
- establishing a green buffer between any potential mineral developments and the local residents.

The potential minerals development area was in the headwaters of three major river systems. The Company developed a community based water monitoring system where members of the local communities were given training and resources to independently collect water samples, sent to an independent laboratory for analysis and the results made available to the communities, the government, and the company.

Tailings disposal was an important issue because of the mountainous area and soft volcanic sediments. Three options were under study:

- containment in highland valleys
- deep sea disposal
- pipeline transport to lowland impoundment.

Although some distance from the main areas of seismic activity, structures and facilities would need to be designed to allow for seismic occurrences.

## **Community**

Community consultation began very early in the project and involved the main cultural groups of the B'laan indigenous communities and Christian and Muslim migrant settlers. Other interested parties outside the potential minerals development area included:

- adjacent landholders and occupiers
- Barangay (village), municipal, and provincial governments
- community groups, committees, and organisations
- businesses and livelihoods that may be affected
- WMC shareholders.

An Information Centre was established in the town of Tampakan. A Social Impact Assessment commenced when detailed exploration started in 1995.

The policy adopted was of transparency, information, and consultation. Community development programs in the project area included:

- infrastructure projects such as improved roads, housing, community centres and potable water supplies
- training in sustainable agriculture

- medical clinics, equipment and staff, community health training, preventative health and nutrition programs
- education initiatives: building schools, funding teachers and providing materials for primary and adult education

Providing employment and skills training for local people was a high priority.

### **Indigenous Peoples**

The FTAA covered the tribal lands of six tribes of the indigenous B'laan people, of which four were in the specific project area. The B'laan is one of the many indigenous or lumad peoples in Mindanao.

For several centuries prior to the early 1900s southern Mindanao was dominated by Muslims. In 1913 the US colonial government began resettlement schemes that brought mainly Christian Filipinos from the Visayan islands and, to a lesser extent, Luzon. Resettlement and spontaneous migration after World War II and the Philippine independence in 1946 saw Mindanao's population (particularly the Christian component) increase considerably.

By 1960 much of the lowland plains of Cotabato were occupied by settlers. Part of this area is the 'ancestral heartland' of the lowland B'laan people, who were driven into the mountainous interior of the region where they now occupy what is classified as public or forest land. The interests, needs, and aspirations of the various groups within this multi-cultural community do not always coincide.

The 1987 Constitution promised 'ancestral domain for indigenous cultural communities'. At the request of the B'laan in the project area, the Company provided anthropologists, archaeologists and survey teams to research their ancestral domain claims, including identification of the boundaries.

Heritage surveys were conducted with the local people to identify ethnographic and archaeological sites of significance.

Consultation with the B'laan people was through with relevant Tribal Councils, evolving before the arrival of WMC with the help of the Philippine Government. WMC assisted with training, and funding for community projects. Members of the Councils are directly elected on an annual basis.

Heads of Agreement were signed with four of the five B'laan communities in the potential development area in 1995, after two agreements had been signed with communities in the wider FTAA access area in the previous year. Both the Company and the communities made commitments under the Heads of Agreement, intended to be replaced later by detailed Agreements.

Inevitably there was opposition to WMC community development activities, particularly the Company's involvement with the indigenous people, some on ideological and political grounds and some from more selfish motives. In most cases the arguments concentrated on the impact on the communities, including wildly exaggerated estimates of numbers of people to be forcibly relocated, without recognising any of the benefits. In some cases, however, the criticism was on the basis that their particular community groups were not included and therefore not benefiting.

It was also claimed that WMC's community activities and liaison with officials and local inhabitants was in effect bribery to induce the latter to agree to what WMC wanted to do.

## **Militarisation**

It was further claimed that WMC employed government, military, and paramilitary personnel to guard its base camp and harass those who opposed the Company. There were also attempts to link activities of Government forces against insurgents in Mindanao with WMC.

A Filipino security firm was employed at the camp to guard against theft, but the charges of harassment and links with the military had no foundation.

## **Project Progress**

On 21 May 1995 Dr T (Terry) Gardner was appointed as Project Manager, located in Manila. Terry, a mining engineer, had worked for over 18 years in Canada at Sherritt Gordon and Rio Algom. Prior to joining WMC at Tampakan he had been in Australia 11 years with Ranger Uranium, Denison Australia, University of Queensland, and Nabalco Pty Ltd where he had been General Manager. He was a new generation mining engineer who had worked for six different enterprises in 29 years, an average of under five years with each.

When detailed drilling commenced after the FTAA had been finalised, further intersections of copper-gold mineralisation were made and a picture of a very large but low grade ore position continued to build up. Perhaps inevitably, this leaked out to the media.

On 2 September 1996, following glowing media reports, including that WMC had committed to investing \$450 million, the Company had to make an announcement denying the reports.

'Exploration drilling and analysis is continuing and until such time as a full understanding of the mineralisation is known, any speculation as to the size of a project or whether or not a project will proceed is premature.'

In 1995-96 five drills were on site and community, development work, environmental monitoring, plant nursery development, and reforestation programs were under way.

Metallurgical investigations and feasibility estimates were carried out as information became available.

The mineral resource discovered at Tampakan was estimated in 1997-98 at 2,500 million tonnes containing 0.48% Cu and 0.20 grams per tonne Au at 0.2% Cu cut-off, or 900 million tonnes of 0.75% Cu and 0.30% Au at 0.5% cut-off.

A pre-feasibility study by Kvaerner Davy in February 1997 estimated the capital cost to produce an average of 193,000 tonnes per annum electro-won copper cathode at 183,000 ounces per annum of gold for 27 years at US\$1,918 million  $\pm$ 30%. The total operating cost was estimated to average US\$0.78 per lb copper.

## **Increasing Doubts**

By early 1998 there were increasing doubts at senior management and Board level regarding the future of the Tampakan project, partly influenced by the then severe downturn in metal prices but also because of concern about some operational aspects such as the method of tailings disposal, possible metallurgical complications, the continuing strident opposition from some NGOs and the Catholic Church, and the economic viability. Invitations were issued to a number of companies, amongst them Phelps Dodge and Newmont to review the information available and to consider entering into a joint



venture with WMC. Several companies accepted the invitation but none proceeded beyond looking at the data.

### **Visit to the Philippines**

I visited the Philippines on my way to China in September 1998. There were meetings with President Estrada and a number of Ministers (known on the American pattern as 'Secretaries') in Manila. I also met the Governor of South Cotabato, The Bishop of Marbel, the Mayor of General Santos City, and the Mayor and Councillors of Tampakan. I met a number of B'laan people on the project site, in a school and at a plant nursery built and donated to them by the Company. I also met WMC staff in both General Santos City and Manila.

Everybody except the Bishop was very supportive and wanted WMC to proceed. I was, of course, aware of the doubts about the project and had a difficult task not to appear too pessimistic while not being misleadingly optimistic about the future. It was particularly worrying to observe the enthusiasm of the staff who obviously expected the project to continue. Terry Gardner was proposing to excavate a tunnel to obtain a large bulk sample for large scale metallurgical testing.

I did my best to point out to the staff that this was not an easy project and a large number of things had to be right for it to proceed. In discussion with the President I was assisted by the constitutional challenge before the Supreme Court still being unresolved and was able to point out that WMC could not expend more money on a low-grade, high capital cost project, such as this, while the outcome of the court case was uncertain.

### **Situation in April 1999**

At the time I retired, the main reason for hanging on to the project was the hope that WMC may be able to salvage something from it when the markets improved.

### **Subsequent Events**

In the 1999 Annual Report there appeared the following comment:

'As part of an expenditure review program, we have decided to withdraw from the Zarmitan Gold Project, Uzbekistan; the Pinares Nickel Project, Cuba; and the Tampakan Copper Project, the Philippines. At this time they do not meet our investment criteria.'

### **In Retrospect**

Among the reasons for becoming involved in the Philippines were the demonstrated high mineral endowment and the relatively low intensity of exploration with the help of modern methods and technology. Government at the various levels was strongly committed to mineral developments, infrastructure was good, and exploration areas were accessible the year round. There was an established mining culture and support and services industry, a well trained workforce, widespread use of the English language, a good western style legal system, improving political stability and security, and nearness to growing markets for the products.

There were also adverse factors which have been discussed above. It is difficult to assess in retrospect whether these were given adequate consideration, or whether the unquestioned potential for mineral discoveries was given undue weight in the decision-making process.

Indophil Resources NL, a mineral exploration company investigating a number of prospects in the

Philippines, made an Initial Public Offering in April 2002. The Managing Director of Indophil was Tony Robbins and the Director of Exploration was Chris Middleton, both ex WMC Exploration Division who had been involved with the Tampakan Copper Project.

The prospectus advised that Indophil proposed to acquire the Tampakan Project.

WMC Philippines Inc in July 2000 signed an agreement for the sale of the Tampakan Project to Lepanto Consolidated Mining Corporation for US\$10 million, payable in two equal instalments 12 months and 24 months after production commenced from Tampakan. The Tampakan Group of Companies (TGC), the original vendors of the claims to WMC, had exercised their right of first refusal and entered into an agreement with Indophil to obtain a 100% Operating Interest in the Tampakan Project. Indophil had in turn made agreements with MIM Holdings Limited and Alsons Corporation which, if fully exercised, would result in final Operating Interests of MIM 60%, Indophil 30%, Alsons 10%.

Lepanto was challenging the Tampakan Group of Companies' exercise of the right of first refusal in the Court, on grounds that the TGC's offer did not exactly match Lepanto's offer.

A W (Tony) Robbins told me in March 2002 that the Bishop of Marbel, WMC's main opponent with whom I had an hour's unfruitful discussion during my visit in 1998, was now in favour of the project! Perhaps WMC's withdrawal and the consequent cessation of the considerable benefits to his parishioners had caused him to see the light.

As far as I was aware in November 2003, the constitutional challenge before the Philippines Supreme Court remained unresolved.

## ***BEING ERNEST IN QUEENSLAND***

### **Background**

In the late 1980s WMC had an exploration team in Townsville, looking for non-ferrous metals and gold in North Queensland. One of the areas they explored was near Cloncurry.

The following description of events is largely from the report of the Committee of Enquiry headed by Mr I G R (Ian) Burgess, submitted to the WMCH Board on 27 August 1993 (see Volume Five, *THE TROUBLES, Ernest Henry*). It is rather detailed because this is necessary to understand the subsequent events.

In 1974 Savage Exploration Pty Ltd, a subsidiary of Savage Resources Limited, looking for iron ore, pegged a number of mining leases in the Mt Fort Constantine area near Cloncurry, based on results of Bureau of Mineral Resources aerial magnetic surveys.

The Savage agent who pegged the leases made errors in the description of one of the leases, ML 2671. The position pegged for this lease was about 850 metres north of the position described in the application lodged with the Queensland Mines Department. Savage did some minor work on this lease in 1982 but did not work on it thereafter.

In the early 1984-85 BHP explored the area, carried out additional airborne magnetics, and did some drilling before abandoning their tenements.

In 1989 and early 1990 WMC decided to explore the area and acquired the BHP and other open file material. One of the BHP maps showed ML 2671 and eleven other Savage mining leases.

Following area selection by WMC, it was found that Hunter Resources Ltd had acquired prior exploration tenements. The two companies joined forces and on 18 June 1990 the Mt Fort Constantine Joint Venture was concluded (WMC 70%, Hunter 30%).

WMC identified several target areas using the BHP aeromagnetic data, which it planned to explore in more detail with ground magnetic and electromagnetic surveys. Its planning involved putting a baseline (marked by steel pegs at 100 meter intervals) north-south through an area identified as FC5 which in its south-western corner contained a portion of ML 2671. The baseline crossed the north-east corner of ML 2671 as described in the Mines Department's records.

On 19 July 1990 a search at the Mines Department at Cloncurry indicated, inter alia, that ML 2671 was current. There was little ground evidence available at the surface to assist in the location of the lease as the area was open, flat, black soil grassland with few trees and no outcrops.

The field crews establishing the baseline were told to keep their eyes open for the ML 2671 area but they were not told to identify it first before establishing the baseline.

The baseline was pegged in July 1990. Notwithstanding that no pegs identifying the location of ML 2671 were seen in the anticipated position, the decision was made to continue to peg the baseline, recognising that in all probability some trespass would be involved.

After the baseline was established, cross traverses were pegged, and some ground magnetic work was carried out. Some readings were made within the assumed area of ML 2671 and the location and character of the magnetic feature defined. This work involved further risk of trespass, but as it merely

confirmed the presence of the already known anomaly, and as the precise area of the lease was still unknown, the field personnel considered the risk justified.

In August 1990 TEM (electromagnetic ground surveys) were carried out. These involved laying wires on the ground and taking instrument readings along the pegged traverse lines. To the extent that this work was carried out over the plotted position of ML 2671 it was a further escalation of the risk already undertaken, since information could have been acquired which was not known to Savage. This further work led to the recognition of minor anomalies on or adjacent to ML 2671 which, if they could be confirmed, would lead to a recommendation to drill.

During a field trip in August 1990 by Messrs C (Chris) Middleton, R (Roy) Woodall and D R (Dave) Harley a brief report on the Mt Fort Constantine exploration was given by WMC geologist T E (Tim) Craske in a Cloncurry motel (the site was not visited) and a note was made by Middleton as to the desirability of approaching Savage for an option agreement to enable work to proceed on the whole of the prospect areas without being compromised by Savage's Leases.

In September 1990 Middleton advised WMC's legal department of the existence of pre-existing mining leases in the Joint Venture area, but did not mention the possibility that WMC personnel may have trespassed inadvertently upon any of Savage's leases.

In late February 1991 an annual technical review at WMC's Townsville offices was attended by Harley, Middleton, Hancock, Craske and others. Maps were produced at that meeting showing the extent of possible trespass on ML 2671. These maps did not attempt to cover up anything nor did they make a special point of the trespass.

### **The Option Agreement**

After contacting Hunter and obtaining its approval to negotiate with Savage for an option agreement an offer was made to Savage by letter dated 8 March 1991. This letter was written by Middleton and checked by the WMC legal department. The letter offered Savage an option agreement over all Savage's leases in the Fort Constantine Joint Venture area for \$1000 per year per lease, plus a production royalty of 1.25%. There is some indication in the correspondence with Hunter that the offer was made in relation to all Savage leases so as not to highlight WMC's particular interest in ML 2671. No mention was made in the letter to Savage of the work already done by WMC on the described position of ML 2671. On 25 March 1991 Savage replied to the letter of 8 March 1991 accepting the offer of an option in principle subject to appropriate legal documentation, and to Savage retaining the right to explore for and, if successful, develop and produce magnetite.

In May 1991 further electromagnetic investigations were made over a significant part of the described position of ML 2671. The work firmed up on the existence of a conductor on ML 2671. In relation to this and to subsequent field activities involving work on the assumed position of ML 2671, the WMC field personnel involved relied on the exchange of correspondence in March 1991 between Savage and WMC.

Further geophysical readings were taken in August, September and October 1991 and some of this work extended over ML 2671. It would appear that, by this time, WMC's field staff had come to realise that the location which they had identified as a potential drilling target was probably covered by ML 2671 as originally pegged by Savage.

After receiving some correspondence as to the form the option agreement should take, Middleton wrote to Savage on 3 September 1991 stating that he had asked WMC's legal department to redraft the option agreement so as to include amendments suggested by Savage. He went on to say:

This (i.e. the *Option Agreement*) will be signed by WMC and Hunter Resources and should be forwarded to you in the next few days for execution. Your prompt attention would be appreciated so that we can initiate at least some field based exploration activity during the remainder of the field season.'

This letter was not checked by the legal department before it was sent. However, at the time it was sent the legal department had not been specifically advised that WMC personnel had, or may have, trespassed on any land under lease to Savage, nor had it been advised of the exploration field work carried out on ML 2671.

The option agreement was signed by WMC and by Savage on or before 16 October 1991. It was subsequently signed by Hunter.

### **The Discovery**

On 26 October 1991 WMC commenced drilling on ML 2671 with the unexpected result of intersecting strong mineralisation. The relatively short time that had elapsed since the Option Agreement had been signed and drilling commenced was later to arouse Savage's suspicion.

On 2 December 1991 WMC wrote to Savage saying that exploration drilling had commenced in the region of ML 2671 but that WMC was unable to determine the exact location of the lease, and requesting survey information on all ML's subject to the Option Agreement.

A further three holes were drilled in November and December 1991 and a public announcement of the discovery was made on 12 December 1991.

The announcement said that three of four diamond drill holes had intersected substantial widths of copper-gold mineralisation approximately 40 km north of Cloncurry and gave assays of the intersections in the first two holes, drilled at an angle of 60 degrees from the vertical. The main intersections were 114.2 metres of 1.7% Cu and 0.9 grams per tonne Au and 84.1 metres at 1.5% Cu and 0.7 grams per tonne Au, commencing about 120 metres from the collar. The geometry of the mineralisation had not been clearly established.

Drilling had been suspended for the wet season and would recommence early in 1992.

On 6 January 1992 a survey by surveyor Lodewyk failed to locate ML 2671 on the ground in accordance with the description.

On 22 February 1992 Savage did ground magnetics on ML 2671 and, comparing the results to ground magnetics done in 1982, located the lease pegs.

On 25 February 1992 a re-survey by Lodewyk's employee Graham placed the lease approximately 800 metres to the north of the described position (see sketch).

On 11 June 1992 WMC gave notice of exercise of the option.

On 6 July 1992 Savage claimed to have identified an economic magnetite resource on ML 2671 and gave notice of an area of joint interest.

On 11 August 1992 there was a meeting between Middleton, Ms K Mander (of WMC's legal department) and representatives of Savage and Hunter to negotiate regarding Savage's prior interest in

recovery of any magnetite derived from future mining of this deposit. Savage's representatives claimed that the speed with which WMC had found mineralisation after commencing drilling led their company to suspect that WMC must have done field work on the area of its ML 2671 prior to the option being signed.

After exchange of further correspondence and a meeting on 22 October 1992, Savage commenced legal proceedings on 28 October 1992, asking the Court to declare the option agreement null and void.

### **The Court Case**

The Court case went badly for WMC, and on 26 July 1993 the matter was settled out of Court, with WMC forfeiting all interest in the project and paying damages and costs. For details, see *THE TROUBLES, Ernest Henry*.

### **Subsequent Developments**

In early 1993 MIM Holdings entered into an arrangement to acquire 51% of Savage's interest in Ernest Henry. Savage was obliged under this arrangement to pursue the Court action.

After WMC and Hunter retired from Ernest Henry, MIM Holdings acquired a 51% interest in the project in a joint venture in which Savage retained 49%. MIM became the project managers.

The orebody was estimated in December 1995 to contain 167 million tonnes of proved and probable ore averaging 1.1% Cu and 0.54 grams per tonne Au, of which 20 million tonnes was supergene and 147 million tonnes was primary mineralisation. Up to 9 million tonnes of ore and over 40 million tonnes of waste were scheduled to be mined per year for the production of concentrate containing 95,000 tonnes of copper and 120,000 ounces of gold which would be transported to Mt Isa for smelting by MIM. The capital cost was estimated to be \$400 million and the mine life 15 years. The construction period was estimated to be 2 years.

Production commenced in September 1997, ahead of schedule and under budget. The actual capital cost was \$304 million. Commercial production was achieved in May 1998.

Difficulties were experienced and the mining plan was revised, with both copper grade and recoveries lower than initially expected because of a higher proportion of supergene ore. In June 1999 the plant was running at the design capacity of 100,000 tonnes of copper in concentrate per annum. Profitability was adversely affected by the low copper price.

Savage Resources had meanwhile acquired four zinc mines and an electrolytic zinc refinery in Tennessee, USA. Pasminco Ltd, which was becoming a major world zinc producer through the development of the Century deposit, made an unsolicited but successful takeover bid for Savage Resources in October 1998, intending to retain the Tennessee zinc assets and dispose of Savage's other interests, including its 49% interest in Ernest Henry. The bid succeeded in early 1999.

### **Subsequent Events**

Pasminco subsequently experienced financial difficulties because of the extremely low price of zinc in the early 2000s and 'out of money' currency hedging. The company's 49% interest in Ernest Henry was taken over by an investment company led by Westpac Bank. MIM Holdings acquired this interest for \$150 million effective on 1 July 2002 and became the sole owner of Ernest Henry.

## ***THE POLISH MAZURKA***

### **Background**

The copper deposits in the Lubin district in south-western Poland were discovered in 1956-57 during exploration for oil in the Permian Zechstein Sedimentary Basin. Previously copper discoveries had been made further south.

The ore horizon is stratiform and varies in thickness from 2 to 20 metres, dipping on an average at 4° to the north-east. The mineralisation extends from 600 to 1600 metres below the surface, has a strike length of 30 km and a plunge extent of over 50 km. The copper content varies from 0.5% to 3% Cu and averages around 2% Cu. The ore also contains some silver and lead.

The proved and probable reserves in 1992 were in excess of 880 million tonnes, averaging 1.50% Cu and 41 grams per tonne silver. The total resource was in excess of 1800 million tonnes at 1.9% Cu.

H M (Hugh) Morgan was initially approached late in 1990 by Jan Czerwinski, a Pole living in Australia who was involved in joint ventures in Poland with Tony Oates (ex Bond Corporation) and Alan Myers QC. He met Hugh, explained that Lech Walesa's Government was contemplating corporatising and privatising the State-owned copper producer (see below) and that he had access to important officials through his friendship with Lech Walesa's priest.

### **Western Mining Investigations**

Kombinat Gorniczo-Hutniczy Miedzi (KGHM), a 325,000 tonnes per annum copper producer (four mines and three smelter-refinery complexes), formed in 1961, was Europe's largest base metal mine in the Lubin district in south-west Poland. The name translates as 'Gorniczo-Hutniczy Copper Kombinat'. The production before 1990 had been 380,000 tonnes per annum.

The initial contact for WMC at KGHM was the head of it, Mr Skoczynski, who was immediately christened by WMC people 'Scotch Whisky'.

A small technical team of C J D (Ned) Williams, J J (Jeff) Gresham and G (Graeme) Sauer had made a brief technical visit with S J C (Colin) Wise in January 1991 and a letter of understanding had been signed to examine mutual cooperation. Colin, whose parents incidentally came from Poland, was appointed to lead the project team.

Further discussions were held in Lubin in April 1991 and WMC proposed examining acquiring a 25-30% interest in KGHM. KGHM advised it was corporatising as a prelude to privatising and would respond within one month. A further memo of understanding was signed in May in which KGHM invited WMC to take equity of up to 46% and the parties agreed to develop a plan to progress the transaction.

In June 1991, Colin, I R (Ian) Maher, and subsequently P (Paul) Chapman went to Warsaw to prepare for on-site due diligence and for discussions with the Polish Government. Meetings with the Ministries of Industry and Privatisation were arranged by the Australian Ambassador, Tony Kevin. The meetings were difficult and WMC continually butted against the requirements of the Polish privatisation laws which required an independent valuation and a competitive tender. Consulting firm A T Kearney had already written a report/valuation and it was clear that Asarco were in the picture. Matters were not resolved with the Government and we did not formally obtain the exclusivity we were looking for, but decided to proceed with due diligence.

Also in June, the Board agreed that a detailed study into KGHM's copper operations should be conducted over the next six months. On 2 July 1991 a statement was made to the press (see copy at end of section).

In July 1991 - on-site due diligence over a three week period was undertaken by a team of Crew, Marshall, Bourne, Goss, Cullum, Maher, Chapman, Ozga, Blandy and Kraj-Krajewski. Ernst and Young personnel from London provided support. A detailed report was then prepared. KGHM's Managing Director Sadecki advised us in August that he was keen to cement the deal and KGHM had chosen WMC as its partner. The Government was less anxious to move, as an election was to be held in October.

In September 1991 KGHM was corporatised into a State-owned, autonomous and self-financing entity KGHM Polska Miedz SA (KGHM Polish Copper S A), consisting of a Head Office and 20 predominantly independent Divisions as the first step in the privatisation process. Meetings with Hugh Morgan and others and senior KGHM officials were held in Warsaw and Lubin in October and November. D M (Don) Morley and K R (Keith) Hulley visited the site during this time.

In December 1991 - WMC sent a joint venture proposal to KGHM suggesting contributions of US\$470 million over five years to earn 40%.

A J (Andy) Cullum, who joined the investigation to provide technical input, subsequently became the leader of the team. In the course of this WMC wrote a report made available to KGHM, analysing what needed to be done to put the operation on a sound commercial basis and recommending specific actions. The Executive Summary of the report is appended.

Early in 1992 discussions continued principally on valuation issues and joint venture and management structures. Turnover in Government Ministries and in KGHM itself (Skoczynski out, Sadecki replaced by Ofman) heightened delays.

It soon became apparent that Asarco was also in discussions with Polish officials. Their approach was to work through the officials in Warsaw while WMC concentrated its efforts on the management in Lubin, on the basis that the management's support was essential to the success of any joint venture. Asarco was endeavouring to gain an influential minority interest by spending little cash but obtaining control of all copper sales and had the support of the US Government, which was being pressured by the Chicago Poles for US investment in Poland. WMC by contrast was discussing a real joint venture.

It was decided that the investigations and discussions had progressed to a point where the full WMC Board should visit Poland to gain a first-hand impression of the operations and people of KGHM, the conditions in Poland, and meet Polish government leaders and officials.

I recall that at about this time there was a demand, encouraged by Czerwinski's lawyer, for a 'finder's fee' of some millions of dollars. The Board did not bite, and the demand was not pursued.

## **Board Visit To Poland**

The visit (called 'Familiarisation Tour') took place in June 1992.

A background briefing was given in the WMC Board room at 360 Collins Street in the afternoon of 2 June. Various aspects of the Polish economic and political situation, attitude to foreign investment, and the Australian Government's view were presented by speakers from the Australian Defence Force



Academy, the Centre for Soviet and East European Studies of the University of Melbourne and the Department of Foreign Affairs. The legal environment in Poland and its relationship to investors was explained by WMC Corporate Lawyer, I R (Ian) Maher.

Directors then made their way individually to London where they arrived at the Intercontinental Hotel on 6 June. On Sunday 7 June, the day was spent in briefings by Ernst and Young, Warburgs, Control Risks (on security aspects), Gallup (on impressions of change) and a representative of Pilkington Glass who was an established foreign investor in Poland.

On Monday 8 June directors flew to Warsaw where the Board stayed at the Warsaw Marriott Hotel. The evening was used to have a relaxed visit and dinner in the old town of Warsaw (actually not so old because it was virtually destroyed during the War, but had been lovingly restored in its original manner).

On Tuesday 9 June the Board travelled by chartered bus to Lubin - a six and a half hour trip through the interior of Poland.

On arrival we were greeted by the President of KGHM, Pawel Ofman and his colleagues over lunch at the KGHM Office. In the afternoon we looked around the town of Legnica (population 100,000) about 20 km to the south, followed by dinner in the KGHM restaurant. (Typical of the communist system, the company owned and operated everything - a bank, housing, holiday camps, a football team, etc. The company in 1990 employed 42,000 people, with 28,000 in the copper business and 14,000 in various service and construction activities).

We stayed the night at the Olimp Hotel in Lubin (population 80,000). The hotel was a part of the football stadium, which was obviously a focal point of the town.

On Wednesday 10 June we were divided into two groups for visits to operations before lunch.

KGHM operated four major mines at Lubin, Polkowice, Rudna and Sieroszowice, three smelter/refinery complexes at Legnica, Glogow I (shaft smelting) and Glogow II (flash smelting), facilities to manufacture continuous cast copper rod, wire bars, billets, and enamelled and insulated wire as well as a series of service and construction divisions. By-products included silver, sulphuric acid, copper sulphate, nickel sulphate and crude lead. Production was below the 380,000 tonnes per annum capacity because an anti-inflationary wages tax had eliminated the incentive for miners to work more than five days per week. Local mine production in 1992 was augmented by toll smelting Chilean and South African concentrates.

The group I was in visited underground mechanised room and pillar mining, with backfill in thicker sections.

After lunch there was an environmental presentation and a visit by helicopter to the tailings disposal area, following which we travelled to Wroclaw (previously Breslau) where we stayed at the Orbis Hotel, and had dinner at the Hotel Wroclaw.

On Thursday 11 June my group visited the Glogow II smelter before lunch and all attended a human resources presentation after lunch, after which we returned to Wroclaw. Dinner that night was hosted by KGHM at the Panorama Hotel, during which, accompanied by much hilarity, the visitors were presented with miners' caps and daggers belonging to the ancient formal miners' dress. As the senior WMC person, my cap had a large green plume and I was presented with a sword instead of a dagger! (Refer to photos in this section.)

On Friday morning 12 June we visited downstream processing operations near Lubin and after lunch

started back on a 14 hour trip towards Warsaw, stopping in Czechostowa to visit the monastery and the famous Black Madonna.

On Saturday 13 June there was a short Board meeting at the Warsaw Marriott in the morning, followed by presentations on the Polish situation from the Australian Ambassador (Tony Kevin), and representatives of the World Bank, Ernst and Young in Poland, and Professor Longin Pastusiak, a member of Polish Parliament.

Professor Pastusiak told the story which I later used on many occasions. There were two ways to achieve prosperity in Poland: the realistic way and the miraculous way. The realistic way was for Jesus Christ and his disciples to come down from heaven and do it. The miraculous way was for the Poles to do it themselves!

After lunch we were taken on a bus tour of Warsaw and surroundings. In the evening music enthusiasts went to the opera; I excused myself and had a much needed early night.

On Sunday 14 June we were again taken sightseeing, including the (restored) Royal Palace and a music recital and lunch in a beautiful garden. In the course of this (on the way to a distant palace) we visited the house where Chopin had lived. Because of the enthusiasm of our guide for cathedrals, old buildings, and palaces, it went on a bit too long and we had to eventually firmly tell him that a little culture went a long way with us!

On Monday 15 June Hugh and I met in the morning with the Prime Minister of Poland (who had not been in the post for long and did not stay in it long) and some other Ministers and officials. In the evening there was a reception at the Australian Embassy and this completed the programme. On Tuesday morning 16 June directors departed for various destinations.

### **Post-Visit Review**

On return from Poland at a post-visit review paper for the Board summarised the situation as follows:

WMC was in a privileged and strategically preferred position compared with competitors. The process of privatisation was demonstrably complex and frustrating. The Privatisation Ministry was advocating that the prescribed privatisation procedure should be followed, while KGHM wanted to do a deal with WMC.

The Board had to decide whether it wished to proceed towards a joint venture. If the answer was no, WMC would need to withdraw gracefully and A J (Andy) Cullum, or perhaps the Managing Director, should visit Poland and explain the reasons to KGHM, the Australian Ambassador, and the Polish Government. If the answer was 'yes', a major effort (the details of which were set out) would need to be mounted to meet all WMC's conditions precedent for committing to a joint venture.

In August 1992 WMC conveyed to KGHM and the Government its continued interest but that it would not do anything further until the means and timing of privatisation was clear. If a formal tender was pursued, we may or may not participate.

Late 1992 - early 1993 there was a complete turnover of KGHM management. The Polish press continued to speculate on whether privatisation would occur and touted WMC and Asarco as suitors. The Ambassador, Tony Kevin, received feedback from the Privatisation Ministry that worker and management unrest and the uncertain political climate made privatisation too difficult. Ministry officials conceded the need for foreign investment in KGHM but stated 'trade unions and populist

politicians do not'. Foreign investment in KGHM was particularly difficult given its status as a strategic enterprise.

In March 1993 there was major industrial unrest at KGHM. It was reported to WMC that trade unions broke off talks with management as they were fiercely opposed to any foreign participation in the Kombinát.

In April 1993 Hugh Morgan wrote to the new Prime Minister, Mrs Suchocka. Her principal economic adviser wrote back, saying they will welcome a renewal of our interest when the Polish Government is ready to commence the privatisation process. They indicated that further work needed to be done by the Government and that any ensuing process would involve 'all foreign firms interested in participation'.

## Conclusion

WMC concluded that there was a considerable political and financial risk in the proposed investment and that the dominance of trade unions in KGHM's affairs did not permit efficient commercial operation. WMC therefore withdrew from the project. Asarco also failed in their ambitions.

## Subsequent Events

An article in *Erzmetall* 54 (2001) No. 12 by W Gasior, J Kotarski and S Plucinski describes subsequent events:

In 1995, the Ministry of Privatisation announced a tender for advisers. Next year, bidding consortia were auditioned and the winner was selected. The Initial Public Offering prospectus was prepared, and as from 10th of July 1997 KGHM went public. The Company shares were offered domestically at the Warsaw Stock Exchange and internationally at the London Stock Exchange in the form of GDRs (Global Depositary Receipts). Current ownership structure is: State Treasury - 44.28%, GDRs - 18.91%, PKO BP - 5.38% and domestic float - 31.43%.

In parallel with privatisation, restructuring processes were carried out since the beginning of 1993. Auxiliary and service activities were separated and moved to subsidiaries or were sold. The main objective was to concentrate on the Company's core business, which are excavation, production and processing of copper, silver and other non-ferrous metals. KGHM focused on improving the organisational structure, cost reduction and rebuilding of sales markets.'

The graphs from the article which show some of the changes between 1990 and 2000 are attached at the end of this section.

## With Hindsight

It appears that the partially privatised KGHM (State Treasury owns 44.28%) has been able to improve its operations and reduce costs, including a substantial reduction in employment. The latter has been at least partially achieved by full or partial separation of activities such as company housing, hotels, sport and leisure facilities and various social services and outsourcing repairs and maintenance, road and rail transport, security services etc. The article in *Erzmetall* omits any mention of profitability. As KGHM is now a public company this can be checked to verify or otherwise WMC's conclusions, but I have not attempted to do so.



## ***GOOD DECISION IN ZAMBIA***

In 1996 WMC participated in discussions with Anglo American and Gencor to jointly take an interest in the privatisation of the Zambian government-owned 350,000 tonnes per annum copper producer, Zambian Consolidated Copper Mines (ZCCM). Anglo, through a subsidiary (Zambian Copper Investments Ltd) owned 27.3% of ZCCM. In particular the consortium, in which WMC was to have a 30% interest, was to make a bid for the development of the US\$600 million Konkola Deeps copper project beneath the existing Konkola Operation of ZCCM, with estimated reserves of 380 million tonnes.

K R (Keith) Hulley who had been born in Zimbabwe, although he was now a US citizen, had a leading part in these discussions.

The discussions did not proceed further because Anglo American considered a 10% return acceptable and Gencor was aspiring to a 15% return, while WMC required in excess of 20%. It was apparent that the Government was not going to sell on terms which would meet WMC's hurdle rate of return.

### **Subsequent Events**

In March 2000 Anglo paid US\$90 million in cash and future capital investment to re-enter the Zambian Copperbelt, nationalised three decades earlier. The mine operator, Konkola Copper Mines, was jointly owned by Anglo, the Government (20%), and other investors. It accounted for two thirds of Zambia's copper output and employed 9500 workers. Another 1600 worked at a smelter managed by Anglo.

On 28 January 2002 it was reported that Anglo American had decided not to proceed with the development of the Konkola Deeps Mining Project, of which it owned 'an effective 33%'. Since this project was the rationale for its investment in the Zambian industry two years ago and since the existing operations are loss making, 'Anglo will withdraw from the Zambian copper industry either through selling the assets or through closure in a socially and environmentally responsible manner'.

The total cost of the project to Anglo on exiting amounted to US\$384 million.

The comment by informed observers was that the mines had been run down while owned by the Government and that Anglo had come to the scene too late. The low copper and cobalt prices since 2000 had not helped. There was speculation that Anglo, who had owned the Zambian copper mines before nationalisation, had been emotionally motivated to regain control of the field.

WMC made the right decision in not becoming involved.



## ***IN THE MARKETPLACE***

The marketing of all the products from Olympic Dam, including copper, was undertaken on behalf of the Joint Venturers by Olympic Dam Marketing Pty Ltd (ODM).

Before committing to bringing the Olympic Dam Project into production, it was hoped to have contracts for all the yellowcake production. The joint marketing company, Olympic Dam Marketing Pty Ltd (WMC 51% BP 49%), was formed on 28 May 1985. It was registered in South Australia but based in Melbourne and managed by WMC. I J (Ian) Duncan became Managing Director and Jim Squire, based in London, represented BP. Another BP officer involved was Miles Rotherham.

In April 1988 Duncan became General Manager of the Olympic Dam Project (ODO) and J E (James) Eggs became Head of Olympic Dam Marketing (ODM), now based in Adelaide. After WMC purchased the BP interest in Olympic Dam in 1993, ODM became fully owned by WMC.

The marketing of uranium is described in *THE GLOW OF URANIUM*. For both uranium and copper, the aim was to commit the production to substantial consumers under long term contracts.

Ian Duncan in his paper *Marketing in WMC - With Particular Reference to Olympic Dam*, Book Three, Appendix XXXIII, records:

The initial pilot plant work in 1982-84 was based on the expectation that the copper product would be an impure blister copper (about 97% copper) that would be sold to significant copper refineries as a feed for their smelters. We therefore formed contracts with smelter/refiners in the UK (2), Germany (2) and Belgium (1). This emphasis on European buyers reflected the state of the market at the time.

Continued metallurgical work demonstrated that due to the presence of uranium and its daughter products in the ore it would be wise to take our copper production to a highly refined "A" grade copper cathode (99.996% copper) by adding electrolytic and electro-winning refineries on-site OD. This required ODM to resubmit proposals to all of the contracted copper buyers, an embarrassing step for a marketing team but fully backed by technical necessity. We found that four of the original five copper buyers agreed to remain contracted to us and to accept the change in product type. The other refinery declined, as OD product would then be too pure for their purposes. As the copper capacity expanded, ODM added buyers in Australia, Italy, France, Malaysia and India.

As early as possible after the commencement of production in 1988, ODM worked to have the OD copper product accredited by the London Metals Exchange, allowing both buyer and seller to trade the cathodes on that exchange if necessary. ODM chose buyers that would most likely use the cathodes for their own production of refined products. The LME registered brand for OD "A" grade cathode copper is "OLYDA". The base price for each contract is the daily posted LME A grade copper cathode price effective at the time of delivery. As OD quality usually exceed the minimum LME specification, a further small premium is negotiated between seller and buyer on an annual basis. ....

As OD expanded its production, the number of contracted buyers increased. The initial copper production of 35,000 tonnes increased to 80,000 tonnes per annum and this provided the

opportunity to change the geographic distribution by adding buyers in Taiwan, SE Asia and Australia.

The further significant expansion in 1998 to 200,000 tpa copper and 4,300 tpa  $U_3O_8$  allowed for expansion to existing copper and uranium contracts and further diversification of contracted buyers. ....

As the marketing effort reached its peak of activity in the two years prior to the commencement of production in November 1988, there was some internal criticism concerning the need to contract for Cu sales when ultimately the product would meet LME standards and could be sold on any market. However the contracts for copper were pursued, as it was necessary to have long term relationships with the companies that would facilitate ODM's application for LME A grade certification.'

The copper market followed the ups and downs of all base metals, periods of shortages and good prices alternating with oversupply and low prices. WMC's relationship with its copper customers, however, remained strong and all the production from Olympic Dam was placed at all times.



# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**BUSINESSES AT APRIL 1999**

VOLUME FOUR

***THE GLOW OF URANIUM***

***THE WHITENESS OF TALC***

***THE FERTILE ROCK***

***THE TREASURE HUNT***

***DISCONTINUED BUSINESSES***

***DISCONTINUED PROJECTS***

# **BOOK TWO**

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# ***THE GLOW OF URANIUM***

## **CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>305</b>
<b>The Nuclear Fuel Cycle</b>	<b>307</b>
<b>For And Against Uranium in Australia</b> Government Policy And Public Opinion	<b>309</b>
<b>The Find At Yeelirrie</b> Uranium At Yeelirrie, WA	<b>335</b>
<b>Wondering About Nabarlek</b> Possible WMC Involvement in Nabarlek, NT	<b>351</b>
<b>Enrichment</b> Uranium Enrichment Studies In Australia	<b>353</b>
<b>The Olympic Glow</b> Uranium At Olympic Dam, SA	<b>357</b>
<b>Acquisition of Jabiluka</b> Possible WMC Involvement In Jabiluka, NT	<b>359</b>
<b>Radioactive Resting Places</b> Disposal Of Radioactive Waste	<b>361</b>
<b>The Marketing of Uranium</b>	<b>363</b>

# ***THE GLOW OF URANIUM***

## **OVERVIEW**

The earliest record of a possible WMC diversification from gold is in the Minutes of the Board meeting on 30 June 1952 when Lindesay Clark (later Sir Lindesay) reported on an invitation from the Commonwealth Government to make an offer for the Rum Jungle uranium property in Northern Territory. WMC declined because of other commitments.

The Company was, however, interested in exploration for uranium. On 28 September 1953 Lindesay Clark reported to the Board on his visit to Northern Australia in connection with uranium investigations, and on 6 January 1954 it was recorded that the costs of uranium prospecting would be shared WMC 75% GMA (Gold Mines of Australia) 25%.

Uranium prospecting was also mentioned by the Chairman at the 1953 Annual General Meeting and in the 1953-54 Annual Report. The first uranium discovery by WMC was, however, nearly 20 years later at Yeelirrie in 1972.

Politics intervened in its Yeelirrie's development. The Australian Labor Party, which had been pro-uranium, reversed its stance in 1977 and became strongly anti-uranium. The Federal Labor Government elected in 1983 withdrew permission to pursue sales contracts and the project was subsequently not granted development status. It has remained undeveloped to the time of writing (November 2003).

In 1974 and 1975 WMC considered uranium exploration in USA and in Iran. A limited investigation was carried out in the Great Lakes area in 1976, but the prospective land was all taken up and no projects were developed. Eric Cameron visited Iran to assess opportunities, but again nothing developed. (See Volume Four, *THE TREASURE HUNT, Beyond The Borders.*)

Meanwhile, the Olympic Dam discovery in 1975 contained uranium as well as copper and precious metals. This resulted in anti-nuclear campaigns against WMC, beginning in 1977.

In June 1977 Heads of Agreement were signed with the Central Electricity Generation Board of UK for a uranium exploration joint venture in the Murchison-Carnegie area of WA.

The Olympic Dam Project was granted development status by the Labor Government in 1984 and commenced production in 1988. WMC had become a uranium producer.

The changes in Australian Government policy and public opinion regarding the use of uranium are described in the next section.



## ***THE NUCLEAR FUEL CYCLE***

The following information brief by the World Nuclear Association describes the nuclear fuel cycle.



# ***FOR AND AGAINST URANIUM IN AUSTRALIA***

## **URANIUM POLICY**

Australian Government policy and Australian public opinion were strongly in favour of the development of uranium as a source of energy until the mid-1970s, when support turned into opposition.

### **Early Mining in Australia**

First discovered in Australia at Carcoar, New South Wales, in 1898, uranium ore was first mined in South Australia in 1906 at Radium Hill near Olary and in 1910 at Mount Painter, in the northern Flinders Ranges. The mining occurred intermittently until 1934. The ore was processed in Adelaide for radium, used in cancer therapy and health and beauty treatments. Uranium was mostly a waste product, although some was used in paints and ceramics.

### **In the 1940s**

The Australian Government first became aware of the possibility of the atomic bomb, and of nuclear energy as a power source for civilian purposes, in 1941. In 1942 control of uranium-bearing ores was reserved to the Crown and a survey of such ores was begun. At that time the only known deposits were at Radium Hill and Mount Painter.

In 1944 the British Government approached Prime Minister Curtin, offering to buy indefinitely all uranium Australia could produce 'for defence purposes'. The British would pay the development costs. Testing of the Mount Painter deposits found these to be too low in grade. Further testing at Radium Hill commenced in 1944.

The Australian Government was concerned that it had no information on the potential value of uranium for power generation and therefore limited the British right to take all production for the duration of the war. Australia's wish to have access to and participate in nuclear research was unsuccessful because of the secrecy imposed for security reasons by USA and Britain.

At the end of the war availability of energy was seen as the key to Australia's future development. The country was completely dependent on imported oil and the potential of hydroelectricity was small and in any case not yet proven. The black coal resources in the Eastern States faced seemingly intractable industrial relations problems. Nuclear energy, although not yet developed for commercial purposes, offered a possible solution.

The Chifley Labor Government was keen to pursue this objective and, after the USA dropped two atomic bombs on Japan, the Australian press also became enthusiastic about nuclear power. It was described as making the industrially troubled coal, gas and electricity industries obsolete, permitting modifications to the climate by creating mountain ranges, and overcoming droughts by desalinating sea water.

In 1945 it was thought that industrial use of atomic energy would become feasible in from two to ten years, but its development in Australia was seriously disadvantaged because of lack of information. While pressing for access to British information, the government also approved in 1946 expenditure to enable the government research body CSIR to work on nuclear energy, and for the newly established



Bureau of Mineral Resources (BMR) to pursue uranium exploration which had resumed immediately after the end of the war. The centrepiece of the Australian National University in Canberra, established in 1946, was its Research School of Physical Sciences, including the School of Nuclear Physics, headed by (Sir) Mark Oliphant. An Australian, he had been prominent in the development of radar and in nuclear research in Britain, in starting the British atom bomb project, and had been seconded to the Manhattan Project for the development of the atom bomb.

In 1946 the Government enacted the *Atomic Energy (Control of Materials) Act 1946* to ensure that uranium remained the property of the Commonwealth.

In 1947 the exploration for uranium was broadened and the co-operation of the States was sought.

In 1948 the Federal Government introduced tax free rewards (with a maximum of £25,000) to discoverers of uranium deposits and later established a buying pool for uranium with guaranteed prices. By 1949 the existence of workable amounts of uranium ore had been established at Radium Hill and radioactive specimens were found at Rum Jungle in the Northern Territory. The Bureau of Mineral Resources (BMR) gave priority to investigations at Rum Jungle.

The incoming Menzies Liberal Government in 1949 continued with the commitment to develop a uranium industry. Robert Menzies hoped to revive the idea of Britain supplying the technology and the Dominions providing the sites and the raw material for the industry.

### **In the 1950s**

At the height of the Cold War in 1950 a number of people, including Prime Minister Menzies, thought that another war was imminent. This was a factor in the Government readily agreeing in 1951 to testing of the British atomic bomb being carried out in the Monte Bello islands in north-western Western Australia. Continuing to seek British cooperation in involving Australia in nuclear research and in developing nuclear power for industrial uses in Australia, the creation of the Australian Atomic Energy Commission (AAEC) was announced in September 1952. In early 1953 the Bill establishing the Commission was strongly endorsed by the Labor Opposition who agreed that atomic energy was the only viable economic alternative to the inevitable shortage of fossil fuels in Australia. The *Atomic Energy Act 1953* brought together in one piece of legislation all matters dealing with atomic energy.

In 1951 the Premier of South Australia, Tom Playford, had negotiated with the joint US-British uranium procurement body, the Combined Development Authority (CDA), by then effectively run by the Americans, a seven year contract to sell uranium concentrate from Radium Hill, processed at Port Pirie.

Meanwhile, by 1952 the Bureau of Mineral Resources had discovered a large body of high grade uranium mineralisation at Rum Jungle. In January 1953 a sales contract for the output was signed with CDA. The Commonwealth contracted the operation on a fee basis to Consolidated Zinc Corporation who established a subsidiary - Territory Enterprises - for the purpose. The project was officially opened by Prime Minister Menzies in September 1954.

In 1953 and 1954 Australia made the Emu Field in north-western South Australia and Maralinga area in south-western South Australia available to Britain for nuclear testing.

At about that time US President Eisenhower launched his 'Atoms for peace' program, declaring that 'atomic energy is no dream of the future. That capability, already proved, is here - now - today'. Australia was invited to join the eight-nation group to drawing up a statute for the International Atomic Energy Agency (IAEA), established for the purpose. Having already succeeded in securing agreement on technical co-operation with the British, Australia made in 1956 a similar agreement with the Americans.

After almost 15 years, Australia had secured access to the technology to proceed with an atomic energy program.

In the mid-1950s it was thought that the world's supply of uranium and other fissile materials was limited. The Americans and the British, through the CDU, partly to secure their own supplies and partly to deny these to others, had secured contracts for the output of Australia's two uranium deposits at Radium Hill and Rum Jungle, and of others in Canada, South Africa, and the Belgian Congo. It was thought that whatever the needs for military purposes in the future, the demand for energy generation would grow rapidly.

The Australian Government decided to remove any possible disincentive to prospecting for uranium. The restrictions introduced in Chifley's time, including the restriction on uranium companies publishing estimates of ore grades and reserves, were removed and by 1953 anyone could prospect or mine uranium as long as they sold it to the Commonwealth.

The Commonwealth's own uranium exploration was stepped up. The BMR conducted low-level scintillometer surveys and distributed Geiger counters to prospectors. Exploration for uranium on Aboriginal reserves was permitted, with royalties from any mining paid into an Aboriginal Benefit Trust Fund. Profits from uranium were exempted from income tax.

These policies inspired by 1954 a prospecting boom, particularly in the Northern Territory. The boom was fed further by the media likening it to gold rushes, talking about the great developments to happen, and referring to 'uranium fever'. By 1955 twenty two new companies had been incorporated specifically to explore for uranium. There was a speculative boom on the stock market, initiated by the enthusiasm following the first oil discovery at Rough Range in Western Australia in 1953 carrying over into uranium.

Some 400 occurrences of uranium minerals were identified and about 100 tested by drilling and underground development. There were some discoveries around the Adelaide and Edith rivers south of Rum Jungle, including Coronation Hill and El Sharana, but even in total these did not amount to a great deal. The big discovery of the 1950s was made in 1954 by a taxi driver near Mt Isa who named it Mary Kathleen, after his wife who had died two weeks earlier. It was sold by the prospecting syndicate for £250,000 and a share interest to Australasian Oil Exploration Company.

The buyer did not have the finance to develop a mine and in January 1955 Rio Tinto of United Kingdom bought an option over the deposit. Rio Tinto had extensive uranium interests in South Africa and elsewhere and had come to Australia specifically to look for uranium.

The Mary Kathleen Uranium Company was established, with Rio Tinto, the prospecting syndicate, and the Australasian Oil Company as shareholders. On 1 March 1956 the Australian Government approved the sale of Mary Kathleen uranium to the UK Atomic Energy Agency (UKAEA). A condition was, that the Agency would also buy uranium from companies in the South Alligator area. The Mary Kathleen Project was officially opened by the Prime Minister in October 1958. The United Uranium NL treatment plant at Moline in Northern Territory started production in late 1959.

By 1957 it was apparent that, instead of a shortage of uranium, there was a glut. There was increased production in South Africa, Canada, and the USA. The initial enthusiasm for nuclear power was waning and the UKAEA was left in the late 1950s with an expensive stockpile which it had to sell to British electricity authorities at below cost. The Agency in 1959 unwillingly honoured its 1956 commitment to buy South Alligator uranium, from United Uranium Ltd (from nine different deposits, treated at Moline) and South Alligator Uranium NL (from the Rockhole Deposit). The initial contracts were not extended.

The Americans, through CDA, also had become unwilling buyers.

### **In the 1960s**

In 1961 the South Australian Government closed down the Radium Hill Mine and the treatment plant at Port Pirie. In the same year the Government terminated the payment of rewards for uranium discoveries and did not renew the offer to purchase uranium from private producers when it expired in 1962. The tax exemption of profits from uranium mining was, however, extended to 1968.

Mary Kathleen was unable to secure additional contracts when the UKAEA contract had been fulfilled and was placed on care and maintenance in 1963. The last private Northern Territory mine, of United Uranium NL, closed in 1964. There was then only one uranium mine operating in Australia - at Rum Jungle, supported by government subsidy and producing for a government stockpile. The mine was eventually closed in 1971.

The situation was similar in Canada and South Africa. In an effort to protect domestic producers, the USA in 1964 placed an embargo on imports of uranium.

There were, however, two conflicting influences at work. While defence demand for uranium continued to decline and existing producers were shutting down, the potential use of uranium in power generation grew rapidly in the mid-1960s. In 1965 governments and electricity authorities in the non-communist world ordered a record total of over 8000 megawatts of nuclear generating capacity; in 1966 the US Atomic Energy Commission (USAEC) alone ordered 16,000 megawatts. The Commission forecast that new uranium reserves needed to be discovered within less than ten years to meet the demand in the 1980s.

There was an effort in the late 1960s to establish nuclear power generation in Australia, with perhaps the additional (unstated) thought that it would make it easier for Australia to consider nuclear weapons. The latter appeared to be one of the reasons why Australia declined to sign the *Nuclear Non-Proliferation Treaty* (NPT) adopted by the United Nations in 1968.

In September 1969 the AAEC published a feasibility study recommending Jervis Bay (the coastal part of the Australian Capital Territory) as the ideal site for a 500 megawatt Commonwealth-owned reactor. Opening his election campaign in October 1969 Prime Minister John Gorton, who was a strong supporter of the project, announced the construction of the plant. In 1970 Australia signed the NPT, although Prime Minister Gorton pointed out that the treaty was not binding until ratified and the decision to sign was not a decision to ratify.

Tenders were called and preliminary work started. However, after William McMahon succeeded Gorton as Prime Minister in March 1971, the project was 'deferred' because of escalation in costs. It was never recommenced.

Concerned about the long term availability of uranium for Australian purposes, the Minister for National Development, David Fairbairn, had imposed an export embargo in 1967. This may have been one of the reasons why uranium exploration in Australia resumed hesitantly, but by 1969 there was renewed interest and in 1970 more than sixty companies were exploring or about to start - twice the number in the previous year.

### **In The 1970s**

The new uranium exploration boom produced early results.

In South Australia the Beverley deposit near Mt Painter and the Honeymoon deposit 75 km north-west of Broken Hill were discovered in 1972. In Queensland, further drilling at Mary Kathleen proved extensions and in 1970 Conzinc Riotinto of Australia (CRA), which now controlled Mary Kathleen, announced its intention to re-open the mine.

In September 1970 Queensland Mines Ltd, a survivor of the 1950s, announced the discovery of 'the world's richest uranium strike' at Nabarlek NT, containing 55,000 tons of uranium oxide ( $U_3O_8$ ) in ore averaging 540 pounds per ton. A special 'Nabarlek Ordinance' was introduced by Prime Minister Gorton, limiting foreign investment in Queensland Mines and its partner Kathleen Investments to 15%. Almost simultaneously Peko Mines NL and the Electrolytic Zinc Company of Australasia (EZ) jointly discovered Ranger in Northern Territory, 50 km to the south-west of Nabarlek, containing 70,000 tons of uranium oxide (later extended to 100,000 tons). In August 1971, however, Queensland Mines had to announce that the initial assessment of Nabarlek was in error, and that the orebody contained only some 9000 tons of uranium oxide.

Some six months after the Ranger discovery Noranda (Australia) found uranium at Jim Jim, 20 km south-southwest of Ranger. In January 1972 Western Mining announced the Yeelirrie discovery near Wiluna in Western Australia, later to prove to contain 42,000 tons of  $U_3O_8$ . And by 1974 Pancontinental Mining, partnered by Getty Oil, had proven at Jabiluka, 20 km to the north of Ranger, reserves of 24,000 tons of uranium.

Within a short time Australia had become a source of world importance of uranium which was once again the glamour metal and there was frenzied speculation on the stock exchanges. In 1971 the Australian Government lifted the restrictions on uranium exports. In the real world, however, it was now very difficult to find customers.

World nuclear power generating capacity was increasing, but capital costs were also increasing and the rate of growth was slowing. There was more than enough stockpiled uranium from earlier production for defence purposes to satisfy the market. The embargo on imports of foreign uranium into the United States, which accounted for 70% of the world demand, severely restricted the opportunities for non-US producers. In addition, in spite of Canadian and Australian protests, in October 1971 the USAEC dumped its stockpile of 50,000 tons of uranium on the international market. The price of uranium, US\$6 per lb  $U_3O_8$  in 1969, fell to US\$4 per lb, making it uneconomic for most producers and certainly to new projects.

The established producers were in a better position than the prospective Australian producers. Canada had the world's largest deposits at Rabbit Lake in Saskatchewan and had kept their industry alive during the 1960s through government subsidies. France had become a producer, both in France and in the former colonies Niger and Gabon. South Africa produced uranium as a by-product of gold mining. However, oversupply was a serious concern.

Tony Grey in his book *Jabiluka* describes the events in February 1972 as follows:

The nadir of the producers' fortunes came when a group of their marketers competed for a uranium supply contract to HEW. The north German utility called for supply tenders and invited representatives of the three most attractive offerors to come to Hamburg for final negotiations. The French, South Africans, and Canadians arrived. Unbeknown to each other, all were invited at the same time and isolated in different rooms at the utility's head office. HEW's purchasing agent went from room to room, saying to the Canadians that the French were willing to shave a bit off the price and then visiting the French claiming the South Africans were prepared to come down a few cents a pound and so on. The price spiralled down. By

chance the French marketer, Michel Houdaille, ran into the representative of one of the other producers in the washroom. After they got over their surprise, they realised that HEW was taking them all to the cleaners.

That humiliating experience was the catalyst for action. The producers could not tolerate the beating any longer. Roy Wright, the Deputy Chairman of RTZ and its co-founder Sir Val Duncan, established a bridge to France via Pierre Taranger, the leading figure in the Commissariat d'Electricité Atomique (CEA), which was the French Government's uranium arm. Taranger and Wright organised a meeting of producers in Paris on 3 February 1972 at the offices of the CEA to confront the problem of the parlous market.

Agreement in principle was achieved to form an informal association of uranium producers which would operate a system of production quotas and price guidelines. The general concept was that four groups would be created, consisting of the French, the Canadians, the South Africans, and mines in or likely to be in construction within a few years. It would be left up to companies in each group to carve up their allocations.

Agreement to the fourth group was achieved on the forceful advocacy of Roy Wright, who was thinking of Rossing, the large low-grade uranium deposit in South West Africa, and potential Australian producers, with whom he saw RTZ playing a role via its Australian subsidiary, CRA. A tentative quota for the fourth group was suggested of 20% over the next five years, a slice that was expected to amount to 5,000 tons of which 3,500 could go to Australia since Rossing would not be in production within the period. Producers at the Paris meeting were unsure of whether Australia would join but did not care because the uranium newcomer could be frozen out of the market if it did not co-operate.

Thus, a government-sponsored cartel of international uranium producers was clandestinely formed out of desperation. Its purpose was to ensure the survival of an industry that was on the brink of a catastrophic implosion. Shortly after the first meeting, the members began referring to themselves cryptically as the "Club".

Officials of Australia's Department of National Development but not representatives of the potential Australian producers were invited to the inaugural meeting in Paris on 3 February 1972 (see *International Supply and Demand and International Uranium Cartel Hearings before Subcommittees on Oversight and Investigations - US House of Representatives Committee on Interstate and Foreign Commerce* in The Australian National Library). On return the officials advised CRA, Exoil, Noranda, Pancontinental, Peko-EZ, Queensland Mines, and Western Mining Corporation that Australia had been allocated tentatively only 8% of the world market to 1977. (see *Report on the Discussion in Paris of the Uranium Industry 1-4 February 1972*, in US Senate Documents p.344-61; p.350).

The Australians were incensed and threatened to proceed on their own outside the Club. I was invited to join in meetings of the prospective Australian producers, of which Peko-Wallsend was the dominant member, at the end of February and in March to discuss the formation of a Uranium Producers' Forum. There was apprehension about a formal association able to dictate to its members, and questions about the role of the government. There was to be a meeting of the world uranium producers in Johannesburg at the end of May and representatives of the prospective Australian producers, including myself, decided to attend.

A diary note written in Miramar Hotel, Hong Kong, on 3 April 1972, outlines the WMC thinking at that time:

- ' 1. WMC supports in principle move for agreement between world producers.

2. WMC also supports suggestion that market shares should be considered in total incl. existing share as well as sharing unsatisfied demand.
3. WMC believes markets should be allocated in first instance between countries, i.e. RTZ share should not be considered separately. We fail to see the justification for doing so.
4. We believe Australia could accept lower percentage total market in 1972-77 than in 1978-80 but should obtain sufficient allocation in 1972-77 to permit intending producers able to get into production in this period commence operations on at least minimum economic level. Producers' association and marketing agreement could fall apart any time and if Australia defers its entry to markets it could be left at a grave disadvantage.
5. AEC existing stockpile of uranium could be used as back up for early contracts if need be.
6. WMC expects to be able to produce from end 1975 onwards and would certainly wish to have a market allocation in 1976.
7. In negotiating Australia's position it would be extremely helpful to know the motives of the French. In sponsoring the producers' club it appears the French and RTZ are working clearly together in trying to bring about some agreement. While not wishing to sound unfair to either, it seems possible that both are viewing Australia's potentially low cost uranium with considerable concern against their own relatively high cost production. If this is so, Australians may have stronger negotiating position than we think. This surmise should be tested if possible and the negotiating leverage used if proven correct.
8. Economic level of WMC operation 1978-1980 not yet determined precisely and will not be available for several months but indications are of the order 1,500-2,000 tpy.
9. Work at Y eelirrie continues to show mineable higher grade zones within the orebody. Without being able to be precise at this time, failure to reach agreement with other producers and consequent reduction of price to, say, \$US 4/lb would not shut WMC out of the market. We would naturally prefer agreement which would give us necessary minimum share of market at higher price.'

My notes for a discussion on 15 May 1972, just ahead of the Johannesburg meeting, follow.

#### WMC AS URANIUM PRODUCER

1. We believe we have a large economic deposit of uranium at Y eelirrie but will not know the extent or other details of this deposit for at least several months.
2. We have other potential uranium areas in Western Australia which could contain further and, perhaps, very large deposits but again even a preliminary assessment will have to await at least three months and perhaps longer.
3. We will not be able to make specific sales offers to prospective purchasers for at least another six months.

#### PROPOSED PRODUCERS' CLUB

4. The uranium market between now and 1980 will be over-supplied. Opinions differ as to whether the generally accepted estimates of demand are correct, optimistic, or too low, but any shortage in supply will not occur before 1980.
5. Under free market conditions, it is thought that the price of uranium might be forced down to perhaps as low as US\$4 per lb U<sub>3</sub>O<sub>8</sub>.

6. The producers are endeavouring to reach agreement on market sharing between now and 1980 so as to eliminate excessive price competition and to be able to maintain a minimum price of about \$6.50 per lb  $U_3O_8$ .
7. The participation of Australian producers is essential for the formation of this "Producers' Club".
8. The Australian Government is encouraging the concept of orderly marketing of uranium and is also involved because it administers the Northern Territory in which most Australian deposits are located.
9. Recent discussions between producers have resulted in Australia being offered 17% of the uncommitted world market between now and 1977 and 20% of the uncommitted world market between 1978 and 1980.
10. The world market share offered up to 1977 is probably acceptable. The market share offered between 1978 and 1980 is too low for all intending Australian producers to come into production even on a minimum basis.
11. The next producers' meeting is scheduled for 29th and 30th May. Australian producers have been asked to decide whether they wish to participate and to declare their intentions by 20th May.
12. The reason for the urgency in calling the next meeting is not completely clear but one reason given is that a number of contracts are at present in the course of negotiation and under offer. It is suggested that if the Producers' Club is to fulfil a useful function, agreement should be reached before these and further contracts are finalised as otherwise there will be no uncommitted market to share out.

#### ALTERNATIVE COURSES OF ACTION

13. Australian producers have the following options:
  - (a) Decline to join the Club.
  - (b) Join the Club and accept the suggested market share.
  - (c) Agree to participate in further producer meetings but indicate that a higher market share will be required by Australia in 1978 to 1980 before Australians agree to join the Club.

#### DISCUSSION OF ALTERNATIVES

14. Declining to join the Club will have the following consequences:
  - (a) Club cannot be formed.
  - (b) There will be immediate intensive competition for available markets by those now producing or able to make firm offers.
  - (c) Price is likely to decline.

- (d) WMC cannot join in market competition for another six months by which time much of the available market may have been taken up by others.
- (e) Alternatively, some purchasers may hold off until WMC is able to bid but presumably they would do so only in expectation of:
  - 1. A lower price from WMC; or
  - 2. Some other benefit (such as equity participation) which others are unable or unwilling to offer; or
  - 3. Possible because they wish to diversify sources of supply.
- 15. Because WMC is later than most others in establishing the physical extent and grade of its deposits, WMC would appear to benefit from joining the Club provided it is allocated a satisfactory share of the world market.
- 16. If this could be achieved, WMC would be protected during the period when others can bid and WMC cannot bid.
- 17. An adequate allocation of market share would also simplify the justification for starting operations as the market would be assured even before project feasibility is established.
- 18. There appears to be no disadvantage in belonging to the Club under these circumstances as the market allocation does not commit WMC to proceed if it does not wish to do so. Other producers would be only too willing to take up WMC market share.
- 19. If the price under Club conditions is higher than under free market conditions, then the minimum output necessary to justify commencing operations would be less, or alternatively, the profitability would be higher at the same output.
- 20. It may be suspected that the market availability figures used as the basis for discussions have been deliberately down-graded. However, it is intended that if the actual market is larger, all participants will benefit from the additional market in proportion to their agreed market percentage.
- 21. Australia should therefore bargain for the maximum percentage of the market which would help to offset any understatement of markets in the initial agreement.
- 22. Another aspect of the Producers' Club is that those joining at this time are not asked to commit themselves beyond 1980. Earliest WMC production could begin in 1976. Any Club commitments would therefore operate for only the first four years of the WMC project's operation and the agreement need not be continued if it is seen to operate unfairly.
- 23. WMC must consider two further factors:
  - (a) The desire of the Australian Government to establish orderly marketing; and
  - (b) WMC relationship with Urangesellschaft.



24. WMC should not get itself into a situation where it can be blamed for the break-down of the Producers' Club negotiations if such a break-down occurs.
25. WMC must also ensure that Urangesellschaft do not feel we have negotiated unfairly behind their back.

## CONCLUSIONS

26. The key question from the point of view of both Australian and WMC in deciding whether or not to join the Producers' Club is therefore, "what is the share of the market which Australia (or WMC) can expect under free market conditions?"
27. If the share obtainable from the Producers' Club is close to or not much below the expected free market share then Australia (and WMC) should join.
28. The determination of a fair market share requires establishment of the criteria on which such determination is to be based.
29. In the long run the criteria should be the reserve available to a given producer which can be worked profitably at a given market price. Initially, however, time enters into the calculation and an intending producer with very large reserve backing is in a weaker situation than another producer with smaller reserve backing but the ability to bid for markets early.
30. WMC must weigh the advantages of an early assured market allocation against the disadvantages of possible under-estimating the strength of its position. While the latter is certainly possible, the risk is limited because of the limitation on the duration of the agreement.
31. On balance, it appears to me that WMC should agree to participate in further discussions provided it is understood that the Australian market share between 1978 and 1980 is now offered is unsatisfactory and the Australians will insist on a higher share.
32. If the other producers agree to participate in the next meeting on the basis that the Australian allocation in 1978/1980 will be reviewed, Australian producers should spend the next ten days in working up the strongest possible justification for Australia to have an increased market share in those years.
33. It is fundamental to a "no teeth" producers' association such as is proposed that all participants feel that they have been dealt with as fairly as possible. Other producers would not benefit from any ill considered conclusions by the Australians as these would probably not be honoured. Other producers should therefore welcome the opportunity for a thorough discussion of the Australian case on its merits before pressing the Australians for a decision.'

WMC was represented in Johannesburg by myself, Hugh Clark, and Jim Munro.

I left Melbourne by Qantas via Perth and Mauritius for Johannesburg on 27 May 1972 and arrived on Sunday 28 May, staying in Tollman Towers. There was a meeting of the Australian representatives on that afternoon, ahead of the main meeting on Monday. John Proud, Chairman of Peko, representing the

Peko-EZ Ranger partnership, was the main Australian spokesman. He and I worked closely together.

At meetings on 29 and 30 May an informal understanding was reached regarding the output of various producers and countries. The Australian share was increased to 19%, which was comparable to Australia's then known resources of about 20% of world resources.

WMC was allocated the following tonnages:

1977	-	947 tons
1978	-	1349 tons
1979	-	1349 tons
1980	-	1349 tons

There would be three bodies administering the Producers' Club:

- Policy Committee
- Operating Committee
- Secretariat

The Policy Committee would meet infrequently. The six Australian companies (Peko Wallsend, EZ Industries, Noranda Australia, Queensland Mines, Mary Kathleen and Western Mining) would each have one representative, with John Proud as the Chairman. The Operating Committee would make decisions within its jurisdiction and submit recommendations to the Policy Committee. The Secretariat (to be established in Lisbon) would collect information and ensure that the Club rules were observed.

Companies would bid for contracts in turn.

A submission was made by John Proud on behalf of the Australian-owned producers to the Federal Government in August 1972 outlining the market situation, noting that the Australian Government had asked the Australian producers 'to come to an arrangement which will ensure orderly marketing' during the market surplus expected to last until the mid-1980s, and expressing concern that any new discoveries may not be able to be accommodated. The submission suggested that

The minimum position would be for the Federal Government to decide that it will not grant export permits for uranium to other than the previously named producers from already known deposits, until such time as the world market situation improves.

In the Northern Territory the Federal Government could also refuse to issue any further exploration licences until the market situation improves. The Commonwealth Government cannot prevent the issue of exploration tenements in the States, but would probably influence the States by taking this action.'

It was further suggested that

The main danger to the orderly marketing arrangements could arise from discoveries by large international companies who in many cases could not legally participate in orderly marketing arrangements even if they wished to do so. The Government may therefore consider placing restrictions on such companies exploring for uranium in Australia.

It would appear reasonable for the Government to decide that all future uranium finds in Australia should be under Australian control, ie at least a 51% equity interest must be held by Australians.

The Commonwealth Government could enforce such a policy by announcing that export permits for uranium will not be granted to any future projects with less than 51% Australian equity.

Overseas companies holding exploration areas before the new policy is effected could be encouraged to follow the example of Noranda Australia Limited and to plan for at least 50% Australian ownership for any finds that may be made on their areas.'

Late in 1972 the Minister for National Development, Reginald Swartz, approved six uranium export contracts totalling about 7000 tons of uranium oxide from Ranger, Nabarlek and Mary Kathleen, in addition to the 3800 tons from Mary Kathleen already approved in 1970 and 1971. The last contract was announced days before the Federal election on 2 December 1972, at which the Labor Party was elected to govern after 23 years of Liberal-Country Party Government. The new Minister for Minerals and Energy was R F X (Rex) Connor.

Connor was a visionary (some would say fanatic) who believed that Australia's natural resources were the key to its future, and that past governments and mining companies (particularly foreign owned companies) had performed poorly and squandered their opportunities. One of his famous statements was to call the industry leaders inept and naive 'hillbillies' for having sold minerals too cheaply, and for having designated long term contracts in US dollars which, Connor was certain, would depreciate substantially against the Australian dollar. He seemed to have a case because the mining boom had pushed the A\$:US\$ exchange rate to a high of 1.49 in 1972.

He set about correcting this, ably assisted by his equally formidable departmental head, Sir Lenox Hewitt, by constraining the activities of private industry including importantly the foreign companies, by closely supervising export contracts, and by endeavouring to establish government authorities to participate in and manage the industry on behalf of 'the people of Australia'. Tony Grey describes Sir Lenox as 'a black belt in bureaucratic infighting .... He ran his fiefdom with a hands-on grip that made the boa constrictor seem slack'. Connor's vision included a grid of natural gas pipelines across Australia and maximum upgrading of minerals in Australia.

Connor was convinced that energy resources were vital (his views appeared to be validated when the OPEC oil cartel was formed in 1973 and the oil price quintupled) and that uranium was an important element in this. He saw Australia gaining great international bargaining power by being able to supply energy to the developed countries which, as he saw it, had foolishly dissipated their energy resources. Connor predicted that the price of uranium would increase from US\$6 to US\$40 per pound in 1977, and US\$100 per pound in 1980. All principal energy resources were to be 100% Australian owned.

His policy therefore called for immediate inaction. He refused to approve further export contracts and began progressively to relinquish exploration licences in the Northern Territory. There was enough uranium in the Government's stockpile to honour all contracts to 1980, and under the *Atomic Energy Act* the Government had the authority to fulfil contracts if need be. In the coming sellers' market Australia would sell only enriched uranium, thus increasing its value fourfold. Foreign customers would be allowed to finance enrichment facilities through loans, but could not own equity.

The policy of 'masterly inaction' coincided with Prime Minister Whitlam's convening of a Royal Commission to examine Aboriginal land claims in the Northern Territory, during which the Government imposed a 'freeze' on the issue of new exploration licences and mining leases. Also, the proposal since 1965 to establish a National Park in the Alligator Rivers region was again actively pursued. Both issues provided a further justification for Connor's moratorium on uranium developments.

The reaction of the companies varied. John Proud of Peko-Wallsend had already on behalf of the Producers' Forum in August 1972 urged Connor's predecessor, Reginald Swartz, to introduce export and exploration licensing control. In September 1973 the Chairman of Pancontinental, Tony Grey, said Connor's policies were 'correct so far'. Queensland Mines, however, had no source of income and urgently wanted to develop Nabarlek.

On 8 November 1973 Doug Stewart wrote to Sir Lenox Hewitt:

In recent months a growing number of the non-Australian members of the Producers' group have expressed the belief that the Australian participants should not be entitled to a share of the world market until they are clearly able to perform.

At a meeting of the producers in London in October, 1973, the Australian group was faced with the choice of taking its turn in bidding for new contracts or forfeiting its entitlement and possibly, as a consequence, being reduced to a position of no influence amongst the world producers. Within the Australian group it was the responsibility of Western Mining Corporation to decide whether to bid or not.

We believe that it is important for intending Australian producers of uranium to remain credible and influential members of the world producers' group. We therefore decided to submit a bid, a copy of which is enclosed. ....

The uranium is to be delivered either from our deposit at Yeelirrie or from an alternative unspecified source. We believe that this meets the wish expressed in the Minister's letter to Mr Proud of 10th September, 1973, in that the uranium need not come from Australian deposits if the Minister does not approve.'

This caused an explosion by Sir Lenox in Canberra and I had to send a telex to say that Stewart acted with my agreement and I accepted full responsibility. In the end, our bid was not successful and the furore died down.

In 1973 the oil crisis struck and the price of uranium, which had been depressed since the mid-1950s, suddenly began to move and increased sixfold by mid-1976. Connor's predictions seemed to come true. The reason for the increase, however, was not a sudden boom in nuclear power generation but a change by the USAEC in its enrichment contracts which required the customers to make commitments for 18 years ahead into the future. The sudden demand was to build up the supply to back these commitments.

In August 1974 the Government agreed to underwrite a share issue by Mary Kathleen Uranium so that the company could recommission its mine without an increase in foreign ownership. The issue was a failure and the Government ended up with a 42% interest in Mary Kathleen.

Otherwise Connor remained unhurried until on 31 October 1974, hours ahead of the arrival of the Japanese Prime Minister to discuss bilateral trade, he announced that Australia would at last allow new export contracts. The Government, however, would be the sole marketing authority, with a 50% interest in any ventures resulting from discoveries by private companies. There would be no new exploration licences to private companies: the Government would carry out all exploration through the Australian Atomic Energy Commission (AAEC) which would also act as the Government's agent in the mining, treatment, and sale of uranium.

Ranger would be the first deposit to be developed in Northern Territory as there were no complications with foreign ownership, Aboriginal land rights, or the National Park. In a late night meeting in the Prime Minister's Lodge in Canberra on the night before the statement, Connor had browbeaten Peko-EZ

into a joint development with the Government, which would provide 72.5% of the estimated \$100 million development capital and have a half-interest in the project. The project would take three years to build. The companies agreed because otherwise they ran the risk of losing their investment, having some two weeks earlier been told that their exploration licence could only be converted into a mining lease at the Minister's discretion, and that they therefore had no rights to anything.

Connor declared that the Government was prepared to offer the same deal to the three other uranium companies in The Territory, after Queensland Mines had obtained the agreement of the aborigines and Noranda and Pancontinental had complied with the yet-to-be announced declaration of the Kakadu National Park and other government (including foreign investment) guidelines. All new contracts would be subject to the Government's assessment of their 'market prospects'.

Immediately after the announcement the Government, finally worried about the deterioration of the Australian economy and run-down in investment for which their policies were mainly responsible, began to solicit uranium contracts. Whitlam returned the Japanese Prime Minister's visit and went on to Europe, including France. Treasurer Jim Cairns visited Iran to discuss uranium sales. Relaxation of the 100% Australian ownership requirement for principal energy resources was hinted at by Whitlam, although Connor remained adamant.

Statements concerning the exploration and development of uranium deposits in the Northern Territory were released by the Minister for Minerals and Energy on 6 March and 15 April 1975. These statements outlined the progress made in establishing the new Exploration Division of the Australian Atomic Energy Commission, indicated the areas on which the Commission's initial field program will be concentrated and set out the conditions under which private companies with existing exploration licences will be permitted to continue uranium exploration in the Northern Territory. Areas covered by exploration licences will be progressively reduced and ultimately the Atomic Energy Commission will be responsible for all uranium exploration in the Northern Territory.

The Prime Minister also released a statement that included government guidelines for uranium exploration on 12 March 1975. Export licences will not be issued where there is exploration with foreign participation arranged after 31 October 1974 and the Australian Atomic Energy Commission will be the only exporter of uranium wherever found in Australia.

On 24 September 1975 the Prime Minister released a press statement on Foreign Investment Policy in Australia. It stated that 'the Government's policy objective is to seek full Australian ownership in the development of uranium deposits. However, in relation to foreign companies which have already discovered, or may in the future, discover uranium orebodies on exploration licences or equivalent titles granted up to the date of this statement, the Government will be prepared to discuss with those companies their participation in the development of those orebodies on fair and reasonable terms. The development of uranium orebodies discovered on exploration licences or equivalent titles granted after the date of this statement will be on the basis of 100% Australian ownership'.

The Government was now prepared to sell yellowcake to generate cash flow for the new projects, but enriching all uranium in Australia before export remained Connor's aim. He believed that Australia had access to centrifuge enrichment technology through AAEC and set about to raise \$4 billion to finance a Petroleum and Minerals Authority, the Pipelines Authority, and the enrichment project.

He endeavoured to do so clandestinely through a shady Middle Eastern entrepreneur called K hemlani, who did not perform. This, and concern by Cabinet about Connor's resources policy led to his dismissal in October 1975. The Whitlam Government was defeated in an election in November, after Governor-General John Kerr had dismissed Whitlam. Malcolm Fraser won a landslide victory.

At about this time an international anti-uranium movement began to build up, particularly in USA and Europe. Although the Labor Party platform included 'to stimulate the growth of nuclear technology, particularly by the earliest possible government initiative to establish nuclear power stations using enriched uranium in reactors of basically similar design', there were vocal opponents within the parliamentary wing of the Party, led by Moss Cass. At the ALP national conference in 1975 Connor had secured a majority in favour of uranium mining, but against opposition. In June, three State branches passed motions opposing Connor's policies. Victoria called for a ban on exports and New South Wales and South Australia wanted a moratorium until independent studies showed that nuclear power was safe.

In response, the Government initiated in July 1975 the *Ranger Uranium Environmental Enquiry* headed by Mr Justice Fox of the Supreme Court of ACT. Thus, uranium development was frozen once again.

The Fox Commission began public hearings in Sydney on 9 September 1975 and continued under Prime Minister Fraser. Meanwhile, the Deputy Prime Minister and Minister for National Resources J D (Doug) Anthony set about to distance Australia from Connor's policies.

He made a press statement on 2 February 1976. Uranium, like other minerals, would be a matter for private rather than government development. The AAEC would discontinue prospecting in the Northern Territory and withdraw from the Ranger project. The Government was giving urgent consideration to various aspects of uranium development, including mining, royalty rates, and marketing. Anthony accepted that uranium was a 'unique material for which governments recognise that special arrangements must be made'.

The Government endeavoured to sell its interest in Mary Kathleen, which had recommenced production in the first quarter of 1976, but could not find a buyer.

On 18 March Mr Justice Fox adjourned his enquiry while waiting information from the Government on its policies. In early April Fraser told Parliament that it had provided to Fox information he had requested. The Government wanted to export uranium subject to safeguards, but it would not make any decisions which would pre-empt the Fox Inquiry.

The Fox Enquiry released its first report on 28 October 1976. It concluded, among other things, that:

The hazards of mining and milling uranium, if those activities are properly regulated and controlled, are not such as to justify a decision not to develop Australian uranium mines.

The hazards involved in the ordinary operations of nuclear power reactors, if those operations are properly regulated and controlled, are not such as to justify a decision not to mine and sell Australian uranium.'

The Enquiry recommended that no decision be made regarding the uranium projects in the Northern Territory until the more detailed second part of the report had been issued and considered. The Government agreed, but approved the preparation of Environmental Impact Statements for projects outside the Northern Territory, such as Yeelirrie.

It also announced that Mary Kathleen, Ranger and Queensland Mines would be allowed to meet their contracts from the government stockpile and a policy towards new contracts would be developed. In May 1977 the Government began intensive consideration of all the issues while the Fox Commission still worked on their second report.

The second Fox report was issued on 25 May 1977. It recommended the development of legally enforceable obligations for those countries to whom exports went, sequential development of mines, and the establishment of marketing authorities to police the development.

Meanwhile, the Labor Party had reversed its long standing policy and become anti-uranium. Increasing public demonstrations against uranium mining organised by various activist groups were reflected by a rank and file movement within the Party, headed by Tom Uren. This gradually overwhelmed the pro-uranium Party leadership - Whitlam, Keating, Hayden and Hawke.

Peter Walsh, a Labor member of Federal Parliament and subsequently Minister for Minerals and Energy and Finance Minister in the Hawke Government describes the events in his *Confessions of a Failed Finance Minister* as follows:

'Some time after 1975, some people decided to reverse Labor's uranium policy. I do not know who actually made the decision, but suspect they were the same people who, in 1974, used to decide what the Left's position was on everything. The most voluble, as distinct from articulate, crusader for an anti-uranium policy was Tom Uren. All the Left's moral humbug and intimidatory inclinations were brought to bear. If you were not opposed to uranium mining and nuclear power, you were not fit to be in the Labor party. The fact that it was repudiating the Platform which it normally held to be sacrosanct did not worry the Left as it wound up its campaign for the 1977 Federal Conference. After the Conference adopted the anti-nuclear policy in 1977 the Left, which for two years had been publicly denouncing the then pro-nuclear policy, allowed no criticism even in private of the new anti-nuclear policy. Authoritarianism rather than consistency is the hallmark of the Left.'

The turning point came when the Labor Premier of South Australia, Don Dunstan, supported by Victorian Labor leader Clive Holding, successfully moved at the 1977 ALP National Conference in July that an ALP Government would ban uranium mining and export until the Party was satisfied that the problems of waste disposal and weapons proliferation had been solved. Contracts signed under a Coalition Government in the meantime would be repudiated. As Alice Cawse says in *Atomic Australia*, 'it was a stunning reversal of policy from the time less than three years earlier when Connor bought into the Ranger mine'. (Incidentally, Connor died in August 1977.)

The reversal split the Labor Party. Opinion polls suggested that some 60% of Labor voters supported uranium mining. Unions with workers in the industry were generally pro-mining, and even anti-uranium unions negotiated with Ranger partners for the right to cover workers on their project.

On 23 August 1977 the Government's decisions regarding its uranium policy were announced. Mining and export of Australia's uranium would proceed under strictly controlled conditions. The mining operations must conform with a mandatory *Code of Practice* which the Government would progressively prescribe. The requirements of the *Environment Protection Impact of Proposals Act 1974* must be complied with. The Government must be satisfied with the acceptability of the development on the environment and the Aboriginal people. Australia would export only to countries which accepted the safeguards and inspections of the International Atomic Energy Agency through either the NPT or a bilateral arrangement. The customer countries could not export to third countries or enrich Australia's uranium beyond 20% or reprocess spent fuel without Australia's prior consent.

Export would be subject to bilateral agreements between Australia and the customer countries, and the marketing would take place under government control and regulation.

Approval of individual projects would be considered on the advice of various bodies, including a

Uranium Advisory Council. The terms of reference, composition, and method of operation of these were to be decided.

Sir MacFarlane Burnet, the eminent Australian scientist and Nobel Prize winner, who had been strongly opposed to nuclear power and uranium development, changed his mind in August 1977. In a letter published in *The Age*, he said:

I believe that the majority of thoughtful people accept the inevitable for at least an interim period of large scale use of nuclear energy in most parts of the world. Things being as they are, nuclear power generators will be needed for the next twenty or perhaps fifty years in most of the developed countries, with Japan and Sweden in particular need.

With application of the best current techniques to ensure safety for the workers, environment protection, regard for Aboriginal land rights and an obligation to rehabilitate areas damaged by mining, one can accept the (Fox) Report's conclusion that there is no adequate reason why Australian uranium should not be mined and supplied at the world price to those countries that have elected to develop nuclear power and can be trusted.'

The Australian Council of Trade Unions (ACTU) biennial conference in September 1977 called upon the Government to hold within two months a national referendum on uranium. If a referendum was not held, ACTU would place a total ban on mining and exports, subject to endorsement by the rank and file. Instead of holding a referendum, Fraser called an early election and was returned in December 1977 with a large majority.

In 1978 the AAEC was abolished and replaced with The Australian Nuclear Science and Technology Organisation (ANSTO).

On 1 June 1978 Doug Anthony, Deputy Prime Minister and Minister for Trade and Resources, announced that Mary Kathleen and Ranger would be permitted to export uranium and outlined the procedures for Government control and regulation of uranium exports. An Uranium Export Advisory Authority would be formed, and the Minister would determine the 'terms and conditions' of future exports after obtaining its advice.

After protracted negotiations, agreements with the Aborigines regarding the Ranger and Nabarlek projects were finally signed at the end of 1978 and mining leases for the two projects were issued in early 1979. The Government's interest in Ranger was sold back to the other partners and a new company, Energy Resources of Australia in which Japanese, German and Swedish companies held a 25% interest, was formed to pursue the project.

An incident illustrating the extent of anti-uranium activity in Australia happened in 1978 in Kambalda, where a density gauge containing radioactive Cesium 137 was lost and found its way in scrap to a melting furnace in Singapore. The quite extraordinary story is told in the chapter on Kambalda in *THE SHINE OF NICKEL*.

In January 1979 the Premier of South Australia, Don Dunstan, issued a statement of conditions which needed to be satisfied before mining and export of uranium from South Australia would be approved:

1. Internationally approved and supervised techniques for the safe handling and safe disposal of the highly radioactive waste material which is an unavoidable incident in the course of generating power by the use of nuclear reactors
2. Enforceable international controls over the reprocessing of any such material (in cases where a



decision had been taken to reprocess the radioactive wastes as an alternative to disposing of them)

3. Effective international safeguards against the diversion of nuclear materials (specifically plutonium) and technology for non-peaceful purposes.

There were, however, still groups, including the Labor Party Left, which wanted a total and unconditional ban on uranium activity of any kind.

In January/February 1979 Don Dunstan, accompanied by a small party, visited the United Kingdom and the major European countries where uranium was used for power generation to learn at first hand about the safety and safeguarding developments. There was much speculation within and outside the Labor Party that this may be a prelude to a change of mind on the uranium issue. However, the Premier's conclusions were that while much progress had been made, particularly with the safe disposal of wastes, he was not satisfied that the present safeguards were adequate for the ban on exports to be lifted.

On 8 February Don Dunstan collapsed while addressing the House. His health deteriorated and he retired from public life later in the year, to be succeeded by Des Corcoran.

The Producers' Club, in which WMC was represented by Doug Stewart, had met periodically in various places, including Las Palmas. Tony Grey relates:

During the first half of 1975, Club members began to hear mysterious and foreboding rumblings from the US. In February RTZ received a subpoena from the American Federal Trade Commission which was looking into possible anti-trust violations. It was not taken seriously. Club members felt protected because their governments were deeply involved. ....

This comfort was shattered by a story that broke in a small Canadian newspaper, *The Kitchener Waterloo Record*, on 20 June 1975 with the lurid headlines "Uranium Price Hypes - Ottawa Aid Linked - US Probes Cartel of Producers". The article contained admissions from Canadian officials that a uranium cartel existed with their blessing, and disclosed that the redoubtable US Justice Department had begun an investigation into the possibility that the cartel's activities were damaging American markets. The Federal Trade Commission could be ignored but not the Justice Department. ....

By this time (September 1975) the Club members were thoroughly alarmed by the Justice Department's anti-trust investigation. While nothing would eliminate past activity and its legal consequences, it seemed prudent at least to cease any new cause for grievance. And so the decision was taken to disband the Club.

In October 1975, a meeting was called with only one item on the agenda. I did not attend since the membership status of Pancon was dubious. I had pushed vigorously to get us in during the early days so we would have a seat at the carving table. But the Australian members were not keen to welcome a competitor and made it difficult for us. With the roadblock set up by Rex Connor there did not seem to be much point in pressing the issue.

At the last meeting of the Club, at Toronto's Harbor Castle on the northern shore of Lake Ontario, Roy Wright sadly made a terse statement that RTZ would resign. Then suddenly a squad of Royal Canadian Mounted Police rushed into the room and shouted that there was a bomb under the floor. Everybody bolted out of the room and, as soon as they had recovered their senses, congregated in the bar. That was the end of the Club. Some believed that the bomb scare, which turned out to be a false alarm, was related to the Club but no evidence could

be found.'

Doug Stewart did not attend this meeting because he had to attend to urgent WMC business in Australia.

Again Tony Grey:

'At the same time the giant Westinghouse Corporation was forced to admit publicly what members of the Club had suspected for several months, that it had committed a commercial blunder of extraordinary proportions. Westinghouse was short 66 million pounds of uranium which it had committed to deliver to its customers.

Under the strategy composed by Chris De Salvo, Westinghouse declined to secure the uranium in advance, believing it could be acquired later at a lower price. Indeed, the building up of a short position exerted pressure in that direction. For a while the strategy seemed to work but when the balance of demand and supply turned around, the price climbed past the \$12 a pound at which they agreed to deliver. By October it was \$20 and soaring. If the company were to buy in the quantity required, it would suffer a bankrupting loss. Faced with ruin, it reneged on its obligations, provoking its utility customers into commencing lawsuits for breach of contract.'

Westinghouse in turn tried to blame the Producers' Club for its troubles and instigated a lawsuit. WMC and the other Australian companies involved were asked to provide evidence, but the Australian Government issued a ruling prohibiting the companies from complying. This protected us and we heard no more about it.

Meanwhile, uranium prices had increased dramatically from US\$4.00 in 1972 to US\$10.50 in 1974 to US\$26.00 by mid-1975 to US\$30.00 by the end of 1975 to US\$38.00-US\$40.00 per lb U<sub>3</sub>O<sub>8</sub> in the first quarter of 1976 for spot sales. This made the Producers' Club redundant and it was replaced by The Uranium Institute, a producers' organisation with provisions for Associate Membership by consumers and processors of uranium, incorporated in the United Kingdom in June 1975. Western Mining was a founding member. United States companies were not represented because of anti-trust concerns. It was explicitly stated that The Institute would in no way seek to influence uranium prices. Its aims were:

'to promote the development of the use of uranium for peaceful purposes, in order to assist in safeguarding the future availability of world energy supplies;

to conduct research and to do investigations concerning the world's uranium resources, requirements and the productive capacity of uranium producers;

to provide a forum for the exchange of information concerning the use of uranium for peaceful purposes, the world's requirements and resources of uranium, the productive capacity of uranium producers and all matters connected therewith;

to consult, for the purposes of its research or investigations, with Governments and other agencies, organisations and entities.'

The Australian Uranium Producers' Forum was terminated in 1978 and the Uranium Information Centre (UIC) established. UIC continues operating as at November 2003.

### **In The 1980s**

In 1980 WMC made a submission to the SA Senate Select Committee on Uranium. Also in 1980, the development of WMC's Yellirrie Project was approved by the Federal Government. This Project had

received very little opposition from any quarter. Foreign investment guidelines were waived for the Yeelirrie Project. Meanwhile, in 1975 a massive copper deposit containing uranium had been discovered by WMC at Roxby Downs in South Australia.

The Noranda-owned Koongarra deposit and Pancontinental's Jabiluka deposit in Northern Territory continued to face environmental, National Park, and Aboriginal hurdles.

The price of uranium had started to decline from its 1976 peak and supply was forecast to exceed demand by the mid-1980s. New discoveries in Canada added to the declining enthusiasm for uranium projects.

Under market pressure the Federal Government's policies were modified. The Australian ownership requirement was reduced from 75% to 50%. Because of 'practical difficulties' the policy no longer required that the uranium remain Australian-owned until converted into hexafluoride, and reprocessing of Australian uranium was approved. Conditional contracts could be signed with intending customers before bilateral agreements on safeguards had been concluded. The concept that Australia's uranium resources would put it in a very strong negotiating position gradually faded away.

The Labor Party's uranium policy issue was then brought to a head by the proposed Olympic Dam development.

In June 1982 Norm Foster, Labor member of the South Australian Parliament resigned from the Party, crossed the floor during the voting on the Roxby Downs indenture agreement, and thus ensured its passage and the commencement of the Olympic Dam Project (see *THE BURNISH OF COPPER*). This was against Labor platform at the time. John Bannon, the Leader of the Opposition, announced that an ALP Government would amend the Indenture Act only 'with the co-operation of the Joint Venturers'.

It has been subsequently claimed that Norm Foster's defection was finally brought about by vicious public vilification of him by his ALP colleagues, which was a carefully calculated move by behind-the-scenes ALP policymakers who wanted Olympic Dam to go ahead. It is further claimed that Premier David Tonkin made a mistake by re-submitting the Bill to the Legislative Council and that, instead, he should have called a snap poll which he would have won easily. I am glad I have never been involved in politics!

Whatever the truth of these claims, in early November 1982 South Australians elected a Labor Government with John Bannon as Premier, who immediately affirmed his Government's support of the Olympic Dam Project.

Some of the subsequent Ministers in a South Australian Labor Government, which became a strong supporter of the Olympic Dam Project (opened by the Labor Premier John Bannon in 1988), were (according to Peter Walsh) 'the most sanctimonious opponents of the 1982 Conference decision to approve it'.

At the 1982 Labor Party Conference, sensing the approaching opportunity for Labor to regain Federal Government, the 1977 policy was amended to allow production from three deposits (*The Three Mine Policy*), while opposing any other mines and nuclear power. Peter Walsh continues:

The uranium policy, no new mines and repudiation of existing contracts for the two operating mines, was no longer tenable. Hayden decided some time in June to take it on at the Conference. During a venomous debate Bob Hogg, with great moral courage and at considerable personal cost, introduced as the new policy a three-page amendment which,

though rambling and incoherent, got rid of the repudiation clause and allowed the Roxby Downs mine to go ahead - the three mines policy which survives still.'

As the Hawke Government came to power in 1983 the Ranger Mine was in full production, the Nabarlek deposit had been fully mined and treated and the mine was about to be decommissioned, Mary Kathleen had been closed since 1982 and was being rehabilitated. The proposals to mine Jabiluka and Koongarra were effectively on a hold and the Olympic Dam and the Yeelirrie deposits were contenders for early production.

The new Government withdrew approval for Yeelirrie and Jabiluka to negotiate sales contracts, but within a year allowed Ranger and Nabarlek to seek new contracts to ensure continuation of the operations. The options for waste disposal, nuclear safeguards, the effectiveness of bilateral and multilateral agreements and opportunities for Australia to advance the cause of non-proliferation 'through the conditions of its involvement in the nuclear fuel cycle' were referred to Australian Science and Technology Council. An enquiry was held, headed by Professor R O (Ralph) Slatyer. The report, tabled in Parliament before the 1984 ALP Conference, was optimistic concerning the potential of technology to deal with waste and Australia's ability to render nuclear safeguards more effective. Prime Minister Hawke strongly endorsed it.

Uranium was again a major issue at the 1984 Conference. Peter Walsh records:

The Left, which had vehemently described and denounced the 1982 decision as a pro-mining uranium policy, changed its mind, argued that the 1982 decision could only be honoured by blocking all exports and closing mines, and made known its intention to so move in 1984.'

The Conference reaffirmed the 1982 policy but sales of uranium to France were banned because of French nuclear testing in the Pacific. The Government bought the quarterly shipments intended for France and established a Government stockpile. The French, who were obligated to buy uranium at US\$30 a pound under the contracts, suffered the punishment bravely by buying on the spot market at US\$12 a pound! The ban was terminated during the financial crisis in 1986.

Production of uranium from WMC's Olympic Dam mine at Roxby Downs commenced in 1988 and exports in 1989. While there were many highly publicised demonstrations against Olympic Dam during the construction of the mine and the plant and at the time of the first shipments through the port of Adelaide, the noise quickly died down and production and export have continued uneventfully.

There was a push for further liberalisation at the 1988 ALP Conference, but the numbers were not there and the matter was referred to a special committee under Mr Henderson. WMC was the only approved producer who supported liberalisation because we thought the Three Mine Policy was wrong in principle.

In July 1988 I was told that the Labor Government would not support nuclear waste disposal in Australia but would support uranium enrichment. Premier Bannon was said to believe that there were two commercial groups 'raring to go'.

On 27 November 1988, at a Policy Convention of the SA branch of the ALP, a Left wing move to outlaw uranium exploration in SA except at Roxby Downs was ruled out of order. This followed a Convention decision on the previous day to re-admit Norm Foster to the Party.

On 4 September 1989 one of the former leading ALP figures in SA Parliament, Dr John Cornwall, claimed in his memoirs that the ALP's public opposition to the Olympic Dam Project in 1982 had been part of a plan to ensure that the project went ahead (see also *THE BURNISH OF COPPER*).

Dr Cornwall said the ALP's clandestine plan to secretly support the mine while publicly opposing it was engineered by senior ALP figures including the then Leader of Opposition, John Bannon. Dr Cornwall said he acted as *agent provocateur* with the support of Bannon, in a 'clever and cruel plan' to goad Norm Foster into voting with the Tonkin Liberal Government to allow the mine to be established, to 'get the Labor Opposition off the hook' following fears that opposition to the mine would lose ALP the upcoming election.

John Bannon denied anyone had goaded Foster into crossing the floor. He said the ALP was not opposed to the project but opposed the Bill because it believed not all questions on the project had been answered. Norm Foster said the claim was 'absolute rubbish'. I am not so sure - I think Cornwall's statement may well have been close to the truth.

### **In The 1990s**

On 14 March 1991 it was reported that the Labor Party's uranium committee was unanimous that the policy on uranium mining was illogical and unsatisfactory, although it was divided on what the policy should be.

Right and Centre Left members of the committee favoured a policy which would permit uranium mining, provided the most stringent conditions were met. The decision which projects should operate would be left to the Government and the mining companies. The Left minority wanted to phase out mining, allowing the fulfilment of present contracts but no new contracts or mines.

The Left was reported as objecting to a reference to 'moral' arguments against uranium mining, arguing that the paper should refer simply to economic and safety issues. This was interpreted as the Left being concerned that their attitude might be seen as emotional, rather than rational.

Later in the 1990s the uranium issue was replaced by other matters in the priorities of activists and Left wing politicians. They still opposed new uranium developments, but existing operations were allowed to continue virtually unhindered.

### **Nuclear Power Generation**

In 1999 17% of the world's electricity was generated by nuclear power stations. By 2003 some countries had a very high dependence on nuclear power - notably France (75% nuclear electricity), Belgium (more than 60%), and Sweden (almost 50/50 nuclear/hydro), while a lot of countries relied on nuclear for at least 20% of their electricity (Switzerland, Germany, Finland, Spain, England, Japan, South Korea, USA)). There was no nuclear power generation in Australia.

In Victoria the *Nuclear Activities (Prohibitions) Act 1983* and in New South Wales the *Uranium Mining and Nuclear Facilities (Prohibitions) Act 1986* prohibited the construction or operation of any nuclear reactor.

(As a matter of interest, in Sweden which has operated nuclear power stations safely for some time but where such stations are to be closed at some future time [which continues to recede into the future], the *Nuclear Activities Act* prescribes:

'No one may make construction drawings, estimate costs, order equipment or take other such preparatory measures for the purpose of erecting a nuclear power reactor in Sweden.' !)

## **Repository of Radioactive Wastes**

### **Types of Radioactive Waste:**

#### **LOW LEVEL WASTE (LLW)**

LLW is characterised by the low level and relatively short life of its radioactivity. International standards prescribe that it should be buried in defined types of containers in shallow trenches, ideally in an arid region which would reduce the risk of interaction with water. The risks are further reduced by the integrity of the containers and the use of an impervious lining to the trenches, which are backfilled and covered with a layer of earth and reinforcing material. After some years, with diminished radiation, the site is fenced off but needs no further surveillance.

#### **INTERMEDIATE LEVEL WASTE (ILW)**

Longer lived and more radioactive than LLW. Requires radiation shielding, but not cooling. International standards require underground disposal, generally hundreds of metres below surface in excavations in solid rock in geologically stable regions with no or stationary groundwater.

#### **HIGH LEVEL WASTE (HLW)**

Heavy radioactivity requiring intense radiation shielding and thermal cooling for some time, such as residue of chemical reprocessing of spent fuel. Unprocessed spent fuel is often included in this category.

### **An Australian Repository**

#### **FOR AUSTRALIAN WASTE**

Australia has no nuclear power stations and therefore does not produce HLW. Australian wastes are mostly of the low level variety, with a smaller amount in the ILW category.

Much of Australia's radioactive waste originates at the laboratories of ANSTO at Lucas Heights, from the HIFAR experimental reactor in the production of radioisotopes used in medicine and industry. Radioactive waste also originates in the use of radioactive sources in industry, science, and medicine. More than 440,000 nuclear medicine procedures using Lucas Heights isotopes were performed in 2000-01.

Western Australia established in the 1990s a small disposal site for LLW and intractable waste at Mount Walton East.

The need for a National Repository for Australian radioactive waste was agreed by Federal and State Governments in the early 1980s. The Federal Government in 1999 commenced investigations into establishing such a repository for low level wastes which were stored in over 100 locations in research institutions, hospitals, and government stores.

On 17 May 2000 the Minister for Industry, Science and Resources, Senator Nick Minchin, announced that the search had been narrowed down to five possible sites in the central-north region of South Australia between Woomera and Roxby Downs. The five sites were to be drilled and the results assessed before discussions with 'stakeholders'. One site would be selected by the end of 2000 as the preferred site which would then be subject to environmental assessment and licensing, providing a further opportunity for public comment.

Subsequently, in 2001 Senator Minchin announced that the preferred site for the national repository for low level radioactive waste (Site 52a at Evetts Field West within the Woomera Prohibited Area), and two alternative sites, were to undergo environmental assessment before deciding on the final site. The process was expected to take about a year and the earliest the repository could commence operations was during 2002.

In February 2003 it was reported that Science Minister, Peter McGauran had recommended the low level waste repository be located at Site 52a in the Woomera Prohibited Area, and that the Defence Department was 'violently' opposed to this. The repository to contain 6 million litres of waste was in a buffer zone less than 1 km from the Range E Target Area where missiles and weapons were routinely dropped for testing, and Defence considered the risk from a stray missile hitting the depository as unacceptably high.

In April 2003 Environment Minister David Kemp decided that the site was environmentally unsuitable. Sites 45a and 40a, on pastoral land owned by WMC and a grazier respectively east of Woomera Prohibited Area, were acceptable.

On 9 May 2003 Science Minister, Peter McGauran announced that the repository will be on Site 40a, 20 km east of Woomera.

The Minister said:

I have now selected Site 40a for the national repository because it has a number of advantages over Site 45a including:

- better security
- a less environmentally sensitive access route
- more saline water which has no pastoral use.

In addition, proposed space activities at Woomera may affect Site 45a but will not affect Site 40a.'

The Premier of South Australia said that the SA Government would oppose the establishment of the repository in South Australia with all means at its disposal.

#### FOR HIGH LEVEL WASTE

The possibility of establishing a repository of intermediate and high level radioactive wastes in Australia has been raised on several occasions, the arguments in favour being that Australia had stable geological formations where such repositories could be safely established, and that as an exporter of uranium Australia had a moral obligation to establish such a repository to ensure safe disposal of the wastes. There was also the view that such a repository would give Australia considerable additional influence in the world nuclear industry.

The 1984 ASTEC report commissioned by the Labor Government recommended not only proceeding with uranium mining but also becoming involved in other stages of the fuel cycle. It spoke of the 'particular need for international collaboration in developing waste management programs' and the desirability of enabling access to the highest quality geological sites for that purpose.

In 1988 the Synroc Study Group set up by the Government to study the commercial potential for Synroc in a global context, consisting of BHP, CSR, WMC and Peko-Wallsend and assisted by ANSTO and the

Australian National University Research School of Earth Sciences worked on a conceptual plan for a reprocessing facility in Australia, combined with a deep geological HLW disposal facility. The Synroc Study Group's published report in 1991 included the idea of a repository for HLW immobilised in Synroc, either in Australia or elsewhere. Since then, the USA has selected Synroc as a preferred form for the immobilisation of plutonium waste.

About the same time WMC toyed with the idea of being involved in establishing a repository near Roxby Downs (see *Disposal of Radioactive Waste*) but did not proceed beyond some test drilling.

Early in 1999 a group known as PANGAEA (70% British Nuclear Fuels Ltd of UK, NAGRA of Switzerland and EHL [Canada], the holding company of Golder Associates), established Pangea Resources Australia based in Perth, for the purpose of exploring the Australian global high-level radioactive waste repository concept. The intention was to widen the group to include partners from the host country and local industry.

The Pangea concept envisaged a dedicated port and rail link to an inland repository at a depth of 500 metres and a fleet of 35 dedicated purpose-built ships. The plan envisaged taking over 40 years 75,000 tonnes of spent fuel and high-level waste from reprocessing as well as some intermediate-level waste from decommissioning nuclear facilities, at the rate of 2000 to 3000 tonnes per annum. This rate equalled 20% of the spent fuel generated annually by commercial reactors around the world, or 25% of the world's civil waste inventory at the time it opens. The size was similar to the repository proposed for Yucca Mountain in Nevada.

The capital cost was estimated at A\$10 billion and the operating cost at A\$700 million per annum.

PANGAEA had identified Australia, southern Africa, Argentina and western China as having suitable geological formations, with Australia being favoured for economic and political reasons.

The Australian Government's reaction to the proposal was a reiteration by Senator Minchin of Australia's long standing bipartisan policy of not importing nuclear wastes and saying that he had no immediate intention of considering such a proposal. The Western Australian Parliament passed a Bill to make it illegal to dispose of foreign high-level waste in the State without parliamentary approval.

Pangea Resources Australia continued with geological investigations.

On 30 March 2001 the Federal Government released draft guidelines for an environmental assessment of the preferred site for a low-level nuclear waste dump north-west of Woomera, as well as two other sites east and north-east of town. Once the guidelines were finalised, the assessment was expected to be completed within a year and work on the dump could start in 2002.

On 23 January 2002 it was reported that British Nuclear Fuels had withdrawn from Pangea and the Australian project was being wound up. Offices in Melbourne and Perth had been closed.

Environmentalists and the Western Australian Labor Government claimed victory. The General





## ***THE FIND AT YEELIRRIE***

Western Mining announced on 12 January 1972 the discovery of uranium mineralisation over a 'very extensive area near Yeelirrie about 50 miles south-west of Wiluna, WA'. The announcement said that 'information available from a limited more closely tested area indicates a large tonnage mineable by open cut methods at a grade in the vicinity of 3 lbs U<sub>3</sub>O<sub>8</sub> (uranium oxide) per long ton.

The Melbourne *Herald* headlined the news in large black letters and Peter Cairns commented that 'Reading between the lines, and allowing for the company's usual understatement, it is fairly clear that (*the find*) is of considerable significance'.

### **The Discovery**

Dr E (Eric) Cameron, a geologist who had joined WMC in 1960, records in *Case Histories of Mineral Discoveries* that:

The discovery of Yeelirrie in mid-1971 was the successful culmination of a grass-roots exploration programme initiated in 1968 as part of Western Mining Corporation's programme of diversification from its historical position as a major gold producer. The object was simply to find an economic uranium deposit - with no constraints other than those normally taken as applied in the mineral search. There was therefore complete freedom in the selection of the exploration models to be applied and the areas to be considered, though the choice was inevitably influenced by both the nature of world occurrences and the local geology. One of the options available was the sandstone environment. Yeelirrie was the direct result of pursuing this line of investigation through three sequential, but quite distinct, stages. First a regional study, second establishing a case for exploring the inland drainage system of Western Australia, and finally an evaluation of the calcrete environment.'

In 1968 WMC set up an exploration base at Meekatharra from which it detected a strong radiometric anomaly at a location called Nowthanna. Later in 1970 Department of Mineral Resources (DMR) radiometric maps of the area were released and in addition to the Nowthanna anomaly they also identified others including one near Yeelirrie. It was not until August of 1970 that it was possible to drill the Nowthanna anomaly. Based on this knowledge, attention was then directed towards the anomaly at Yeelirrie where the field crew located the only known outcrop of canary yellow carnotite within a few metres of a major fence line on a pastoral property.

Cameron records that,

The anomaly was drilled out between June and September 1971 to a depth of 8 m, using a tractor-mounted auger rig, with holes spaced at approximately 265 m intervals on uncontrolled traverses 1,500 m apart. ... Subsequent testing using a combination of diamond and reverse-circulation drilling, with down holes gamma-logging supported by X-ray fluorescence (XRF) analysis, eventually proved that Yeelirrie was a deposit of world importance. ... In common with any discovery, Yeelirrie carried its own salutary lessons for the future, not least of which is the necessity of maintaining open eyes and an open mind. Perhaps the most surprising feature is that the mineralisation should have remained undetected for so long. In a region which has been extensively prospected for gold since the turn of the century, a major fence line across the pastoral property passes within a few metres of the outcrop which carried eye catching, canary-yellow carnotite.'

Although many geoscientists and support staff were involved, the principal leaders in the exploration effort were Dr Eric Cameron and the late J A (John) Haycraft who did a great deal of work in establishing the ore reserve.

### **The Deposit**

The Yeelirrie Station, established in 1925 by the Howard family, was purchased by WMC in 1972. The name Yeelirrie, chosen by the original owners, is understood to mean *break away country*.

The uranium orebody occurs in horizontal sediment layers filling an ancient river bed and extends over an area of about 9 km by 1 km with an average thickness of 3 m below an overburden of 2 m. The ore type is carnotite of varying grade, deposited from ground water circulating through the sediments.

Anomalous uranium values occur over an area 45 km long and some 3 km wide. The deposit located within this area contains about 34 million tonnes of ore with an average grade of 0.14%  $U_3O_8$ . It is estimated to contain approximately 47,000 tonnes of  $U_3O_8$  and some by-product  $V_2O_5$  (vanadium pentoxide).

### **Pilbara Joint Venture**

In 1969 Prince Casimir zu Sayn-Wittgenstein gave a dinner in Schlosshotel Kronberg near Frankfurt in honour of Mr & Mrs W M (Bill) Morgan who were visiting Germany. Prince Wittgenstein was Deputy Chairman of Metallgesellschaft, one of the shareholders in Urangesellschaft mbH (UG), which had been formed to obtain interests in and to procure uranium for German nuclear power stations. The other guests were Dr H R (Hans) Hampel, just appointed as Managing Director of UG, and Mrs Hampel.

WMC was intending to explore for uranium in the Pilbara and during the discussion Bill Morgan indicated that WMC was looking for partners to carry the exploration costs, in return for an assured supply of uranium from any discoveries. Dr Hampel said UG was interested and it was decided to pursue a joint venture.

On the following day Bill Morgan met in Bonn representatives of another company in the Rheinbraun group, Uranerzbergbau GmbH (UEBG), with similar aims. Under the impression that it was the same company he had spoken to the previous evening, he expressed his satisfaction with the earlier discussions.

Dr Hampel recalls:

'Dr Dieter Nottmeyer, UEBG's MD and a good business friend of mine, phoned me immediately. After a short discussion we agreed to propose to WMC a tripartite venture which was readily accepted by Mr Morgan'.

At WMC's Annual General Meeting in 1972 the Chairman reported that, following the discovery of Yeelirrie, a major exploration program was begun to cover similar geological environments elsewhere in WA. Widespread uranium mineralisation had been discovered at a number of localities and the Company held, wholly or under joint venture, 280 sq miles of exploration areas. The Pilbara Joint Venture was over a part of this area.

In the event, the search for uranium in the Pilbara was unsuccessful and the joint venture was terminated.

## Discussions With Urangesellschaft

Dr Ing Hans Rudolf Hampel and I had first met in 1970 and had quickly discovered that we had both studied at Bergakademie Clausthal - I quite a few years earlier than he, but it was nevertheless a bond between us. For the next nearly 20 years we worked closely together, initially while he was Managing Director of UG in Frankfurt and for the following 10 years while he was the Managing Director of Ruhrkohle Australia and lived in Sydney. On retirement in 1989 he became WMC representative in Frankfurt, until 1 May 1998.

To mark his retirement, I wrote an article in the German Institute of Mining and Metallurgy (GDBM) publication *Erzmetall*, which is enclosed at the end of this section.

Hans Hampel is a thorough gentleman and we have remained friends in retirement.

Following the Pilbara Joint Venture, there had been expressions of interest by both Western Mining and UG to widen the association between the two companies. On 19 October 1971 I wrote to Dr Hampel:

'For our part, we have found a uranium prospect which looks promising. Evaluation drilling and preliminary metallurgical investigations are in progress. At this stage it appears as if this prospect could be brought into production at an early date. Mr Woodall will bring details of this prospect with him to Frankfurt; should it be of interest to you we would welcome your own full inspection and evaluation of the prospect with a view to joining us in its development and exploitation.'

In a further letter on 23 November 1971 I added:

'It is evident that one of the critical aspects of any uranium project in the near future will be the marketing arrangements for the product. We believe that your Company may have access to markets. If our understanding is correct, it would be one of the main reasons for your Company joining us in Project X instead of others who have shown interest, such as Westinghouse, various Japanese organisations, etc. Any comments which you may have concerning possible marketing arrangements will be of great interest to us.'

Dr Hampel recalls:

'In 1972 (*it was actually in December 1971*) - quite separate from the Pilbara Joint Venture - I had the visit of Roy Woodall, at that time WMC's Chief Geologist, in my new office in Westendstrasse in Frankfurt. We both had meanwhile developed an excellent scientific and personal relationship. .... After more information about the newly discovered surface deposit at Yeelirrie in WA we expressed a firm interest in forming another joint venture.'

We were visited on 20 March 1972 by Dr Hampel and Dr Janecke, an UG geologist.

On 19 March, a Sunday, Hugh Clark and Doug McIntyre took the visitors to Healesville Sanctuary and a lunch at Kenloch Restaurant at Olinda. I was in Sydney and could not participate, but hosted a dinner on Monday evening. It was agreed to resume discussions about the middle of the year, when the assessment of the Yeelirrie deposit had proceeded further. Because foreign participation in uranium mining was limited to 25%, UG preferred for Uranerzbergbau not to participate in Yeelirrie and Doug Stewart (who knew the Rheinbraun people from his time with the State Electricity Commission of Victoria) was asked to inform them accordingly.

Formation of the Producers' Club before the next meeting with UG introduced a new element because it would limit UG's ability to market the product. Nevertheless, WMC felt that having UG as an equity partner was an advantage, although room should be left for some possible equity participation by the Japanese, French, English, etc.

UG was negotiating for an equity in Rossing. Dr Hampel indicated that if they could get a reasonable equity (16% was indicated) in Yeelirrie, they were willing to retire from Rossing and limit their overseas uranium exploration.

Dr Hampel returned at the end of June and, after discussions in WMC Office and a dinner at Longwood on 30 June, we continued our discussions on 1 July 1972 in a meeting room at the Portsea Hotel and walking along the beach at Portsea. Dr Hampel was accompanied by John Barr and on our side there were me, Hugh Clark and Doug Stewart. We were striving hard to establish good personal relationships with the UG people, and succeeded.

Further discussions were held in Melbourne in mid-September, and by me with Dr Hampel and Dr V on Kienlin of UG in Frankfurt on 30 November and 1 December.

Dr Hampel and his legal counsel, Dr Michael Dondorf were in Melbourne for further discussions on 11 and 12 December. A Heads of Agreement giving UG a 10% interest on payment of \$3 million was concluded on 15 December and I submitted this on 19 December for approval to Lloyd Bott, the Secretary of the Department of National Development.

Almost immediately thereafter there was a change of government in Canberra. The politics of minerals development, and particularly uranium, changed drastically as described under *For And Against Uranium In Australia*. The Heads of Agreement was re-submitted to Sir Lenox Hewitt, the new Secretary of the now Department of Minerals and Energy on 21 December 1972, but there was no response and the joint venture therefore could not proceed.

In mid-1973 we were informally advised by Sir Lenox Hewitt that the government would not approve UG having an equity in Yeelirrie. He advised me to 'discuss alternative arrangements' with UG. I pointed out to Sir Lenox that the inability of Australian producers to bid for contracts was a major embarrassment in the Producers' Club because it was now Australia's and, within Australia, WMC's turn. There was no response from him beyond asking, as always, to be informed of all the details, and in November Doug Stewart unsuccessfully attempted (with my agreement) to break the deadlock. (The outcome is described in *For And Against Uranium In Australia*).

On 21 December 1973 I was advised by Sir Lenox over the phone that an alternative arrangement with UG over Yeelirrie, where they would not have equity but would be able to take 10% of the production at cost in return for making a pre-payment of \$3 million, was not approved.

Whether by design or for other reasons, we rarely ever received written advice either from Sir Lenox or his Minister. Also, my submissions were always met by requests for more information, with silence after providing it.

A separate non-exclusive Agency Agreement for European uranium sales was later negotiated between WMC and UG with the full knowledge of the Secretary of the Department of Minerals and Energy.

On 27 September 1974 I wrote to R F X Connor after he had made a statement in Parliament regarding the development of uranium deposits in the Northern Territory. I pointed out that Yeelirrie was ready to commence sales negotiations and construction, and requested advice regarding the Government's policy regarding Yeelirrie. On 29 November we sent him further detailed information regarding our plans.

There was no response.

### **Preliminary Investigations**

Close pattern drilling had established an ore reserve which was announced in the half yearly report to 2 January 1973, and a trial slot was cut in the shallow orebody to obtain bulk samples for preliminary testing. However, little work other than metallurgical investigations and some design work was done between 1973 and 1975 because there had been a change in the Labor Party's attitude to uranium and the Government's policy had not been announced. The project was on care and maintenance. At the Annual General Meeting in 1974 the Chairman said that technical work had been completed to the stage where commercial discussion could begin as soon as the Government's policy was known.

In 1975 Mr Justice Fox was appointed to head an inquiry, specifically to enquire into the environmental aspects of the Ranger Uranium Project, but also to consider all aspects of uranium mining and milling in Australia and export of the uranium. The government changed in November 1975 and after that metallurgical and engineering planning recommenced, plans for a pilot plant were drawn up, and a thorough environmental impact study was initiated.

John Barr and I jointly submitted on 9 February 1976 the Joint Venture Heads of Agreement to the Treasurer, Phillip Lynch, for approval. We advised him that

There is an understanding between WMC and UG that the Heads of Agreement of December 1972 would require certain adjustment due to the lapse of time since its conclusion. The variations will be negotiated after the Government has approved the proposal and the Government informed when they are finalized.'

We were informally advised to request deferment of the final decision until after the Fox Inquiry had been concluded, and on 4 June 1976 I wrote to the Treasurer accordingly.

In April 1976 a WMC renounceable rights issue was announced to raise \$32 million, 'principally to provide funds for initial work on the Yeelirrie Uranium Project, including a large scale pilot plant to be established on site, in financing the Company's current minerals exploration and oil and gas exploration programmes, and to provide additional working capital'.

The Fox Inquiry released its first report on 28 October 1976. It concluded, among other things, that:

The hazards of mining and milling uranium, if those activities are properly regulated and controlled, are not such as to justify a decision not to develop Australian uranium mines.

The hazards involved in the ordinary operations of nuclear power reactors, if those operations are properly regulated and controlled, are not such as to justify a decision not to mine and sell Australian uranium.'

The Inquiry recommended that no decision be made regarding the uranium projects in the Northern Territory until the second part of the report had been issued and considered. The Government agreed, but approved the preparation of Environmental Impact Statements for projects outside the Northern Territory, such as Yeelirrie.

In early 1977 it was decided that the pilot plant would be better located near Kalgoorlie than at Yeelirrie, so that it may be subsequently used as a research facility for testing other ores.

On 25 August 1977 the Federal Government approved the mining and export of Australia's uranium subject to stringent controls and safeguards.

On 31 August 1977 S G Warburg & Co Ltd were appointed financial adviser for developing the Yeelirrie Uranium Project.

An *Environmental Impact Statement* for the Kalgoorlie Research Plant was submitted to the Western Australian and Federal governments late in 1977.

On 25 November 1977 John Barr and I wrote to the then Treasurer, John Howard, pointing out that Mr Justice Fox had now reported and again asking for approval in principle of the Heads of Agreement, with variations to be submitted for further approval after negotiations had been completed.

In June 1978 the Industrial Bank of Japan was appointed financial adviser in Japan for the Yeelirrie Project.

On 1 June 1978 the Rt Hon J D Anthony, Deputy Prime Minister and Minister for Trade and Resources released the Liberal Party's policy on export of uranium and indicated that approval of export from a particular project would be given after full consideration by the Government following completion of environmental procedures and compliances with the Government's foreign investment policy.

The Draft *Environmental Impact Statement* and Environmental Review and Management Programme was submitted to the two governments and released to the public on 11 July 1978. It set out details of the existing environment, the proposed operation and its environmental consequences. It also stated the economic benefits that would accrue to the Company and the nation as a result of the development. At the time the export income potential was forecast at US\$220 million per annum based on a uranium oxide price of US\$40 per pound.

## **The Joint Venture**

In the bullish outlook for uranium in 1978, Esso expressed an interest in joining in the Yeelirrie development. I first introduced this proposal to Dr Hampel at a meeting in London on 25 March 1978. The negotiations with Esso were conducted by Hugh Morgan and reached a rapid conclusion on 15 August 1978. Subject to governmental approvals, Yeelirrie would be developed by a joint venture. WMC would hold a 75% interest which was the minimum Australian equity required by government policy; Esso Exploration and Production Australia Inc (EEPA) would have 15% and UG 10%. The Joint Venture would be managed by a WMC subsidiary Yeelirrie Management Services Pty Ltd of which P E (Pat) Gray was appointed Manager.

The arrangement is worth recording in detail to show its complicated nature.

The development was to be in two stages:

### **Stage One**

Stage 1 would take approximately 3 years to complete and would encompass

- metallurgical test work including the construction and operation of a research plant in Kalgoorlie
- further detailed drilling to define the orebody
- testing for water
- a final feasibility study covering the preparation and costing of the complete project.

Stage 1 was expected to cost about \$21 million in 1978 dollars and would be funded in the proportions

10%	WMC
80%	EEPA
10%	UG

## **Stage Two**

The second stage was the development of the mine and construction of a treatment plant at Yeelirrie together with all associated facilities to produce approximately 2500 tonnes per annum of yellowcake ( $U_3O_8$ ) and 1000 tonnes per annum of vanadium pentoxide, including a town for 1000 people about 10 km from the mine. The estimated cost of Stage 2 was \$300 million in 1978 dollars, and the construction time three years.

## **Commitment to the Project**

The feasibility study would form the basis on which the parties would commit to develop the project.

If EEPA or UG did not commit to Stage 2, they must withdraw from the project. If WMC subsequently developed the project within 2 years, EEPA and UG Stage 1 expenditures were refundable out of future sales proceeds. Under certain conditions UG had the right to participate if the project proceeded at a future time.

If WMC did not commit to Stage 2, but EEPA was willing to proceed, then EEPA may finance the WMC proportion of capital and operating costs and keep the WMC share of production for the payment to WMC of A\$5 per pound escalated. This arrangement would continue until EEPA had recovered its contributions on behalf of WMC plus a penalty of 200% on capital costs, after which normal production sharing would commence.

If during the construction phase and up to the commencement of commercial production EEPA was able to prove that there would be a capital cost overrun in excess of 25% of the costs estimated in the feasibility study (after allowing for contingencies and cost inflation) then EEPA may withdraw from the project. In such event WMC may renegotiate with EEPA, or introduce a new party to dilute EEPA's equity interest or to purchase it. If it was not possible to do any of these things, the project may stop. UG had similar rights to EEPA to withdraw or dilute its equity.

## **Stage 2 - Financing**

WMC sought to minimise its financing risks and obligations in the project by requiring EEPA to accept financing obligations and risks disproportionate to their equity.

Hence, EEPA would be required to finance its own 15% share plus 35% (on behalf of WMC) of capital costs to develop the project to the production stage. In addition WMC may at its option require EEPA to finance all WMC share of cost overruns during construction and commissioning. 55/75 of any overrun financing advanced by EEPA on WMC's behalf was repayable by WMC to EEPA out of its share of sales proceeds after allowance was made for all operating costs, debt servicing, etc.

WMC expected to finance 40% of its share of pre-production capital costs through pre-payments on sales contracts to buyers. If it was not possible to do so on suitable terms, WMC could fall back on its right not to commit to Stage 2, and the provision for EEPA to provide WMC share of the finance described earlier. UG would finance its 10% share of development and overrun costs.



## **Commissioning**

After the plant started up and until it was commissioned or 2 years from start-up whichever was the earliest, WMC had the option to require EEPA to finance overrun costs related to operating expenses in excess of costs estimated in the feasibility study. Such advances by EEPA on behalf of WMC were repayable in the same manner as the repayment of cost overruns during construction.

## **Offtake Arrangements**

Each party would receive product in proportion to its equity. However WMC proposed to sell to EEPA 35% of project production out of its 75% share (up to a maximum of 28 million pounds). For this production EEPA would pay:

- (a) 35% of the estimated capital costs of the project. WMC would have no obligation to repay these funds.
- (b) All project operating costs attributable to this 35% production.
- (c) A\$5 per pound escalating from July 1978.
- (d) 50% of any real  $U_3O_8$  price increases realised by EEPA over July 1978 levels.

After 28 million pounds had been delivered WMC had no further obligation to EEPA, would be responsible for all relevant operating costs, and would dispose of the product as it wished.

WMC had undertaken to consult with UG with regard to a proportion of the sales of the remaining 40% of product and to keep UG informed of the terms under which it was negotiating such sales. UG had the right to present European customers to purchase on similar terms and conditions, and WMC may at its own discretion elect to sell to such customers. This arrangement substituted for the Agency Agreement of 1973.

## **Management**

A subsidiary of WMC would manage both Stage 1 and Stage 2. EEPA and UG may nominate a limited number of personnel for secondment to the project. EEPA and UG would also have the right to appoint observers or have personnel trained at the project.

## **Voting and Control**

During Stage 1 all changes from the agreed programme would require unanimous approval. All other matters would be under the control of WMC.

During construction and up until the end of the 5th year after the plant was commissioned an 86% majority (i.e. EEPA and WMC) would be required for all decisions. After that time most decisions would require a simple majority. An 86% majority would be required for substantial issues.

If during Stage 2 overruns occur as described above and WMC elected to exercise its option to have EEPA fund more than 50% of project overruns, then EEPA would have the right to exercise complete control over the project while advancing such funds. However, immediately overrun funding stopped, control reverted to the normal situation.

## UG Premium

A part of the new joint venture arrangement was the re-negotiation of the UG entry fee. This was done by me and Doug Stewart.

We met with Hans Hampel and Michael Dondorf in the Austral Development Office in London on 13 and 14 July 1978. There was a considerable difference of opinion on what the adjustments should be. There was an exchange of long telexes subsequent to the London meeting. The following note written on 2 August summarises the issues:

These notes refer to the exchange of telexes on the subject dated 20th July and 31st July.

The key issue is whether the 1972 Heads of Agreement is legally effective if we can't agree on suitable amendments.

I think that everyone, including UG's QC, agree that it can only be legally effective subject to Government approval. The difference of opinions is limited to whether the re-submission of the Agreement to the Government is conditional to amendments being agreed or not. We say it is, UG say it is not.

The issue can be put beyond doubt by determining whether the Government will approve the Agreement without amendments or not. In fact, there does not appear to be another way of settling the issues unless we can come to agreement with UG.

It therefore appears reasonable that in the absence of agreement we should inform the Government that we are unable to reach agreement on amendments and of the differing views held by WMC and UG. The Government can then decide whether it is prepared to approve the 1972 Heads of Agreement without amendments or not.

Another important factor in the dispute is that the changes sought by us (with the exception of the upgrading of the entrance fee) are essential if the project is to proceed. If UG does not agree to the required amendments, and if we are committed to the terms of 1972 Heads of Agreement, the consequence will be that the project will not proceed and probably that both WMC and UG will lose rights to the deposit as the State Government is bound to require development within a reasonable time. Thus, from the UG point of view it is not a matter of either agreeing to the amendments, or proceeding on the basis of the old agreement. In the latter case, UG would pay \$3 million for a 10% equity in the project which would not go ahead and which would probably lose its main asset, the mining rights, as a consequence. UG agreeing to the amendments is therefore not solely in WMC interests but in their own interests as well.

Regarding the various points made in UG telex of 31st July:

1. The 1972 Heads of Agreement terms for marketing and the agency agreement are affected by two aspects:
  - i. The need and the opportunity to raise finance for the project through pre-payments which did not exist previously; and
  - ii. Government requirement for sales of uranium only in countries covered by bi-lateral treaties.

In the present situation where the actions of the EEC have not made it possible to sign a

suitable bi-lateral treaty with Britain, we are at present not able to sell uranium in Europe. The UG rights under the 1972 agreement and the agency agreement are therefore negated by Government requirements until such bi-lateral treaties are signed.

There is no assurance whether and when suitable treaties will be signed and in the interests of the project we must be free to make alternative arrangements.

Again, this is not in the interests of WMC only but equally in the interests of UG because otherwise the project could not proceed and their interest in it would be valueless.

2. Regarding the disadvantage suffered by UG because of delays, we are not claiming to be compensated for disadvantages to us because of delays. All we are talking about is amending the entrance fee to be commensurate with the fee agreed in 1972. We have suffered many other disadvantages which we will not be compensated for by UG or anyone.

While we must upgrade the entrance fee to be able to defend it to our shareholders and ourselves and while we are asking UG to carry that cost<sup>1)</sup> we are not asking them to forego any of the substantial advantages which have accrued to them through project economics. It is not correct to say, as they do, that the price improvements have been offset by cost increases because price has increased six times while costs have increased three times. It is not possible for one to be offset by the other.

UG are furthermore gaining substantial advantages from our ability to negotiate the type of deal we have in mind which will enable the project to proceed. The 1972 Agreement stipulated that all decisions regarding the project were made by WMC and if we had not been able to negotiate this agreement they would be at present locked into a project which could not proceed.

I do not understand their reference to \$2.3 million and interest rates for prime company borrowings towards the end of their paragraph 2. They say that this will increase the entrance fee significantly compared to the earlier proposal but do not quote an amount.

3. It is patently incorrect to say that the project has not progressed very much because of the substantial cost of the pilot plant. The plain fact is that in 1972 we had not even got to the stage of recognising that we needed a pilot plant. Since then the project framework has been put together, the pilot plant has been designed, a great deal of further exploration and test work has been done, the environmental studies for the pilot plant and the main plant have been completed, and there are now expectations that substantial savings can be made in capital and operating costs.
4. UG keep being jealous about the very favourable deal which we are making with new party. This indicates that UG are getting a very much better deal than the new party.

The point that our deal with the new party could have progressed without their willingness to make amendments is idle because in that case they would have nothing of value either as explained previously.

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<sup>1</sup> They are really not 'carrying the cost' of changing the amount to compensate for changes in money values - it merely re-establishes the status quo.

In any case all these subsidiary arguments must turn on whether the 1972 Agreement is legally effective without an agreement between WMC and UG on amendments. If it is, then they have a strong bargaining situation and most of their points are valid. If it is not (as we maintained) then our arguments are valid, and they have nothing to bargain with.

We come back to the introductory situation which is that:

- (1) If we cannot agree on amendments then we must test whose view is correct.
- (2) The critical test is whether the Government will approve the 1972 Agreement in the knowledge that the parties cannot agree amendments because at present it is before them for approval on the basis that amendments will be agreed.
- (3) The only way to test the situation is to inform the Government that we cannot agree on amendments and the reasons for our inability to agree.'

My files and memory are silent on how the differences were eventually reconciled, but by 15 August 1978 it had been agreed that UG would pay the following for its 10% equity:

- A\$3.0 million payable on commitment to Stage 1 of the project
- A\$6.0 million payable on commitment to Stage 2 of the project.

It is significant that the good relationships with UG continued in spite of the difficulties about revising the entry fee.

On 12 December 1978 I wrote to the Treasurer, John Howard, seeking to explain that the proposed purchase by Esso of 35% of Yeelirrie production out of WMC's entitlement was not equity and did not infringe government guidelines.

In April 1979 I was telephoned by John Howard saying that the Government required proof that there was not an Australian company prepared to enter the project on the offtake conditions as negotiated with Esso. It was agreed that BHP, CSR and AMP should be approached. In early May I contacted Brian Loton of BHP, Ray Craig of AMP and Gordon Jackson of CSR. They all expressed surprise that the arrangement could be thought to be anything other than a commercial contract and all declined to consider replacing Esso.

## **Investigations and Planning**

On 1 November 1978 WMC announced having entered into an agreement with the Western Australian Government regarding the future development of the Yeelirrie uranium deposit. The agreement provided for a royalty to the State of 3.5% of the realised f o b value of the product.

Environmental approvals for the Kalgoorlie Research Plant to test the Yeelirrie ore and establish design criteria for the full size treatment plant and the Yeelirrie Project itself were given by both Federal and Western Australian governments in early 1979, followed by Federal Government approval for the Joint Venture in June 1979.

Also in 1979 it was announced that Kanematsu-Gosho had been appointed agents in Japan for selling 1000 tonnes per annum of the output, and that Esso and Urangesellschaft would take 1500 tonnes per annum.

Construction of the Kalgoorlie Research Plant commenced in June 1979 and trial mining and ground water investigations began. The research plant on the Broad Arrow Road about 15 km north of Kalgoorlie was commissioned in August 1980 and continued testing until February 1982. The plant was then placed on a care and maintenance basis and was later utilised for other metallurgical testing and for plasma arc smelting trials in 1985.

In February 1982 work commenced on the Final Feasibility Study. French Government-owned Electricité de France had agreed to purchase 40% of the product. Allied to this, Société Générale was to provide non-recourse project finance.

### **Esso Withdraws**

In May 1982 Esso exercised its right to withdraw from the joint venture on completion of Stage One, leaving WMC and Urangesellschaft to discuss restructuring of the venture. The joint press statement by WMC and Esso said Esso had been 'completely satisfied with Western Mining's management and technical direction of Stage One but it had become apparent that Esso's continued involvement was not economically viable under the terms of the joint venture agreement and Esso's current assessment of the world's uranium market outlook. However, Esso acknowledges that different assessments of market conditions can be made based on different customer situations and other factors'.

A part of the reason for Esso's withdrawal was probably that the major oil companies were becoming less enthusiastic about participating in minerals projects. Within a few years, all the oil majors had quit their minerals interests.

### **Ready to Go**

In June 1982 the ore reserve was estimated to contain 52,500 tonnes of  $U_3O_8$ .

All aspects of the project, including the conceptual design of the mine, treatment plant, township, details of water and electricity supplies, and the feasibility study were expected to be completed by August 1982. The project was to be ready to proceed on concluding sales contracts. The estimated capital cost of the proposed development was about \$525 million (in 1981 dollars).

The Final Feasibility Study was completed in September 1982. By early 1983 project financing was well advanced and customers to replace the 50% offtake by EEPA were being canvassed, using the 15% equity available as an inducement.

### **Permission Withdrawn**

In my Chairman's address to the Annual Meeting on 4 November 1983 I reported that although planning and feasibility investigations of the Yeelirrie Uranium Project were completed confirming that this project was amongst the best in the world in terms of expected cost of production, joint venturing discussions were interrupted in March when the newly elected Hawke Labor Government withdrew permission to pursue contracts pending a review of the Government's uranium policy. I noted that, 'The expenditure on the project during the 13 years since discovery has been \$35 million of which approximately \$10 million was incurred by the Company'.

In 1984 the Olympic Dam copper-uranium project was granted development status by the Federal Labor Government, but no advice was received regarding Yeelirrie then, or subsequently.

In 1989 there were hopes that a possible change of Government in Canberra might make it possible for the development of Yeelirrie to proceed and a secret agreement was made with Tokyo Electric Power

Company (TEPCO) to participate and purchase some of the yellowcake. The negotiations and events are described in *The Marketing of Uranium*. In the event, Labor remained in government in Canberra until 1996 and the attempt was unsuccessful.

Urangesellschaft remained a 10% owner until 25 October 1993 when WMC acquired UG's 10% interest for the sum of US\$940,000.

### **The Clean-Up**

In July 1997 the second WMC Environment Progress Report caused Yeelirrie to be remembered in a brief flurry in the media. The trial mining site was reported to be inadequately fenced and signposted and drums containing processed material and laboratory glassware, gloves etc were found at site. People had been swimming in the salt water pool which had formed in the trial pit. The authorities had been notified and the site had been cleaned and checked by Australian Radiation Laboratory.

Some of the comments were critical but others commended the Company for reporting the matter and the clean-up. The Wiluna Shire President said he swam in the pond with his two children. There was no danger. People have been living on top of uranium for decades and it has not killed anyone yet.'

### **Management**

Project Manager	F E (Pat) Gray	1972	-	June 1979
	I R (Ian) Letts	1979	-	Jan 1984

Thereafter the Project was placed on care and maintenance.

### **The Situation in April 1999**

In April 1999 the Yeelirrie Uranium Project remained on care and maintenance. There was sufficient noisy opposition to opening up another uranium mine that the 'three mine' policy remained de facto in force, although one of the three mines - Nabarlek - was mined out long ago.

WMC was meanwhile mining all the uranium it wished to sell as a co-product of the Olympic Dam mine. The world market was adequately supplied and there was no case, economic or otherwise, for WMC to want to proceed with Yeelirrie at present. The deposit, valued in WMC's accounts at only \$13 million, was ready for development, awaiting a change in circumstances.

There had been a proposal by the financial people that Yeelirrie should be written off because there were no plans to proceed. I disagreed with this because I thought placing no value on the property would enable the Government to resume the lease at no cost if another company wishing to develop it came forward.

### **Subsequent Events**

I believe the value of Yeelirrie in WMC's accounts was written down to zero in 2000.

**RETIREMENT OF GLOBAL MINER****DR. HANS RUDOLF HAMPEL**

On 1st May, 1998, Dr. Ing. Hans Rudolf Hampel retired as the Frankfurt Representative of WMC Ltd., a post he had held for nine years. I believe that it is fitting on this occasion to review his remarkable career in many parts of the world which, it has been suggested, entitles him to the designation of Global Miner.

Dr. Hampel was born on 14 September 1929 in Breslau, now Wrocław, in Silesia. After attending elementary and high school in Breslau he escaped to Recklinghausen during the winter of 1945, just before the Red Army surrounded the city.

While still at High School in Recklinghausen, he worked his first shift underground in 1948 and continued to work underground during school holidays to support his widowed mother - his father died in the war - and sister and brother. After graduating from High School in 1950 he obtained his Miner's Certificate (Hauerprüfung) and entered the Bergakademie Clausthal (now University of Clausthal) in 1951.

He began his global mining career during university holidays, working as a miner in Northern Sweden and Austria, as well as in the Ruhr, - he himself says, wherever the wages were highest!

He graduated as Diplom-Ingenieur, Fachrichtung Bergbau, with honours in 1955 and became Assistant Professor of Mining Engineering. In 1958 he became Doktor-Ingenieur (with honours) and left Clausthal to become the Manager of an iron ore mine in the Salzgitter area.

He remained in iron ore for the next six years, working as a Project Engineer, Exploration Engineer, and Assistant to the Chief Executive in Liberia, in Sumatra in Indonesia, in Germany, in the Philippines, and in Nigeria.

In 1964 he became Production Manager in various base metal and industrial minerals mines of Sachtleben AG, a Metallgesellschaft subsidiary, and in 1967 the Managing Director of a group of metal and industrial minerals mines within MG.

In 1968 Dr. Hampel was appointed Managing Director of Urangesellschaft mbH in Frankfurt, responsible for worldwide uranium exploration. His duties took him again all over the world - to North-West Territories of Canada, Namibia (previously a part of German south-west Africa), Niger, Brazil, Columbia, Saudi Arabia, and Australia. It was my good fortune to first meet him in this capacity in 1972, after WMC Ltd (then Western Mining Corporation) had discovered uranium in Western Australia and was looking for a partner for its development.

In 1981 Dr. Hampel became Managing Director of Ruhrkohle Australia Pty. Ltd., based in Sydney, and Director of Capcoal which developed into production and managed the appropriately named German Creek coking coal mine in the Bowen Basin in Queensland. This was both an open cut and an underground operation, the latter employing the most modern longwall techniques.

On retirement from Ruhrkohle in 1989 he became the Frankfurt Representative of WMC Ltd.

Dr. Hampel's colourful career has given him a wide experience well beyond the professional technical aspects of mining engineering, such as in general management, international negotiations, government

relations in various parts of the world, and in handling the media. English is his second mother language, and he is also fluent in French and Bahasa Indonesian. He estimates that during his working life he has spent five months in an aeroplane, flying around the world.

His nine years' residence in Australia and his many visits to Australia, both before and after living here, have given him a deep understanding of the Australian way of life. Some of his many Australian friends say (only half-jokingly) that he is really an Australian, pretending to be a German!

As the Frankfurt Representative of WMC Ltd. Dr. Hampel has had a wide range of responsibilities, from regular reporting on German and European developments, industry affairs, and outstanding events, to arranging visits and meetings for WMC executives, representing WMC at organisations such as GDMB, Deutsch-Australische Gesellschaft, Australien-Neuseeland Verein, Kerntechnische Gesellschaft, Deutsche Gesellschaft für Auswärtige Politik, etc., arranging lectures by WMC executives at German organisations and universities, lecturing himself about the Australian mining industry and WMC, arranging traineeships in Australia for German students, and so on. His very extensive knowledge of the industry and of WMC and his wide knowledge of and access to people in Germany have made his contribution particularly valuable to WMC. Many of us are privileged to consider him a personal friend, as well as a valued colleague.

The Board and management of WMC greatly appreciate Dr. Hampel's service to the Company, and thank him.

While Dr. Hampel has retired from his day-to-day duties with WMC as of 1st May, we at WMC look forward to maintaining contact with him on an informal basis in the future and wish him and Mrs. Hampel many healthy and happy years ahead.

Manager of Pangea said the changes were a restructure, and the Pangea proposal would continue to be advanced by 'a new association of interested parties'.





## **WONDERING ABOUT NABARLEK**

In July 1972 it became known to WMC that Queensland Mines Ltd were negotiating with various interests regarding a joint venture or perhaps a takeover of their Nabarlek deposit and the surrounding exploration area of about 4000 square miles. R (Roy) Woodall regarded some 1500 square miles of this to be of high interest. WMC made an offer for a farm-in to acquire a 75% interest in the exploration area.

Sir Alan Westerman, the Chairman of Australian Industries Development Corporation (AIDC), a government-owned bank, who was well informed through an observer on the Queensland Mines (QM) Board, suggested to me that WMC should make a further offer based on combining the WMC and QM Producers' Club quotas and basing the initial operation entirely on Nabarlek, deferring Yeelirrie.

The ore reserves were said to be 483,000 tons averaging 2.06%  $U_3O_8$ , containing 9960 tons  $U_3O_8$ . An alternative, more conservative estimate was 381,000 tons averaging 1.75%  $U_3O_8$ , containing 6699 tons  $U_3O_8$ .

K F (Keith) Parry was attending the Staff College at Mt Eliza and I asked him to absent himself one Friday and Saturday in September to assist with the evaluation of information obtained from QM. Others involved were S A (Stan) Eyers and R W (Bob) Bourne who had been with QM in Sydney getting the information, and Dick Stoeckert of Homestake who was hoping that his company may be able to market some of the uranium in USA.

On 21 September 1972 I wrote to QM proposing a 50:50 joint venture on payment by WMC of \$5 million. WMC would be the Manager and revenues and costs would be shared equally. WMC would contribute its market share up to and including 1980 but reserved the right to bring Yeelirrie into production by 1981.

The joint venture did not proceed.

In January 1974 there was a suggestion that WMC should make a takeover offer for QM. This, also, did not proceed. The company was eventually acquired by Pioneer International Ltd.

In January 1976 QM appointed Poseidon Ltd as Managers of the Nabarlek Project.

The Nabarlek 1 deposit was completely mined in 1979 and the ore stockpiled for milling, which started in 1980. By 1989 there was only a small amount of low grade ore left. Mining and treatment of the Nabarlek 2 deposit, held in a joint venture with Cogema Australia Pty Ltd, did not proceed because agreement could not be reached with the Northern Land Council.



## ***ENRICHMENT***

For a general description of the nuclear fuel cycle and uranium enrichment see *The Nuclear Fuel Cycle*.

### **The Australia - Japan Study**

At a Joint Ministerial Meeting in Tokyo in October 1973, the Minister for Minerals and Energy, R F X (Rex) Connor, had proposed to Japan a joint feasibility study for uranium enrichment in Australia. The Labor Government fell in November 1975 before much progress had been made.

During a visit to Japan in February 1976 the new Minister for National Resources, J D (Doug) Anthony, confirmed Australia's wish to proceed with the study. Several meetings were held over the next few years. The conclusion in 1979 was favourable.

The attraction was the substantial value added beyond the yellowcake stage, in approximate terms:

Concentration to yellowcake	-	approximately 20% of nuclear fuel element cost
Conversion of yellowcake into uranium hexafluoride	-	approximately 4%
Enrichment	-	approximately 33%
Fuel element manufacture	-	approximately 33%
Re-processing of spent nuclear fuel elements for re-use	-	approximately 10%

### **The Uranium Enrichment Study Group**

Australian industry had independently started to consider uranium enrichment in 1976. Four companies, BHP, CSR, Peko-Wallsend and WMC had established the Uranium Enrichment Study Group on the initiative and under the leadership of Sir William Tyree, Chairman of Tyree Industries. Initially this was essentially a discussion group, with BHP being conspicuous by its absence from meetings. They later became an active participant.

In January 1979 the Study Group proposed to the Minister for Trade and Resources, Doug Anthony, a detailed feasibility study and on 23 January 1979 the Minister announced that it would proceed to study the feasibility of a commercial uranium enrichment industry in Australia, primarily owned and operated by private industry. Agreements were signed with the Uranium Enrichment Corporation (URENCO) a company jointly owned by the British, Dutch and German Governments and pursuing uranium enrichment in these countries, to provide commercial information. An agreement already existed with the French Government to provide information on gaseous diffusion technology.

The South Australian Government decided to proceed in parallel and established its Uranium Enrichment Committee in November 1979.

## **The Uranium Enrichment Group of Australia**

On 2 January 1980 (an extraordinary date, considering Australian holiday habits!) the Commonwealth Government announced that the four companies (BHP, CSR, Peko-Wallsend, and WMC) had formed The Uranium Enrichment Group of Australia (UEGA) to carry out a pre-feasibility study to assess the commercial viability of an uranium enrichment industry in Australia. An interim report was expected before the end of 1980. The study would take 12-18 months to complete.

UEGA requested and obtained the assistance of The Australian Atomic Energy Commission (AAEC). The Management Committee of UEGA was chaired by Dr R G Ward of BHP (previously Deputy Chairman of AAEC), with Sir John Proud of Peko-Wallsend as Deputy Chairman. A P (Alan) Marks was given leave from AAEC to manage the Study Group.

The Interim Report submitted to the Government on 24 December 1980 was cautiously optimistic. The Final Report on 30 April 1981 recommended that the Group be authorised to undertake a full feasibility study at its own cost, and the Government approved on 4 June 1981.

A major effort resulted in the Feasibility Report in September 1982. It concluded that, subject to satisfactory terms, the centrifuge technology offered by URENCO-CENTEC be the basis of further study by UEGA as it offered economic superiority to alternative technologies, was technically and commercially proven, and was suitable for modular growth. Sites near Adelaide and Brisbane were recommended for further evaluation. A detailed engineering and feasibility study, expected to take two years, was recommended subject to a prior market study expected to take six months.

The Government asked UEGA to report back to it after the market study and commercial negotiations with URENCO-CENTEC had been completed and before the detailed engineering and feasibility study would proceed at the end of 1983.

The political situation changed dramatically with the Labor Party winning the federal election in March 1983. The new Government's policy included shutting down of the uranium enrichment program, and UEGA shelved its further studies. These had not been resumed at April 1999.

Had there been no change in Government, it is most likely that the project would have been shelved anyway because there was an excess of existing world enrichment capacity relative to foreseeable demand. Commercial considerations would have produced the same result.

## **Laser Enrichment Technology**

In 1993 WMC was approached by B S (Barry) Patterson, an ex-WMC staff member who had become a successful entrepreneur, in an endeavour to interest WMC in financing research and development of laser technology for uranium enrichment to which he had obtained rights. Alan Marks, who had joined WMC staff, reviewed the proposal and reported favourably on it. However, WMC had made a loss of \$21.2 million in 1991-92 and was not in a position to finance a business venture not directly related to its main businesses and in which it had no technological expertise.

Patterson founded Silex Uranium Systems Pty Ltd (Silex standing for Separation of Isotopes by Laser Excitation), and in November 1996 he was successful in selling exclusive rights to the commercial use of the process to USEC Inc, the leading US supplier of enriched uranium fuel for commercial power plants (USEC stands for United States Enrichment Corporation). It was created in the early 1990s as a government organisation and was privatised in July 1998. USEC operated the now only enrichment plant in the US, a gaseous diffusion plant in Paducah, Kentucky and was involved in the further developments of centrifuge technology. It was also the US Government's exclusive agent for the

*Megatons for Megawatts* program, a \$8 billion 20-year initiative of the US and Russian Governments to recycle 500 metric tons of bomb-grade material from dismantled Russian nuclear warheads into uranium fuel for nuclear power stations.

Subsequently, in January 2000 USEC announced that it had successfully completed the initial research on Silex technology and would begin funding further research to allow direct measurement of enrichment performance. However, in April 2003 USEC announced that it will end its funding for research and development of the Silex-based laser uranium enrichment process and focus its resources on demonstration and deployment of its American centrifuge enrichment technology.



## ***THE OLYMPIC GLOW***

WMC became a uranium producer in 1988 through the Olympic Dam Project, where uranium is a co-product with copper, Olympic Dam is in fact the largest known single uranium resource in the world. The discovery, development, and progress of the Olympic Dam operation is described under its principal product category in *THE BURNISH OF COPPER*, and the uranium issues relevant to Olympic Dam are also described there to make the story complete.

After the expansion in 1998 the uranium produced every year at Olympic Dam had an energy content equivalent to 60 million tonnes of black coal.





## ***ACQUISITION OF JABILUKA***

In May 1991 WMC was approached by Degussa AG of Germany, a 14% shareholder in Pancontinental, with the suggestion that WMC purchase (as a package)

50.1% of Jabiluka uranium deposit for US\$83 million  
50% of Thalanga/Lady Loretta copper deposits

and take up a placement of 10% (about 18.5 million) of Pancontinental shares, at the market price of A\$16.5 million.

Degussa was trying to divest itself from the Pancontinental investment.

The Board considered this at a meeting on 5 June 1991.

Pancontinental was known to be in negotiations with ERA (the North Broken Hill - Peko uranium subsidiary and operator of the nearby Ranger Mine) for ERA to purchase a part of Jabiluka and mill the Jabiluka ore in the Ranger Mill. Negotiations were known to be at an advanced stage. NBH - Peko was a 14.1% shareholder in Pancontinental.

The thought of controlling Jabiluka was attractive because, combined with Olympic Dam and Y eelirrie, Jabiluka would add to WMC's potential to become the world's largest uranium producer. There were, however, many complications besides Pancontinental's advanced negotiations with ERA and ERA's advantage of proximity to Jabiluka. WMC would have to outbid ERA, with the price likely to escalate.

While Jabiluka was probably the world's best undeveloped uranium deposit, there was likely to be a long delay in start-up because of political opposition, high royalties, and high capital costs. There was unlikely to be a return on the investment for at least 10 years.

On balance, the Board decided not to proceed.

### **Subsequent Events**

- ERA subsequently bought Jabiluka from Pancontinental
- ERA's plans to develop Jabiluka as an additional ore source for Ranger met with considerable opposition on environmental and aboriginal heritage grounds
- Rio Tinto took over North Ltd (previously North Broken Hill) in 2000 and thereby acquired a controlling shareholding in ERA
- It was reported in the press on 10 July 2003 that Rio and traditional landowners were about to sign an agreement under which no further development activity would be undertaken at Jabiluka.



## ***RADIOACTIVE RESTING PLACES***

For a general review of the disposal of radioactive waste in Australia, see *For And Against Uranium In Australia*.

On two occasions in the 1990s WMC considered becoming involved in the disposal of radioactive waste.

### **The Roxby Downs Proposal**

In November 1994 there was media publicity when the Federal Government was reported to have transported a truck load of low level radioactive soil from Sydney to Woomera for 'interim storage' on Crown land.

Hugh Morgan was reported to have said that WMC would consider providing a permanent storage site for low level radioactive waste at 'the Roxby Downs mine', provided it met with political and safety concerns, had Commonwealth and State government approval, and 'fitted in with Roxby Downs operations'.

The Premier of South Australia, Dean Brown, was reported as opposing any plans to establish a permanent radioactive material 'dump' in the State. The Opposition joined in this. There were no further developments.

### **The ANSTO Proposal**

In May 1995 the Board was informed that the Australian Nuclear Science & Technology Organisation (ANSTO), a Federal Government organisation and the successor to the Australian Atomic Energy Commission, had approached WMC with a proposal to form a consortium to bid for the cleanup and remediation of radioactive sites in the USA. ANSTO had also approached BHP and CRA and had retained Golder Associates, a well known Canadian consultancy firm.

Large quantities of radioactive waste were awaiting treatment and disposal at old weapons production sites across USA. Large sums of money had been already spent ineffectively, and the US Department of Energy intended to 'privatise' the cleanup.

Hanford in Washington State, a weapons production facility in the 1940s, was the first site to be tackled. There were 250 underground tanks and 240,000 tonnes of high level waste to be dealt with.

Tenders were being called for a demonstration phase. Two identical contracts were to be let: the first to retrieve a small quantity of the waste and pre-treat, separate and immobilise it. This was to be followed by a multi-billion dollar seven year program which was in turn to be followed by an 'application phase' for 30 years, worth US\$50 to 100 billion.

While ANSTO was small by world standards (some 830 staff, including 350 professionals at the Lucas Heights Research Laboratory), it owned the *Synroc* technology developed by Professor Ringwood at Australian National University. This technology enabled the treated high level waste to be immobilised in a smaller total volume than by any other known method, which was important because of space limitations at the planned repository at Yucca Mountain in Nevada.

The ANSTO proposal was to form a consortium of WMC, ANSTO and Golder Associates to prepare a

business plan by the end of 1995. BHP had been invited, but declined and CRA was still studying the proposal. The Government was aware of the proposal, and supportive.

It was pointed out to the Board that of all the possible sites around the world for permanent disposal of high level radioactive wastes, the geological conditions in northern South Australia in the Woomera-Roxby Downs region appeared very favourable. Roy Woodall agreed with this.

I had grave misgivings about WMC's participation because I could not see what we would be contributing to the venture. We had absolutely no experience in disposal of high level radioactive wastes, in dealing with the US Government, or in carrying out Government contracts. Because of its nature and size the project could not be handled without much input of time by WMC most senior management, at least in the initial phase. There were likely to be other, perhaps more experienced, tenderers and the effort could well be unsuccessful.

Such a proposal was certain to attract the focussed attention of the anti-nuclear activists and I questioned whether it was in the interests of WMC shareholders to pursue such a project. Also, it could not succeed without the wholehearted support of the Australian and South Australian governments, and it was extremely doubtful that there was the political will for that.

The management was insistent that they wanted to look into the possibility of such a project. The outside directors had serious doubts about the wisdom of pursuing this. After considerable discussion, it was agreed that some drilling should be undertaken to confirm or otherwise the geological basis for such a project. The drilling was 'to better understand the regional geology' and no mention was to be made or recorded of its possible role in locating a site for an ultimate radioactive depository.

Several holes were drilled. The project did not proceed further.

Judging by the difficulties of the subsequent proposal by the Pangea consortium to pursue a similar project somewhere in Australia (see *For And Against Uranium In Australia*), WMC was wise not to get involved in this highly politicised area which would have inevitably distracted the management and resulted in substantial expenditure of time and money, most likely for no benefit to shareholders.

## ***THE MARKETING OF URANIUM***

### **Yeelirrie**

When Yeelirrie was discovered, WMC immediately recognised the importance of marketing in bringing the deposit into production. The discovery was announced in January 1972 and already in April/May 1972 Sir Willis Connolly and Jim Munro visited potential customers in Japan, USA, and Europe. Sir Willis had been the Chairman of the State Electricity Commission of Victoria and the World Energy Conference and was well known and highly respected by the world power generation industry. The purpose of these visits was to introduce Western Mining Corporation, as yet unknown in the world energy scene, to the industry. I participated in some of the visits in Japan and Dr Brian Rotsey and Mr Geoff Clarke of the Australian Embassy were very helpful.

In May 1972 WMC became a member of the Uranium Producers' Club (see *For And Against Uranium In Australia*). Discussions regarding Urangesellschaft (UG) participation in Yeelirrie, initiated in December 1971, were also largely motivated by marketing considerations.

In August 1973 I visited Tokyo Electric Power Corporation (TEPCO), declaring our interest in commencing negotiations for Yeelirrie yellowcake 'as soon as the Government's policy had been clarified'. Contact was also made with other potential customers in Japan and an arrangement for non-exclusive marketing of Yeelirrie uranium in Europe was concluded with UG.

Towards the end of the Whitlam Government it became apparent that R F X Connor intended for the Government to control, and even carry out, the marketing of uranium. The change of government in November 1975 discontinued the efforts towards a government-owned marketing organisation. The Fraser Government, however, introduced detailed requirements regarding safeguards and imposed various other conditions. All uranium contracts had to be approved by the Government.

The Yeelirrie marketing after H M (Hugh) Morgan joined WMC in June 1976 was carried out mainly by I J (Ian) Duncan and J (Jim) Munro under his supervision. Ian had been appointed Business Manager, responsible to Hugh Morgan, in September 1977. Jim had some previous uranium experience with CRA at Rum Jungle.

In early 1978 I had a discussion regarding the Yeelirrie Project with Japanese Senator Tamaki while he visited Perth. On 10 May 1978 the Japanese Ambassador, Mr Okawara, called on me for a follow-up discussion. He said that there was a feeling in Japan that, because of the UG arrangement, the product from Yeelirrie would go to Europe and perhaps none would be available for Japan. I said that this was not the intention; we expected to sell in all the main markets - Europe, Japan and United States, in accordance with the demand in these areas. I thought Japan would wish to buy 20-25%.

Okawara noted that Australian Government policy permitted a 25% foreign equity in uranium projects. Would any of the 15% left after UG's 10% be available for Japan? I said that we were hoping to tie the equity arrangements to finance for the project and therefore could not predict what the outcome would be.

In August 1978 Esso entered the Joint Venture to take up a 15% interest, with U/G 10% and WMC 75%. As a part of the arrangement, Esso was to buy in addition to its 15% share of the production a further 35% out of WMC's 75%. For the remaining 40% of its share, WMC was negotiating for its sale to EdF (Electricité de France). Related arrangements with the French Government owned bank Societé Generale were to provide for project financing the balance of WMC's Yeelirrie development costs.

However, in May 1982 Esso exercised its right to withdraw from the project. (For a detailed account of the Esso involvement, see *The Find At Yeelirrie*.)

We were trying to re-package the project when in March 1983 the Hawke Government withdrew the permission for Yeelirrie to negotiate sales contracts, in effect withdrawing permission to develop the project. The uranium marketing effort then became focussed on Olympic Dam, which was approaching the construction stage.

## **TEPCO Negotiations**

By 1989 it looked likely that there might be before long a change of Government in Canberra. If so, this might also mean a change in the uranium policy and Yeelirrie might again receive development approval.

In the course of my Australia-Japan Business Co-operation Committee activities I had become friendly with the President of TEPCO, Mr Gaishi Hiraiwa. A TEPCO purchasing executive, Mr Samejima, suggested to Hugh Morgan, who met him at The Uranium Institute, that we should approach TEPCO for a substantial long term contract, with the sweetener of an equity in the Yeelirrie Project. This had to be done very confidentially because the approval to negotiate sales contracts had been withdrawn, and the initial discussions were on a strictly need-to-know basis on both sides. Hugh Morgan and I visited Mr Hiraiwa, with Mr Samejima present, without even telling Ted Weatherstone. Ted inevitably found out about this and was somewhat upset; I had to tell him that his exclusion was no reflection on him, and that Olympic Dam Marketing also did not know about it.

To ensure security, in June 1989 Hugh Morgan and K R (Kym) Saville met with Samejima in Singapore. I am indebted to Kym for much of the following recollection of events.

The Singapore meeting was followed by another strictly restricted meeting in January 1990 in the ANA Hotel at Narita Airport. Samejima led the negotiations at all times, but at subsequent meetings in Tokyo in July 1990, October 1990 and December 1990 others became involved - Baba, Usani and Kondo for TEPCO and Mike Rowe of AMRAS for WMC. An updated feasibility study for Yeelirrie, prepared under the leadership of I R (Ian) Letts, was presented to TEPCO about May 1991 and this was followed by the signing of the agreement in October 1991.

TEPCO was to hold a 12½% interest in the Yeelirrie Joint Venture but would take 50% of the production of 1100 tonnes per annum U<sub>3</sub>O<sub>8</sub> (12½% as its joint venture share and 37½% under long term contract from WMC). An increase in the production rate above 1100 tpa required unanimous approval of all joint venturers. The agreement was subject to a Feasibility Study demonstrating economic feasibility and reinstatement of the Federal Government's approval of the project before 1 July 1995.

Following the TEPCO agreement, it was hoped to make a similar arrangement with one (or more) of the other large consumers. In preparation for this, Urangesellschaft's 10% equity was bought back in October 1993 and approaches were made to the main candidate, Electricité de France. Kansai Electric was also viewed as a possibility.

However, the Coalition lost the 1993 'unlosable' election, there was no change in uranium policy and Yeelirrie did not go ahead. Hiraiwa retired and was succeeded by Mr Shoh Nasu. All we received from TEPCO at the time was a token contract for 100 tonnes of yellowcake a year from Olympic Dam. Later, TEPCO became a large customer.

## Olympic Dam

Before committing to bring the Olympic Dam Project into production, it was hoped to have contracts for all the yellowcake production. A joint marketing company, Olympic Dam Marketing Pty Ltd (ODM), (WMC 51% BP 49%), was formed on 28 May 1985, registered in South Australia but based in Melbourne and managed by WMC. Ian Duncan became Managing Director and General Manager, Jim Squire, based in London, represented BP. Another BP Officer involved was Miles Rotherham. Ian Duncan recalls (in *Marketing in WMC - With Particular Reference to Olympic Dam*, see Appendix XIII):

The marketing of uranium needs to take into account that the product from the mine/mill is an impure mixture of uranium oxides, generally referred to as  $U_3O_8$ . The product can therefore vary as to the quantity of uranium contained in any shipment of concentrate. The product is often referred to as 'yellow cake' although in most cases it has been treated further to drive off moisture and ammonia (calcined) and is in the form of a dry dense grey granule. It must be technically acceptable for the next step in the processing train for uranium fuel, that of chemical conversion to a pure uranium hexafluoride. The value of the product is based on the uranium content of the concentrate and not on the weight of the concentrate. The  $U_3O_8$  is packed into 400 litre drums and labelled to show its source, radioactivity and ownership. The product leaving the project is securely packed into standard shipping containers of approximately 20 tonnes gross weight and is delivered to a uranium conversion service nominated by the buyer, at which point title is transferred to the buyer and payment is made.

The marketing of OD uranium was strictly to civil nuclear electricity generating companies and was monitored by national and international authorities. Sales could only be made to companies in countries having Bilateral Safeguards Agreements with Australia and additionally, having full scope safeguards under agreement with the International Atomic Energy Agency, a United Nations associate organisation situated in Vienna. For European utilities there is also the necessity for European Commission (Brussels) oversight. The Australian Government granted export approval only if such safeguards were in place and additionally if minimum pricing was obtained and the project continued to meet environmental requirements. During the early life of OD, the Australian Government had a policy for the export of minerals that included a minimum floor price. This caused some concern to potential buyers but did give a price reference for ODM, without which lower revenues would probably have been obtained. History shows that uranium prices declined from the early 1980s to 2000 due to inventory liquidation, over-supply, lower demand than earlier estimated and ultimately a return of military related material to the civil market. There has been some recovery to the spot price over the last two years and the gap between long-term and spot has narrowed.

The grandfather contracts were an essential element to the financial underwriting of the development of OD and its continued expansion. Because the original uranium pricing was higher than the spot market price, OD shipments have maintained a price premium since the beginning of production. As there is no formal long-term world market for uranium, the price obtained in each contract is a matter of negotiation with perhaps an annual variation to be agreed. More recently the spot market price can be one of the inputs into the price determination formula.

As the project matured and with a re-arrangement of the general management, James Eggs and Chris Lewis joined ODM, bringing with them experience in the marketing of metals, uranium and other energy commodities. Duncan became General Manager Olympic Dam Pty Ltd in April 1988 at which time Eggs headed up the marketing effort, reporting to Duncan.



Project and marketing management was consolidated in Adelaide, South Australia. Eggins continues to manage the marketing of all OD production.

Most of the grandfather contracts remain effective, 14 years after start up. The original buyers of OD uranium were utilities in Sweden, United Kingdom, Belgium, Japan and South Korea. As the project expanded, ODM added utilities in Finland, United States, Canada and France. Marketing efforts to utilities in Germany and Switzerland were unsuccessful due to those utilities being over-supplied from existing contracts and a contraction of their needs.

An element of the successful marketing of both uranium and copper was that we sought buyers that had similar requirements to ourselves. They invariably were large organisations that required a contract with one of the world's larger resources, as part of their policy of diversified supply. They also wished to be associated with a project that was likely to expand in the future, that had income from more than one product and was therefore buffered against a downturn as can happen with one-product companies.'

One of the early tasks was to establish our credibility with the customers, and I was asked to join Ian in 'showing the flag' in a number of visits with prospective customers in Europe. We did so in August 1985 in Germany (Hamburg) and Switzerland (Zurich and Olten) and in October in Sweden (Stockholm) and Finland (Helsinki). Also in October 1985, Ian and I had dinner with prospective UK uranium customers at the Savoy Hotel in London.

Kym Saville recalls that the original buyers were called Founding Fathers:

The idea was that the Founding Fathers would have the first right to additional product from subsequent expansions, provided they signed up before project commitment. This proved impossible as no-one would take us seriously until we committed (on 7 December 1985, you will no doubt recall). After that, we signed up two uranium customers (for about 30% of the initial planned uranium production) and four copper customers (for 80% of the initial planned copper production) during the course of 1986. I think these were the true Founding Fathers: **uranium** Swedish State Power Board, Central Electricity generating Board (UK); **copper** BICC (UK), Norddeutsche Affinerie (Germany), Huettenwerke Kaiser (Germany), SGM (Belgium).

In 1987 we sold the remaining 20% of the copper to two Australian customers and Korea Electric signed up for some uranium. Two Japanese utilities (Kansai and Kyushu) came on board during 1988 and Tepco followed in 1989. The Belgian utility (Synatom) was not an original buyer. Perhaps Ian is confusing them with the SGM copper contract. In fact, I think the next two contracts we signed up (in early 1990) were to US customers. Customers in Finland (1991) and Canada (1992, I think) came later.

*(In USA) .... we appointed an agent there (Bob Rich) quite early in the joint marketing days and started to tender on number of contract proposals almost immediately after project commencement. The problem was that the US utilities all wanted to buy at no more than the spot price (because they had difficulty justifying a higher price to their price regulators) and we were unable to bid on a spot price basis until the floor price regime started to be loosened up in the late 1980s. The US market was also quite different to other countries. Most utilities only wanted one or two year contracts, so the "relationship" and the need to press the flesh and get known was far less important than price.'*

Duncan continues:

For the sale of uranium ODM established representatives in Japan, Europe and the United States. Further, in Japan an agent was also appointed for the sales of uranium. For copper sales in Europe and Japan, the same representatives were also used. The marketing team under the management of James Eggins remains small with just three ODM people and three overseas representatives handling copper and uranium sales, backed up by an office of nine people covering safeguards, transport, warehousing and accounting. From the commencement of production in 1988, ODM has made sales of copper, uranium, gold and silver to the total value of A\$6,200,000,000 (A\$6.2 bn) without incurring any bad debt or loss.

ODM appointed agents and representatives as follows:

- Initially ODM appointed Kanematsu Gosho in Japan as its uranium sales agent (Gosho had represented Japanese iron ore buyers in dealings with the GOJV). In 1995 the Kanematsu agency was terminated, as it became clear that their senior management would not be suitable for the future expanded Japanese off-take. Mitsui and Company Limited replaced them.
- ODM (as with WMC) is also represented in Japan by AMRAS (Weatherstone, Virili, Rowe). This small organisation gives each of the WMC divisions an insight into Japanese commerce, language and political reality. Without this advice, ODM would be solely in the hands of the agent.

(Kym Saville elaborates:

'... the Japanese agent of the foreign supplier (invariably a large Japanese trading company) is paid by the supplier, but is primarily concerned with protecting the interests of the Japanese customer. Invariably we would first have to negotiate with our agent, who had always first talked to the customer to see what was required or desired, and then go along and be beaten down further in direct discussion with the customer. More often than not, the agent's advice to his supplier client as to what should be done corresponded with what the Japanese customer wanted to be done! The foreign supplier always had to assume that anything communicated to the agent, even in the strictest confidence, would as a matter of course be passed on to the Japanese customer.'

*(Kym is right. I would add that this known lack of confidentiality was at times useful in passing informal messages to the Japanese customer in a way in which there would be no embarrassment or loss of face.)*

- Initially BP Minerals (Squire, Rotherham), being London based, acted more intimately with the European market for copper and uranium until their withdrawal in 1993. On their departure ODM appointed Miles Rotherham as its London based representative for copper and uranium sales in Europe.
- Bob Rich, based in Massachusetts USA, was appointed as ODM's representative for uranium in North America.
- Alex Suvoltos was appointed ODM's representative in Korea.
- Agents for copper sales were also appointed in South East Asia and Taiwan.'

Kym Saville:

'... we also appointed an agent in Korea in early 1987. His name was Kang and he was well connected with senior Korea Electric officials. Subsequently (circa 1989) many of these officials were caught in bribery and other scandals so his connection became less helpful and I imagine that's when he was replaced by Alex Suvoltos.

.. it is probably worth mentioning that we also obtained considerable logistical help (and sometimes hindrance!) from the BP Far East officials in Japan and Korea.'

In April 1988, with production about to commence, Ian Duncan was appointed General Manager of the Olympic Dam Operation and James Eggins, who had joined the marketing team, became the Head of Olympic Dam Marketing, reporting to Duncan. Chris Lewis had joined the marketing staff.

Senior representatives of uranium customers were honoured guests at the official opening of the Olympic Dam Project on 5 November 1988. After the lunch following the opening ceremony, my wife Saima and I, together with Ian Duncan, accompanied a group of uranium customers (mainly Japanese) in chartered aircraft to Ayers Rock (now called Uluru) where we stayed overnight at the Sheraton Yulara Resort, travelled around the Rock by bus and attended a champagne and crayfish supper (arranged by Ian) to view the Rock at dusk.

ODM has appointed various representatives and agents for uranium (and copper) sales in Japan, Europe, USA, Korea, South East Asia, and Taiwan. The initial agents for uranium, Kanematsu Goshu, were replaced by Mitsui in 1995 because Mitsui was considered to have a better 'entree' with major customers such as TEPCO. This was naturally a shock to Kanematsu and they tried to appeal to me when I was visiting Japan at about that time. It was inappropriate for me to become involved because I was no longer an executive, and I managed to avoid meeting them because I was in Tokyo only for a very short time.

With the Olympic Dam Operation and ODM becoming 100% owned by WMC on 1 April 1993, the management of ODM was transferred to Adelaide.

In 1993 WMC commissioned NUEXCO (Nuclear Exchange Corporation) to report on the market for uranium until 2005.

The market was weak at the time, and expected to remain weak. Electric power stations were essentially the only end users of uranium. The US Government was likely to reduce their inventory of weapons grade material as it was purchasing highly enriched Russian uranium. Utilities may reduce inventory.

The low prices were thought to attract some producers to meet commitments by buying on the market, instead of producing. Review of nuclear power programs in the United States and elsewhere following the 1986 Chernobyl accident, plant deferrals and cancellations, and past uranium supply commitments in support of Department of Energy enrichment feed requirements had resulted in accumulation of large inventories.

The NUEXCO Predictions in 1993 are shown on the attached graphs.

At the end of the Bush administration and the beginning of the Clinton administration in 1992 a 'swords to ploughshares' agreement was concluded between USA and Russia. A US Government enterprise called the United States Enrichment Corporation (USEC) would buy Russian uranium from destroyed nuclear warheads and bring it to the United States, de-enrich it so it could no longer be used in weapons and be suitable for use in nuclear power stations.

This was opposed by US uranium producers under fair trade laws. The USEC was privatised and applied for substantial subsidies to continue with the import of Russian uranium.

In April 1997 WMC concluded a contract to supply TEPCO with 907 tonnes per annum of uranium oxide. This was the biggest single contract for Olympic Dam uranium.

In 2003 WMC had long term contracts for uranium with utilities in Sweden, Finland, Belgium, France, United Kingdom, Spain, South Korea, Japan, Canada, and the United States. Worldwide, only about a half of the annual consumption came from current production. The other half came from inventories and diluted military material.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**BUSINESSES AT APRIL 1999**

**VOLUME FOUR**

***THE WHITENESS OF TALC***

***THE WHITENESS OF TALC*****CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>371</b>
<b>White Rock At Three Springs</b>	<b>375</b>
Talc Mining At Three Springs, WA	
<b>Into Europe</b>	<b>381</b>
Milling In Amsterdam & Marketing	
<b>Further to Finland</b>	<b>385</b>
Half-share In Finnminerals OY	
<b>To Mondo And Back</b>	<b>387</b>
Mondo Minerals OY & Plüss Stauffer	

# ***THE WHITENESS OF TALC***

## **OVERVIEW**

Many people are not aware that talc is a mineral mined like, say, iron ore or limestone, and used for many purposes other than talcum powder. The following background information may therefore be useful.

### **Background**

Pure talc is a hydrated magnesium silicate with the chemical formula  $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$

The main **uses** of talc are:

- paper filler
- pitch control in pulp and paper manufacture
- paper coating
- pigment in paints
- ceramics including electroceramics
- cosmetics and pharmaceutical
- plastics, mainly polypropylene
- agricultural uses, fertilisers and animal feedstuff

The **main properties** of talc are:

- low abrasiveness
- hydrophobic surface properties
- organophyllic surface (pitch absorption)
- chemical inertness
- electrically neutral
- unaffected by pH, temperature, or chemical balance in the pulp system

**Competitors** to talc are:

- kaolin
- calcium carbonate
- miscellaneous other pigments and fillers of lower and higher value
- organic dispersants in the pitch control application

**Leading producers:**

In 1994 there were over 50 countries producing talc. The estimated annual production was 7-8 million tonnes. Top 10 producers accounted for approximately 70% of world output. The leading producers were:

China	State organisations
Europe/Nth America	Talc de Luzenac (RTZ)
Comm.Indep.States	State organisations
Finland	Finnminerals (now Mondo Minerals)

Brazil	Costalco
Nth Korea	State organisations
USA	Mineral Technologies
South Korea	Il Shin
Australia	WMC

Other Australian talc producers were Gwalia Industrial Minerals Ltd and Commercial Minerals Ltd (the latter owned by Normandy, subsequently sold to Unimin in August 2000).

Gwalia intermittently operated the Mt Seabrook Mine north of Meekatharra and about 800 km by road from Geraldton (the shipping port). Mt Fitton, operated by Commercial Minerals, is approx 750 km north of Adelaide and produced milled talc.

### **WMC in Talc**

Gilbert Ralph has prepared a detailed history of WMC involvement in talc. (See *Group Historical Collection*, GHI,TST-10.)

After having bought a half-share in the Three Springs talc deposit in 1960, WMC became a supplier of lump talc to customers in Europe and Japan. From difficult beginnings the business became well established and profitable over the years.

In January 1987 WMC acquired the other half of the business and became sole owner. Later in 1987 it was decided to become established as a producer of milled talc in Europe. Milling facilities in Amsterdam were acquired in 1990, improved, and commissioned in 1991. The entry into the market proved difficult against strong competition, particularly from the Rio Tinto-owned Talc de Luzenac, and the milling operations incurred losses for some years.

In September 1993 a review of the talc business concluded that WMC had a world class talc deposit at Three Springs. Its cash flow was predominantly from lump talc sales to Japan, largely to paper industry customers, which were under heavy price pressure from Chinese milled talc. In Europe WMC was engaged in a pricing war with Talc de Luzenac.

WMC had three options :

1. Sell The Business.

The value in WMC's books was \$35 million. There were several potential buyers; the business had strategic value to Talc de Luzenac and others, but it was thought that it would be difficult under the then circumstances to sell for more than book value. The present development cycle needed to be completed before better value could be obtained for the assets.

2. Stand Still.

Further deterioration of the market in Japan was expected in both price and volume. Sales of lump talc peaked in 1988. European sales of milled talc were expected to grow slowly in a very competitive business, but WMC was thought to be on a recovery path through product development and technical marketing. The 'stand still' option risked erosion of the value of the asset.



### 3. Grow the Business

#### a. Internal Expansion

Product development to capture an increasing share of the paint, cosmetics and plastics industries.

#### b. Acquisition

Such as the takeover of Montana Talc, then being considered, which was an entry into the US market for products from TST talc in the paint and plastics industries and for cosmetic products based on Chinese talc.

The conclusion was that growing the business was the appropriate option.

Plüss Stauffer AG a privately owned Swiss-American calcium carbonate and other industrial minerals producer, processor and marketer was operating under the trade name OMYA. On 6 May 1998 they and WMC announced that they had merged their European talc activities Norwegian Talc AS and Westmin Talc BV with Finnminerals Oy, which would change its name to Mondo Minerals Oy. Mondo Minerals, in which both Plüss Stauffer and WMC would have a 50% interest, would be one of the most important talc suppliers in Europe with a leading position in the paper and paint markets.

Plüss Stauffer was appointed as the sales agent of Mondo Minerals in Europe and North Africa. Mondo Minerals, with talc sources from Australia, Norway, Finland, China and Egypt had technology centres in Finland and the Netherlands and processing facilities in Finland, Sweden, Norway and the Netherlands, with a total capacity of 600,000 dry tonnes per annum - over 10% of the world market. The partnership combined WMC's mining and processing skills with Plüss Stauffer's product development and marketing expertise.

WMC retained ownership of the talc deposit and mining operation at Three Springs.

At the time of my retirement in April 1999 Mondo Minerals was modestly profitable, although it was not a happy partnership. Plüss Stauffer gradually became in effect the manager of the business, with WMC relegated to a shareholder role. At Three Springs, a WMC-owned talc mill was under construction to produce milled talc for Australian and Asian customers.

### **Production and Financial Results**

Refer attached tabulations for years 1961 to 2001.

### **Subsequent Events**

On 14 November 2000 WMC announced that it had sold its 50% shareholding in Mondo Minerals to its partner, OMYA, for 110 million Swiss francs (A\$120 million). The shareholding had a book value of approx A\$60 million. As a consequence, WMC would withdraw from the talc business and place its Three Springs mine and mill on the market.

On 1 August 2001 it was announced that the Three Springs Talc operation and associated assets had been sold to Luzenac Australia Pty Ltd, a wholly owned subsidiary of the Rio Tinto Group, for US\$27.8 million (A\$54.5 million). The sale was expected to be completed by the end of the year.

## In Retrospect

In October 2001, Hugh Morgan summed up as follows:

'We were not as astute as we might have been in marketing and managing a non-metallic consumer product. We found ourselves at odds with our partners in Europe, and the price of products fell - in part I believe because of our own marketing aggressiveness. We would have wished it to become an important contributor to the Company, but it became clear we would have trouble growing the business so we decided we should withdraw.

I have previously written of the sale of our half interest in Finntalc which was in itself remarkably successful. We were left with TST as a vibrant, well endowed but relatively small enterprise, and it logically followed that it should be sold.'

My own assessment is similar. We were very successful in terms of returns on the investment while we were selling lump talc. When the decision was made to become involved in milled products and direct sales to customers, we did not understand the difference between this business and what we had been doing previously and did not acquire staff with appropriate experience early enough. The partnership with Plüss Stauffer appeared to continue to suffer from our relative inexperience in marketing to consumers, as well as personality differences. To Plüss Stauffer this was their core business to which their most senior people devoted all their energies. To WMC it was a sideshow, with those in charge having neither the seniority in the organisation nor the decision-making authority or expertise to impress our partners.

## **WHITE ROCK AT THREE SPRINGS**

(For a more detailed account see *Group Historical Information Collection*, GHI-WMC-10, *A Brief History of Talc Operations* by G M Ralph.)

### **Three Springs Talc**

Three Springs talc is a world class deposit; its massive nature is unrivalled globally. The mineralogy and grain size of Three Springs talc are unique in the pitch control industry, making it one of the most organophyllic talcs marketed. Three Spring talc has:

- high brightness (but not the brightest)
- low abrasion
- high purity
- absence of asbestiform minerals
- good grindability

The size of the deposit is estimated at about 16 million tonnes.

### **Background 1959 - 1974**

When the Western Mining Board decided in 1953 to diversify from gold, some exploration effort was diverted to non-gold projects and senior executives were alerted to watch out for opportunities to acquire interests in other minerals. In 1959 an opportunity arose to acquire a 50% interest in a talc mine at Coodawa near Three Springs in Western Australia, about 340 km north of Perth.

Talc occurs in nature as a rock, magnesium silicate, known as *steatite* or, in popular language, *soapstone*. A small privately owned company, Universal Milling Pty Ltd, owned and operated a small underground mine to produce lump talc for milling at their plant in Welshpool, an industrial suburb of Perth. Universal Milling also ground and prepared a variety of other industrial minerals from various sources in Western Australia.

The mine was worked by contract miners. The talc was hand picked and bagged for transport by rail to Welshpool. The Chairman of Universal Milling, John Stewart, approached L C (later Sir Laurence) Brodie-Hall, suggesting that WMC may wish to acquire an interest and manage the mine.

After acquiring an option to purchase 50% of the deposit, WMC drilled it and quickly determined a potential for at least a million tonnes of high grade talc and large quantities of adjacent lower grade material for which it was thought a market may exist.

The option was exercised and Three Springs Talc Pty Ltd (TST) was incorporated in Victoria on 25 February 1960. Universal held 50% of the shares and WMC 50%. The founding directors were W M (Bill) Morgan (Chairman), Brodie-Hall and F R (Fred) Morgan representing WMC, and John Stewart, Arthur F B Norwood and Marcus E. McGowan from Universal; equal representation for the two owners.

WMC was appointed Manager. The intention was to establish an opencut mine and to increase production. This proceeded after some of the surrounding land was acquired after a lengthy legal dispute with the owner.

Initially the company struggled to become profitable and the Universal Milling directors on the Board were openly critical of WMC management.

In June 1961 I was sent to Europe to investigate the market and the appointment of an agent. Gilbert Ralph records:

'WMC's first negotiations for sales of talc in Europe were conducted by A H Parbo during a visit in 1961. He was given wide powers when he left Melbourne by air on 25 June and within days was sending comprehensive reports back on his numerous negotiations. His reports were subsequently collated and became a significant document which proved invaluable in later negotiations. (Pat Patterson mentioned in 1995 that Parbo's report was still referred to from time to time by Westmin Talc.)

One of the most important contacts was with Chemikalien Aktiengesellschaft (Chemag) who were appointed sole distributor for Europe, excluding Scandinavia and UK. The agreement between TST and Chemag was duly signed on 15 July 1961. Initial sales were either ground talc, in multiwalled paper bags at \$37.80 per ton FOB Fremantle, or crushed talc, in jute bags at \$32.50 per ton ex Fremantle or Geraldton.

Other contracts were later concluded with Iföverken in Sweden.'

R P (Paul) McNerney, who had retired in 1960 as Managing Director of R P McNerney & Co Pty Ltd, a machinery supply company he had established in Perth, had been engaged to manage WMC's small Perth Office in November 1961 when 66 years of age. He was appointed Manager of Three Springs Talc and described the first few years of TST in Westminer Magazine in 1969 when he said,

'During 1961, Australian sales were 1,455 tons; overseas sales 2,659 tons - a total of only 4,114 tons.

It was therefore, of extreme importance to increase sales of talc overseas. All efforts were made in this endeavour, but progress was slow. Most of the export was in small quantities - of from 100 to 300 tons - which had to be shipped in bags, and shipping companies were not enthusiastic about taking such small quantities.

The first order for 1,000 tons of talc in bulk was obtained early in 1962, and a crushing plant with small bins, conveyor and trommel were installed, with a capacity of 60 tons throughput per day. As the company was short of money at the time, all this equipment was supplied by WMC on loan. Without this assistance from WMC it is doubtful whether Three Springs Talc would have survived. The loan has since been repaid in full.'

The first Officer in Charge at Three Springs was Dave Canning, an industrial chemist. Mining was carried out by contract miners. Canning was succeeded by Bob Lodge in 1965. Modest profits were made and equipment was improved.

Paul McNerney had been successful in his several trips to Europe in substantially increasing sales. He proposed setting up a stockpile of bulk talc in Rotterdam from which barges, road/rail would transport the talc to customers in several western European countries.

McNerney went on to record that;

The turning point came in 1965 when I made a visit overseas in an endeavour to break into the European market and to overcome shipping and freight problems. It was decided during this visit to establish a talc stockpile at Rotterdam - the transportation centre of European overseas commerce. A favourable shipping rate was negotiated in London for shipments of bulk talc up to 3,000 tons per shipment, and this lower freight rate enabled Three Springs talc to be sold at a competitive price overseas.

By 1968, overseas sales totalled 17,333 tons; Australian sales - through Universal Milling Co - reaching 2,082 tons - a total of 19,415 tons. An extensive market existed in the UK, Europe and Scandinavia spread over the cosmetic, pharmaceutical, paint, paper and pulp, electro ceramic and tile industries.'

The first bulk shipment of 915 tons left on board the *MUNSTERLAND* in April 1966. This worked well and the stockpile was enlarged to 5,000 tons in 1967-68.

What Paul did not record was that when his first visit to Europe was planned, Three Spring's agents Chemikalien AG in Frankfurt were concerned about the intense schedule of visits because of his age. As Paul told it, they had 'several young fellows meeting me at the airport and travelling with me to carry my bags. After a week or so, I finished up carrying their bags!'

Paul was a very successful businessman and a delightful companion, but not the tidiest of workers. His office desk was completely covered by a mound of paper in no apparent order.

I invariably used to drop into his office for a chat while in Perth. When the time came to leave, Paul would say 'Well, I'll better do some work', dip his hand into the heap of paper and come up with whatever he was going to attend to next!

In July 1968 Cyprus Mines Corporation of New Jersey USA was appointed exclusive agent for Three Springs talc outside Australia. This involved increasing production, and a new plant was constructed at Three Springs. Additional land was purchased and drilling indicated talc in the newly purchased area.

The 74 year old Paul McNerney retired on 31 December 1968. Brodie-Hall said at the time of his retirement:

Paul has been and still is, quite a fellow. Whether playing or working, he always goes hell for leather, and strong men have been known to blanch at the thought of a night out with him.

Loyal, resourceful, enthusiastic, outspoken; a good man to have on your side in any circumstances either personal or organisational. In seven years Paul has written his name indelibly on Western Mining history.

He has the common touch and a host of friends, young and old, male and female, in all stations including all WMC employees with whom he came into contact.'

Sadly, he died suddenly the following year while visiting Nairobi.

Don French, who had been Assistant Manager TST, was temporarily appointed Manager TST. Early in 1969 P N (Patrick) Johnston was engaged as Manager Three Springs Talc, and remained in this capacity until 1987.

The agreement with Cyprus was terminated in 1973 and TST resumed its own marketing. Sales of

second grade talc to Ataka in Japan commenced in July 1973. Additional sales were made in both Europe and Japan, and TST was for many years the most profitable operation in WMC in terms of profit per employee and profit as a return on investment.

This brings the story up to 1974.

## **Events 1974 - 1998**

The relationships with Universal Milling at Board level had been difficult from the beginning, particularly in the early years when TST was making losses. Gilbert Ralph has written an excellent account of this, which is in the *Group Historical Information Collection*.

While becoming profitable eased the problems, they did not disappear. To quote Gil:

'As manager Johnston quickly learnt that with a 50/50 ownership and an equal representation on the Board he had to be very careful to avoid a stalemate on any controversial issues. As it was Johnston observed that, "when the meeting broke up the three from Universal Milling would go to one pub for a drink and the three from Western Mining would go to another pub". In his inimitable fashion Johnston put drinks in the fridge in the Boardroom and invited them to stay for drinks, which they did and gradually a better understanding and warmer relationship between rival directors developed. Adelaide born Bill Blown aided this process. He had made an art of listening and his personal charm and politeness had a very stabilising influence on the Board. When Keith Parry became General Manager of WMC in WA he called Pat Johnston into his office and said, "What happens at Three Springs?" Johnston replied, "Nothing I can't solve. I won't give you any problems. One thing I can guarantee is that you can't give me an ulcer". He was right.'

## **The Restructuring of UMC**

Universal Milling was endeavouring to expand and diversify its interests. To do so, it wished to become a public company.

This was achieved in May 1978 when Universal Milling acquired WMC's 30.8% interest in Kalgoorlie Southern Gold Mines NL (KSGM) for a nominal sum. Gold Mines of Kalgoorlie Ltd (GMK), in which WMC held a 31.7% interest, also sold its 27.2% interest in KSGM to Universal for a nominal sum. Both WMC and GMK wrote-off their \$100,000 loans to KSGM. This action was conditional upon the transfer from Universal to KSGM of Universal's 50% interest in TST at an agreed price, which took place on 22 June 1978. TST was now owned 50:50 by WMC and KSGM, and was in a position to distribute some of its accumulated profits.

## **Expanding Activities**

J F (Jeff) Fradd, a geologist, was appointed Resident Manager in 1976.

Exploration activity was increased and a promising new deposit was found at Coorow, 48 km south of Three Springs in 1978. A further extension to the east of the existing deposit was also identified on farmland adjacent to the current workings. It was subsequently purchased.

In about 1980 TST began bulk shipments of talc from Geraldton using the shiploading facilities established by WMC in 1966 for the export of iron ore. This greatly improved the efficiency of stockpiling and shiploading but was more restrictive on the class of ships that could be used due to depth restraints at Geraldton Harbour.

Production fluctuated between 42,960 tonnes in 1981-82 and 180,000 tonnes in 1985-86. Sales ranged from 68,000 tonnes in 1978-79 to 163,900 in 1985-86.

Profits steadily grew over the next few years and regular dividends were declared.

### **A Further Restructuring**

At an Extraordinary Meeting of Members on 22 June 1982 it was resolved to sell the assets of the company, being the mine and production facilities, to WMC and KSGM in equal shares at the tax written down value of such assets. The operation became a Joint Venture which continued to be managed by WMC.

Johnston worked hard to secure markets for talc in Japan and Korea against strong competition from China. He was also successful in building up sales in Europe and exploring sales in USA. At the mine further improvements were made to mining operations and the treatment plant. J (Joe) Denison took over as Resident Manager in 1983. Greater attention was given to quality control. Profits began to increase appreciably.

In November 1985, KSGM was the subject of a takeover offer by Oakhill Pty Ltd, a company controlled by the Perth entrepreneur Laurie Connell. KSGM's Board recommended that shareholders reject the offer. Oakhill increased the bid to \$1.40 per share in February 1986.

WMC did not wish to see Oakhill become a joint venture partner in TST so WMC made an offer of \$1.65 per share for KSGM, which was recommended for acceptance by the KSGM Board. WMC quickly acquired 88% of KSGM and placed it in voluntary liquidation on 27 June 1986.

The cost to WMC of acquiring KSGM was \$20.5 million, valuing 100% TST in excess of \$40 million.

The final transfer of assets took place on 11 February 1987 and the talc operations became wholly owned by WMC.

A new crushing plant was installed at the mine to improve flexibility, grade control and performance at the minesite. Reserves were of the order of 9 million tonnes - the highest ever.

A C (Colin) Cruickshank retired as Resident Manager of Three Springs Talc at the end of 1998 and was succeeded by D J (David) L oth as Operations Manager. At about the same time work commenced on an \$11 million micronising mill at Three Springs, based on the technology used in the Amsterdam mill, to supply the South-East Asian market. The 40,000 tonnes per annum mill was officially opened on 24 October 2000.

### **Production and Financial Performance**

Please refer to the schedule at the end of *Overview*, and the following graphs

### **Subsequent Events**

On 1 August 2001 it was announced that the Three Springs Talc operation and associated assets had been sold to Luzenac Australia Pty Ltd, a wholly owned subsidiary of the Rio Tinto Group, for US\$27.8 million (A\$54.5 million). The sale was completed by the end of the year.





## ***INTO EUROPE***

(For a more detailed account see GHI-TST-10, *A Brief History of Talc Operations* by G M Ralph.)

The talc operations were now wholly owned by WMC and WMC was keen to expand the business directly into the northern hemisphere markets after 20 years of selling fob Western Australia.

When H M (Hugh) Morgan became Managing Director of WMC in 1986 he decided to develop TST from a producer and seller of the raw material to a processor and marketer of processed products.

I believe his major motivation was the belief that processed products included a much larger margin of profit and that the skills that had to be developed in marketing and sales would be useful in other WMC activities. A supportive consideration was that TST's sales of lump talc into Japan faced increasing competition from China.

P N (Patrick) Johnston left in November 1987 after managing TST for 18 years. He was succeeded by P J (Pat) Patterson, an engineering and commerce graduate from Melbourne who had made a name for himself in the WA Government after moving to WA in 1980. He was appointed Manager Industrial Minerals on 9 December 1987, with a brief to internationalise the TST business.

Discussions regarding WMC acquiring Talc de Luzenac were unsuccessful and that company was subsequently acquired by RTZ.

After studies of the European and American markets it was decided to establish a presence in Europe. Possible sites and JV partners were assessed before the decision was taken to establish a milling plant in Amsterdam. A strong corporate view was that WMC should gain the value added by preparing products used by the consuming industries and have its own people dealing directly with the customers.

The first talc milled by WMC in Europe was produced at a contract mill in November 1988 for customer trials. This single product was presented to the paper industry in Germany under the new brand name Westmin. The product, made from TST's number 2 grade product compared favourably against its competitors.

After market tests, a new company Westmin Talc BV was incorporated in The Netherlands on 9 July 1990 and soon after it acquired a 51% interest in an existing mill (AIME) from Jan de Poorter. The facility was upgraded to Westmin's requirements and the new plant commissioned in August 1991. About this time Pat Patterson moved to Amsterdam and was responsible for the new marketing company. Amsterdam became the centre for product development.

During the period from 1991 Westmin started to supply milled talc products from its Amsterdam plant to Asia, including Australia. WMC talc was being shipped back to Australia in processed form!

B H S (Bernie) Schwarz, who was based in Perth, was responsible for Asia-Pacific sales and A C (Colin) Cruickshank, an experienced K algoorlie trained mining engineer was made Resident Manager at Three Springs on 1 December 1991, replacing J (Joe) Denison who retired.

In August 1991 WMC looked closely into purchasing Cyprus Industrial Minerals which had long life orebodies in Yellowstone and Vermont, a market presence in Europe, Japan and USA, and provided milled talc to customers. Cyprus was eventually bought by Talc de Luzenac, by then owned by RTZ. Westmin acquired the remaining 49% of the milling plant in Amsterdam in January 1992 and proceeded

to upgrade it further, to broaden the product range, effect production efficiencies and provide a suitable base for expansion. A WMC engineer, G (Geoff) Carroll transferred to Amsterdam to manage the engineering aspects of the work. A laboratory was constructed on site to extend quality control testing and enable a wide range of product development and customer service testing.

At about this time Westmin's competitors increased competitive and other pressures, including moves to exclude Westmin from the European talc association, 'Eurotalc'. The battle to establish/exclude Westmin in Europe was well and truly on. Gradually sales increased and the customer base expanded, both in number and in composition. Growth in this period reached 50% per annum but to gain and hold each customer was a continual sales effort. Customers in the pulp and paper industry, under severe economic conditions in the industry, were willing to change suppliers from month to month and talc in the pitch control application for the paper industry lost its specialty status. Prices suffered accordingly.

In June 1992 Pat Patterson, on the recommendation of Joe Mulryan of Cyprus Mines Corporation, proposed to enter the cosmetic talc business, with initial development of body powders. Work commenced in Perth on new surface-modified products based upon lecithin and a search began for a macro platey talc product (Rhapsody Project).

In late 1992 WMC commenced due diligence on the acquisition of Montana Talc in the USA but for a number of reasons the bid did not proceed until mid 1993. Talc de Luzenac (RTZ) acquired Montana Talc shortly afterwards.

Sales of talc were being made into nearly all European countries, into the pulp and paper, paint, plastics, rubber, ceramics and cosmetic industries. Along the way Westmin had developed a suite of specialty products, achieved ISO9002 accreditation (the first business in the WMC Group to achieve this) and was judged to be one of the top ten exhibitors at the Paints and Pigments Exhibition at Nuremberg in 1993.

During 1993 production of surface-modified products commenced in Amsterdam and Donald Duncan was engaged as a consultant to develop his micro milling process for talc at the North Carolina University.

The search for a partner in Europe commenced in 1993 when it was realised that the building up of sales and marketing skills and connections was progressing too slowly. In late 1993, after approaches were made by Westmin to acquire Ernstrom's European industrial minerals business and the subsequent purchase of that business by Plüss Stauffer AG, a privately owned Swiss-German company, Patterson commenced talks with Plüss Stauffer with a view to forming a talc joint venture. Plüss Stauffer AG, operated under the trade name OMYA, and was then Finnminerals' talc agent in Europe. OMYA was the largest supplier of calcium carbonate in the world and also sold talc to its customers to supply all their needs for fillers and coatings. Talc and calcium carbonate compete with each other in some uses, but blends of the two materials have certain technical advantages in other uses. OMYA had extensive product research facilities at the service of their customers. These talks were protracted.

Early in 1994 Drew Anderson was engaged as Operations Manager to complete test work on the micro milling process and build a US\$400,000 pilot plant at Oxford, Alabama.

The project was fraught with difficulties. The research and development work was inadequate and there were scale-up problems. Only a small percentage of premium products could be obtained alongside a large quantity of low value products. There was little confidence in the sales forecasts in a potentially small niche market. In August 1995 the pilot plant closed down and the project was abandoned.

The surface-modified patent was granted in 1996 and the technology sold to Ultra Chemicals Inc. The patent for the *Rhapsody* process was granted after the project had been wound up.

During the negotiations with Plüss Stauffer, United Paper Mills (UPM) in Finland indicated its subsidiary, Finnminerals, was for sale and simultaneous negotiations with OMYA and UPM began. Finnminerals was the second-largest supplier of talc in Europe (after Talc de Luzenac), particularly to the paper industry, and dominated the Scandinavian market. It produced 380,000 tonnes of talc a year and also 1000 tonnes of nickel in concentrate from talc flotation. There were three operating mines and process plants in central Finland, three dormant mines, and one mine for future development.

At the end of 1994 Patterson returned to Australia after having led the establishment of the WMC talc business in Europe. He was succeeded in Amsterdam by S C (Steven) Molkenboer who became President of the Talc Division in May 1995.

The development of the European business by Westmin coincided with a severe downturn in sales of talc to Japan, a consequence of increased competition from China commencing in 1989 as its economy opened to international trading. Innovative marketing strategies were adopted to hold key accounts, as these and all of WMC's talc customers in Japan struggled to combat competition from milled Chinese talc. By late 1995 this lean period eased as a result of export duties being imposed on talc exports from China.

During this period Westmin Talc operated at a loss and it became clear that there were two choices: to build the business up to the level where it would become profitable, or to sell it to one of the competitors.



## ***FURTHER TO FINLAND***

(For a more detailed account see GHI-TST-10 *A Brief History of Talc Operations* by G M Ralph.)

In February 1995, H M (Harry) Goern was appointed Executive General Manager, Alumina, Chemicals and Industrial Minerals. Goern and Molkenboer continued the discussions with Plüss Stauffer begun by Pat Patterson. After somewhat difficult negotiations, final agreement on critical issues was reached in August between the sole owner of OMYA (a part of the Plüss Stauffer organisation), 83 year old Max Schachenman, and H M (Hugh) Morgan. On 6 September 1995 the formation of a 50:50 joint venture to acquire the Finnish talc producer Finnminerals for a total of \$178 million was approved by the Board. I was unable to attend the meeting because of commitments in the United States, but sent Hugh a note from Chicago which said, amongst other things:

'My view is that there is little downside and potentially substantial upside in going ahead with it. At worst we should get our money back; at best we can start building a major industrial minerals business which would provide welcome diversity for our future. It would be a business related to what we know best except for the marketing skills, and the OMYA partnership would provide a painless way to learn these. If I were a strategic planner, I could not wish for a better opportunity.'

The purchase became effective from 1 February 1996. Wolfgang Tegethoff of OMYA was appointed Chairman and Steve Molkenboer of WMC the Managing Director.

Finnminerals was Europe's largest talc supplier to the paper industry and also provided talc products to the paint, plastics and fertilizer industries. It had three operating talc mines serving three processing plants in Finland and talc slurry plants in Holland and Sweden. The capacity was about 480,000 tonnes of talc annually.

The product range was extended, rationalisation undertaken, and sales of milled talc into Asian markets initiated.

Soon after the acquisition a world economic depression reduced the demand for talc in the paper industry and reduced the profitability of Finnminerals.

The production and financial results during this period are shown in the tabulation in section *Overview*.

At the time of the Finnminerals acquisition Plüss Stauffer and WMC had begun to investigate options for integrating their respective talc interests. There were difficulties: Plüss Stauffer preferred 'customer based' integration while WMC sought an 'asset based' integration. There were different views on the valuation of the respective facilities. OMYA wished to have sole marketing rights in Europe, which was opposed by WMC. Plüss Stauffer were concerned about the supply of lump talc from Three Springs. The discussions continued for many months and eventually resulted in the formation of Mondo Minerals, described in the next section.



## ***TO MONDO AND BACK***

(For a more detailed account see GHI-TST-10 *A Brief History of Talc Operations* by G M Ralph.)

After Harry Goern retired late in 1997, A G (Andrew) Michelmores became responsible for the Talc Division. He resolved the problems by foregoing some of the WMC objectives. By February 1998 what was called a *Protocol* for the Plüss Stauffer-WMC relationship had been established. The name *Mondo Minerals* was proposed for the unified venture, which caused some concern because the registered slogan of Talc de Luzenac, Mondo's major competitor in Europe, 'Luzenac, the world of talc' translated in French as 'le Mond du Talc'.

On 6 May 1998 Plüss Stauffer and WMC announced that they had merged their European talc activities Norwegian Talc AS and Westmin Talc BV and Finnminerals Oy, into a 50:50 partnership called Mondo Minerals Oy. Mondo Minerals would be one of the most important talc suppliers in Europe, with a leading position in the paper and paint markets.

Plüss Stauffer was appointed as the sales agent in Europe and North Africa. Mondo Minerals, with talc sources from Australia, Norway, Finland, China and Egypt had technology centres in Finland and the Netherlands and processing facilities in Finland, Sweden, Norway and the Netherlands, with a total capacity of 600,000 dry tonnes per annum, some 7% of the world production. Products were marketed mainly in Europe, with Three Springs talc directed to Asia and Japan. The partnership combined WMC's mining and processing skills with Plüss Stauffer's product development and marketing expertise.

There were difficulties in the management and operation of Finnminerals. A report on employee opinions at the end of May 1998 noted that:

The other owner (WMC) is regarded as distant when it comes to Finnminerals. It is not seen as an owner with expertise in business nor touching ground on the clientele, which is seen to result from the differences in its core business and its indirect activity in the stock market.

The differences in business cultures of Finnminerals and WMC were regarded as very big, which reflects as unnecessary and overlapping reporting, interference in small issues etc., whereas big and important policy decisions were left missing.

The other owner (OMYA) was seen as totally different regarding its business culture: it was seen as a dynamic and hard business expert, whose interest lied first hand in synergistic utilisation of Finnminerals in its own business'.

OMYA proposed the appointment of one of its people as Managing Director of Operations, to replace Steven Molkenboer who would become Managing Director Marketing.

Steven resigned in November 1998 and other WMC executives gradually either resigned or transferred to other WMC activities. WMC's role was limited to Board representation and a watch on the affairs through reports.

Kym Saville has commented as follows:

'OMYA's primary objective at all times was to control the marketing. This was achieved

through an exclusive sales agency for Three Springs and Finnminerals talc which they procured at the outset and guarded jealously throughout. It earned them a generous sales commission (8%, from memory), gave them exclusive access to customers (ie kept WMC at arm's length) and enabled them to cross sell their own products and possibly even allocate their own products to the highest margin customers.

This of course conflicted directly with our aspirations to develop market expertise in industrial minerals, in addition to diverting profits to OMYA at the expense of the joint venture.

When we finally decided to throw the towel in and exit, we found that the only interested buyer was OMYA, and as the only buyer they were in a position to low ball the price. Especially since they were creaming off a lot of the profits through their sales agency (and hence reducing the apparent value of our ownership interest). It was only when we exercised our right to give notice of termination of the sales agency that they realised that the game was up and made an acceptable offer to buy us out.'

### **Subsequent Events**

On 14 November 2000 WMC announced that it had sold its 50% shareholding in Mondo Minerals to its partner, OMYA, for 110 million Swiss francs (A\$120 million). The shareholding had a book value of approx A\$60 million. As a consequence, WMC would withdraw from the talc business and place its Three Springs Mine and mill on the market.



# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**BUSINESSES AT APRIL 1999**

**VOLUME FOUR**

***THE FERTILE ROCK***

# ***THE FERTILE ROCK***

## **CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>389</b>
<b>Fertilizer At Kwinana</b> Ammonium Sulphate	<b>391</b>
<b>West(ern) Meets South</b> The BH South Takeover	<b>395</b>
<b>Testing The Soil With Hi-Fert</b> Marketing Of High-Analysis Fertilizers	<b>399</b>
<b>Duchess Awakens</b> Queensland Fertilizer Project	<b>401</b>

## ***THE FERTILE ROCK***

### **OVERVIEW**

The Sherritt Gordon ammonia leach process selected for the Kwinana Nickel Refinery produces ammonium sulphate, a fertilizer, as a by-product. The Company's initial entry into the fertilizer business was therefore not a conscious decision, but as a consequence of the development of its nickel business.

Ammonium sulphate remained the only WMC interest in fertilizers until BH South Limited was taken over in 1980. In the sharing out of BH South's assets between WMC and CRA the phosphate rock deposits in Queensland were allocated to WMC.

After an unsuccessful attempt in 1983-84 to develop a phosphate rock export business, the alternative of producing high-analysis fertilizers at Phosphate Hill for the Australian and export markets was studied over the next twelve years. In December 1996 it was decided to embark on a project to produce 1,000,000 tonnes per annum of di-ammonium and mono-ammonium phosphate at an estimated capital cost of \$700 million. Construction was in progress when I retired in April 1999 and production was scheduled to commence at the end of 1999.



## **FERTILIZER AT KWINANA**

D P (Doug) McIntyre in *WMC Nickel History - The Commercial Aspects* describes the developments related to ammonium sulphate in some detail. The following is an abbreviated and edited summary.

At the time WMC made its decision to build the Kwinana Nickel Refinery, there was no manufacturer of nitrogenous fertilizers in Western Australia. However, BP Australia Ltd (BP), which had built an oil refinery at Kwinana in 1954, had just decided to build an ammonia plant alongside the oil refinery to produce urea and ammonium nitrate for the West Australian market. The company established to produce ammonia, the Kwinana Nitrogen Company (KNC), was owned 80% by BP and 20% by CSBP and Farmers Ltd. (CSBP stood for Cuming Smith BP.)

When WMC decided to build the nickel refinery it was intended to also build an ammonia plant. The CSBP Group was concerned that WMC as a producer of by-product ammonium sulphate would dump its production into the West Australian market at low prices, thereby jeopardising the economics of their own nitrogen fertilizer project.

Despite an increase in the use of nitrogen in Australian agriculture in the late 1960s and 70s, WMC's ability to sell ammonium sulphate outside Western Australia was limited by freight costs. CSBP had developed mixtures of phosphate and ammonium nitrate fertilizers for use on cereal crops, especially those grown on the considerable area of light soils which had fairly recently been cleared for agriculture. CSBP perceived their interests as best served by control of the WMC product and/or its disposal.

BP took the initiative by proposing that WMC should not build its own ammonia plant, but take ammonia from the Kwinana Nitrogen Company. CSBP would endeavour to take all or most of WMC's ammonium sulphate production and develop the Western Australian market alongside its own sales of ammonium nitrate. CSBP offered to provide storage space for all ammonium sulphate production from WMC, except that WMC was required to provide storage for about 15,000 tons as a cushion. CSBP also offered to make available at cost its shiploading facilities at Kwinana for any ammonium sulphate which had to be shipped out of Western Australia.

This proposal was envisaged to last five years, with CSBP estimating in 1968 that in the first year of WMC's production at Kwinana (1970-71), CSBP would take about 75,000 tons of ammonium sulphate, about half of WMC's initial design output. The initial proposal in 1968 also fixed the prices at which WMC would buy its ammonia from KNC and at which WMC would sell its ammonium sulphate to CSBP.

The BP/CSBP proposal was attractive to WMC in that it reduced the initial capital cost of the Kwinana Refinery and also reduced the problem of marketing a large new increment of ammonium sulphate, which was used only in small quantities in Western Australia at the time. WMC would have had to find markets either in the eastern States of Australia or overseas. The proposal had the disadvantage that it made WMC dependent on the Kwinana petroleum refining complex for supplies of essential process materials such as ammonia and hydrogen. If there was a production hold-up in the BP operations, WMC's operations would also be disrupted.

WMC decided to proceed with the BP/KNC/CSBP proposal and heads of agreement were signed on 22 February 1968. The disposal of WMC's ammonium sulphate outside Western Australia was to be WMC's responsibility. As it seemed likely that WMC was going to have to market substantial quantities

of ammonium sulphate outside Western Australia for at least some years. David Berry, formerly of EZ Industries Ltd, was appointed Manager of Fertilizer Sales.

It was Australian Government policy at the time to encourage the use of nitrogen fertilizers by a bounty paid to farmers. North Queensland was the major user of ammonium sulphate, particularly in the sugar industry. However, this region was geographically the most difficult and expensive for WMC to service from Western Australia, given the cost of sea freight and the inefficient way in which the Australian Coastal Shipping industry was organised.

The historically cosy organisation of the Australian fertilizer industry was being disrupted by the formation of a new company called Austral Pacific Fertilizers Limited (APF), which was being established in Queensland. APF was an aggressive organisation, jointly owned by two US companies (The Dow Chemical Company and Swift & Co), both of which were heavily involved in the US fertilizer industry. A small interest in APF was held by the Japanese trading company Sumitomo Shoji.

APF planned to make ammonia from the natural gas which was then in the process of being piped to Brisbane from the Western Queensland gasfields and convert this into urea as its principal nitrogen fertilizer product.

APF was keen to market WMC's ammonium sulphate outside Western Australia. One reason for this was that they saw Western Australia as a major market for their urea and the shipping costs for urea would be reduced if they were able to backload ammonium sulphate to the eastern States, particularly to Queensland. APF did not propose to produce ammonium sulphate itself, but would need some supplies to complement its total fertilizer product range. APF also claimed an ability to sell nitrogen fertilizer in suitable export markets, having already had some discussions in Indonesia.

The APF concept appeared to be sound. They planned to market custom-made high-analysis fertilizers with compositions based upon modern soil sampling and analytical techniques. This was a great improvement on methods of sales and use then current in Australia, but was probably a little ahead of its time.

APF's activity had galvanised the other Australian fertilizer producers into action, with ICI (which had a stake in several of the producing companies) co-ordinating their position.

The ICI Group's proposal to WMC was less ambitious than APF's and assumed that of WMC's anticipated production of 120,000 tons of ammonium sulphate in 1970-71, CSBP would take 25,000 tons for the Western Australian market, Australian Consolidated Fertilisers (ACF) would market 50,000-60,000 tons in the eastern States, and the balance of 35,000-45,000 tons would be exported.

The biggest unknown for WMC in making its decision was to guess how successful CSBP was likely to be in marketing ammonium sulphate in Western Australia. This was the market which would give the highest net return and was obviously the most desirable in the long term. After considerable deliberation, WMC decided against the APF proposal and in favour of the ICI Group. The main reason was that there was expected to be strong competition between CSBP and APF in Western Australia, and WMC would have been in a conflict of interest situation with APF.

The ICI Group formed in 1971 Consolidated Fertilizers Limited to represent its interests in the eastern States.

WMC did not want to get into the retail fertilizer business and hence found itself working with CSBP in Western Australia, Consolidated Fertilizers in the eastern States, and using its own resources to find

export markets for the balance. CSBP with Bill Batty as its Managing Director was a tough party to deal with.

In the first year of Kwinana Nickel Refinery's operations, 1970-71, CSBP's offtake of WMC's ammonium sulphate was 15,000 tons. CSBP's initial estimate for the following year was only 8000 tons, compared with the original CSBP/WMC contract of 1968 where they estimated 75,000 tons in 1970-71 and 90,000 tons in 1971-72!

The actual tonnages bought by CSBP were 15,000 in 1970-71, 8600 in 1971-72 and 16,000 in 1972-73. In 1973-74 there was some improvement in the market, with CSBP's initial estimate of 24,000 tons later rising to 30,000 tons. Subsequent purchases increased the total in that year to 40,000 tons.

Marketing of WMC's early production was made more difficult by problems of quality, with product size and colour often below specification. Some of the early production had to be sold at very low prices, simply to clear it. However, as quality improved, a steady market was developed in Indonesia and sales were also made regularly to the Philippines and Taiwan. Other shipments were made to Brazil and East Africa.

WMC was dissatisfied with CSBP's performance and gave the required two year's notice on 20 June 1973 that it intended to terminate the contract on 30 June 1975. CSBP responded by indicating that it wanted the present agreement to continue.

CSBP increased its offtake to 40,000 tonnes in 1973-74 and indicated that it was hoping to increase this tonnage further in 1974-75. At this time the fertilizer market had become very strong and WMC was able to obtain prices far higher for export sales than were being obtained from CSBP and other Australian sales.

Considerable haggling developed over the price to be paid by CSBP for WMC's ammonium sulphate, with WMC seeking much higher prices than CSBP had been paying in the past. In a bid to outflank WMC, CSBP then gave notice that, for the 1974-75 financial year, it wished to take the whole of WMC's output, which could have been as much as 140,000 tonnes.

In a further bid to become more independent of the BP/KNC/CSBP complex for its essential processing materials, WMC decided in 1973 to buy the idle ammonia plant owned by Consolidated Fertilizers in Brisbane which had a capacity of 50,000 tonnes of ammonia per annum. This fairly new plant was dismantled, transported to Kwinana and erected there in 1975-76.

After WMC established its Kalgoorlie smelter, some of the nickel concentrate feed to the refinery was gradually replaced by nickel matte. As the matte contains a much lower proportion of sulphur the production of ammonium sulphate at Kwinana declined and, with the passage of time, most of it was absorbed in WA. Hence the significance of ammonium sulphate in the economics of Kwinana declined. Marketing and revenue from ammonium sulphate became a relatively minor matter.





## ***WEST(ERN) MEETS SOUTH***

### **Background**

Broken Hill South Limited (later renamed BH South Ltd) was one of the major lead-zinc-silver mines on the famous Broken Hill line of lode. Established as Broken Hill South Silver Mining Company Ltd in 1885, it was one of the Collins House group of companies.

As its orebody in Broken Hill neared exhaustion, the company looked for other major mining ventures to secure its future. This led to copper mining at Cobar in New South Wales and Kanmantoo in South Australia, and the discovery and development of phosphate rock deposits at Phosphate Hill in north-west Queensland.

The phosphate project incurred heavy losses and brought about the financial difficulties which caused the demise of the company.

### **The Phosphate Project**

In looking around for something to replace the South Mine in Broken Hill, the company had been interested in phosphate since the early 1960s. A South geologist, Ron Russell, concentrated on phosphate and in mid-1960s South drilled unsuccessfully in prospective areas from South Australia to the north-west of Western Australia.

In August 1966, field inspection in the Duchess area, 120 km south-east of Mt Isa in Queensland, identified phosphate rock deposits at Discovery Creek. By July 1968, more than 2,000 million tonnes in ten deposits in the region, averaging 15.5% P<sub>2</sub>O<sub>5</sub>, had been outlined.

### **Initial Development**

In May 1969 BH South appointed Lindsay Thompson General Manager of the Phosphate Project. He was later appointed to the Board and, in 1973, became Executive Director (Phosphates).

Initially the work was concentrated on the Lady Annie deposits north of Duchess, the intention being to upgrade the phosphate rock to shipping grade by flotation and to transport the upgraded ground rock by pipeline to a shiploading port on Sweers Island in the Gulf of Carpentaria for export overseas.

A wholly owned subsidiary, Queensland Phosphate Limited, was formed in 1972.

In 1973 a pilot plant was built at Lady Annie. The result of the investigations was that the capital costs would be very high, requiring an annual output of 2-3 million tonnes, and there were technical problems with the Lady Annie ore.

The general view at that time was that there would be a world shortage of phosphate rock. Prices were increasing. The Labor government in Canberra was concerned about the long term supplies of phosphate for Australia, wanted the indigenous resources developed as a matter of urgency and had issued a very supportive statement in May 1974. The Minister for Minerals and Energy, R F X Connor, called the development an 'urgent national responsibility'.

At Duchess there was a substantial body of phosphate rock of direct shipping grade which did not need

upgrading by flotation before shipment.

BH South announced in 1974 that it would proceed with the Queensland Phosphate Project. The retiring Chairman, Sir Lindesay Clark, told shareholders at the Annual General Meeting in December 1974, that the industry based on the phosphate deposits in Queensland would 'constitute the backbone of South group activities for decades to come'.

The proposal was for a mine and grinding and beneficiating plant at Phosphate Hill, to produce by selective mining one million tonnes per year of phosphate rock for rail to Townsville whence it would be shipped to customers in Australia and overseas. Opencut mining began in 1975 and the beneficiation plant started up in 1976. The project was due to reach full capacity by March 1977. A township 16 km north of the plant site to house the workforce was named *Monument* after a spectacular rock spire in the vicinity.

The Duchess phosphate rock contained hard, coarse silica in the form of chert which was abrasive and therefore disliked by the Australian fertilizer manufacturers. Extensive R&D was carried out on unique technology to remove the silica, including ore sorting by infra-red chemical analysis of the rock in free flight. N A (Norman) Trueman was responsible for the research which was carried out under contract by CSR Central Research Laboratory. The technology, however, had not been applied in the production plant by the time the project ran into trouble.

### **The Setbacks**

In 1975 the Whitlam Government abolished the long standing superphosphate bounty, resulting in an increase in the cost of fertiliser to Australian farmers and thus curbing demand. Superphosphate demand fell by 50%. Australian fertiliser manufacturers, who had been concerned about supplies of rock at the higher demand rate, could now meet the requirements by using imported softer rock from Nauru and Christmas Island and declined to use the more abrasive rock from Phosphate Hill.

On top of this R X F Connor, who strongly believed that the world would be short of all minerals and that the prices would continue to increase, would not grant export permits for more than one year at a time which discouraged potential overseas customers.

Connor was subsequently dismissed because of the 'Khemlani Affair' and in September 1975, Prime Minister Whitlam approved export of 2 million tonnes per year for ten years, but by that time world markets for phosphate rock had turned against sellers. The well-below-capacity production rate of Queensland Phosphate meant heavy losses and operations were terminated on 30 June 1978. Lindsay Thompson had already resigned in September 1977.

South had spent more than \$100 million on exploration, development, capital expenditure, and operating losses. As the project was financed by loans, this resulted in a very considerable cash strain.

### **Sale of Investments and Takeover Offer**

In the first half of 1978 the Chairman of BH South, J T (Jim) Tyler, visited a number of prospective joint venturers for the Phosphate Project. On 8 September 1978 South Directors announced that the search for an equity partner had been unsuccessful and that they intended to raise about \$50 million through the sale of some of their investments.

The major marketable asset was their 16% interest in Alcoa of Australia. Under a shareholder agreement South were obliged to offer their shares to the other shareholders first. WMC was

approached on 1 September 1978 and were offered the shares at between \$4 and \$4.25 each. Our reply on 19 September was negative, but we wished to reconsider our position should BH South decide to sell at a price below \$4 a share. None of the other shareholders were willing to pay the asking price.

Consequently South sought to place the shares with institutional investors. The T&G Insurance Company bought 1.5 million shares. National Mutual Life (NML) offered \$4.80, which South declined. NML soon realised that BH South shares were a better buy. They bought 15% of South on the market and then bought North's 19% shareholding in South, bringing their holding to 34.4%. In September 1979, NML made a takeover offer of \$2.50 each for the outstanding BH South shares.

### **Deal With CRA**

South's directors recommended to shareholders not to accept the offer, pointing out that the value of the Alcoa shares alone was \$2.26 per South share. They decided to look for other potential buyers.

I was in Japan at the time, and received a telephone call at the Imperial Hotel in Tokyo from Jim Tyler. After a quick consultation with Hugh Morgan in Melbourne we decided not to bid. Tyler then negotiated with Sir Roderick Carnegie, Chairman of Conzinc Rio Tinto of Australia Limited (CRA). Late in September CRA offered four CRA shares and \$1.25 cash for five South shares, conditional on 90% acceptance. The offer as at 26 September was worth \$3.40 for each South share. The South Directors recommended acceptance and announced that they would accept for their own shares.

### **WMC Bid**

On learning that CRA was the buyer, we became concerned about a large parcel of Alcoa shares getting into the hands of a competitor (CRA was the manager and major shareholder in Comalco).

We decided we could not allow this to happen, and on 10 October 1979 we offered one WMC share plus 50¢ cash, equivalent to \$3.50 for each South share (about \$210 million). By comparison, the CRA offer was then worth \$3.25 per South share. I advised Jim Tyler of the WMC offer in a letter which I personally handed over to him. As it happened, BH South Board had accepted the CRA offer at 4.30 pm and I delivered the WMC letter at 4.45 pm! The WMC offer was open until 28 December.

*The Australian* said this was 'the biggest takeover battle in Australian history'.

Discussions in Melbourne between myself, Hugh Morgan, Sir Roderick Carnegie and the Chairman of CRA's major shareholder RTZ, Sir Val Duncan, resulted in CRA withdrawing its bid and agreeing to acquire certain South assets from WMC if the WMC bid succeeded.

WMC also modified its offer to 11 WMC shares and 55¢ cash for every 10 South shares, with WMC shares on an uptrend in the market, and extended the offer.

On 28 November Bond Corporation Holdings Ltd offered NML \$4.00 per share for its 34.4% of BH South. NML declined.

On 22 January 1980 the value of WMC's offer had increased to \$5.50 per South share. Directors of South recommended the WMC offer to shareholders and accepted for their own shares. NML also accepted. Commonwealth Bank Superannuation Fund (CTB), holding over 11% of BH South shares, did not accept. WMC had 80.2% of the shares when the bid was declared unconditional and closed.

## **BH South As a WMC Subsidiary**

On 21 February 1980 South appointed four new directors: myself as the Chairman, Hugh Morgan, Hugh Clark, and Harold Amos. Former Chairman Jim Tyler, Len Fielding, and Jack Brady retired. Tyler and Brady joined CRA staff and Fielding became a consultant to CRA.

At an Extraordinary General Meeting on 21 March 1980 South shareholders approved the sale of various assets to CRA: Cobar Mines Pty Ltd, Kanmantoo Mines Ltd, Electrolytic Refining and Smelting Co of Australia Ltd, and subsidiaries. WMC was issued 19.3 million shares in CRA, equivalent to 4.06% of the company, which were sold over the next few years.

The main South assets retained by WMC were 13.1% of Alcoa of Australia, 100% of Queensland Phosphate Ltd, and 16% in Beach Petroleum NL.

## **The Winding Up**

There was no purpose in maintaining BH South as a separate company, and it was expensive to do so. Besides WMC and CTB there were only 2,900 shareholders, owning 4% of South between them.

In December 1982 WMC notified South that it proposed calling an Extraordinary General Meeting to consider a voluntary winding up of the company. South appointed Chartered Accountants Ernst & Whinney to value the company. In February they reported that shareholders could expect about \$4.69 per share on winding up.

In March 1983 shareholders agreed to the voluntary winding up of South. A liquidator (Douglas Oldfield of Ernst and Whinney) was appointed to distribute certain assets in specie, sell the remainder, and make pro rata distributions in a manner approved by shareholders at the meeting.

The liquidation was completed by June 1984. WMC and CTB received part distribution in specie and part cash; WMC receiving 10.5% of Alcoa, 83.5% of Queensland Phosphate, and \$47.5 million in cash. The other 2900 shareholders received \$4.9957 per share cash.

The statutory final meeting of BH South took place on 15 June 1984. The only people attending were representatives of WMC.

At the final Board meeting, Sir Reginald Swartz suggested the writing of the history of the very nearly 100 years' contribution of BH South to Australia. Brian Carroll, a noted Australian historian and writer was engaged to do so. His illustrated history, *Built On Silver*, was published in 1986. Sir Lindesay Clark, who had been a director and subsequently Chairman of BH South from 1956 to 1974 wrote in his foreword:

'While the company no longer exists, it contributed greatly to the development and prosperity of Australia during its life of nearly 100 years. Many flourishing enterprises today owe their success partly to the activities of Broken Hill South Limited.'

## ***TESTING THE SOIL WITH HI-FERT***

Hi-Fert Pty Ltd, a small privately owned Adelaide-based company, had been established by Evan Morgan and David Rust in 1984 to import, blend, and market a range of high analysis fertilizers in South Australia, Victoria, and New South Wales. In December 1985, Queensland Phosphate Limited (QPL), a WMC subsidiary, purchased a 50% interest in Hi-Fert Pty Ltd.

The reason for the purchase was to become familiar with the fertilizer market in Australia in preparation for Queensland Phosphate becoming a producer at some time in the future, and to provide an outlet for some of that production.

QPL moved to 68.2% ownership of Hi-Fert in November 1986, and to 100% in February 1988. The purchase was effected through an injection of capital and acquisition of shares held by Morgan and Rust. David Rust remained with the company as Sales Manager.

The production and sales results are shown at the end of this section. WMC regarded the losses, until its own production began, as a part of the cost of becoming a fertilizer producer and establishing itself in the Australian market.

In 1988 Hi-Fert introduced a new product called GOLDPHOS, a sulphur-enriched triple superphosphate, particularly appropriate for Australia's sulphur-deficient soils. The product was well received by the customers.

Initially Hi-Fert had blending and storage facilities at Port Adelaide and Port Lincoln in South Australia. In subsequent years additional facilities were established at Portland and Lara in Victoria, Kadina in South Australia, and Newcastle in New South Wales.



## ***DUCHESS AWAKENS***

### **Initial Attempt**

BH South had initiated work into improvements in beneficiation and various other studies which were continued after the takeover by WMC in 1980. R M (Richard) Morgan, a former BH South executive with degrees and a background in agricultural science and commerce, who had transferred to WMC, was appointed Manager of Queensland Phosphate to investigate the feasibility of resuming operations. He was assisted in Melbourne by Cliff Abbott and John Dennis and at Phosphate Hill by Jack Andreatza.

Various studies indicated that an operation producing 200,000 tonnes per annum of phosphate rock may be economic. As there was virtually no need for additional capital investment, operations recommenced and railing of phosphate rock to Townsville resumed in November 1981. Shipments from Townsville to domestic and overseas customers started in February 1982.

Sufficient orders to operate at the required level were, however, not obtained and production ceased again in January 1983, although shipments from stockpiles continued until May 1984. Total sales amounted to 238,675 tonnes.

On 18 October 1996 Queensland Phosphate L td changed its name to WMC Fertilizers L td.

### **High Analysis Project**

After two economically unsuccessful attempts at producing phosphate rock for sale, further investigations were directed toward the production of high-analysis fertilizers at Phosphate Hill. It was thought that this may change the fundamental economics of the project. Production of phosphoric acid at Phosphate Hill had been looked at by BH South, but not pursued.

To produce high-analysis fertilizers economically it was necessary to demonstrate that the lower than direct shipping grade phosphate rock at Phosphate Hill could be used without upgrading in phosphoric acid manufacture. It was also necessary to secure, in addition to the phosphate rock, long term supplies of sulphuric acid and natural gas at an acceptable cost.

The sulphuric acid was necessary to produce phosphoric acid by reacting it with the phosphate rock. Reacting phosphate rock with phosphoric acid would produce triple superphosphate. The natural gas was necessary to produce ammonia which, by reacting with the phosphoric acid, would result in ammonium phosphates - desirable fertilizers.

Test work by CSIRO and overseas in 1982-83 confirmed the practicability of using low grade rock direct for phosphoric acid manufacture.

The purchase of Hi-Fert in 1985 provided marketing information and experience.

The project took a long step towards becoming a reality when negotiations began for a natural gas pipeline from south-west Queensland to Mt Isa, passing Phosphate Hill, and discussions with MIM Holdings indicated that there was a real interest in building a sulphuric acid plant at Mt Isa to recover SO<sub>2</sub> from the smelter gas and thus relieve the environmental problems at Mt Isa.

## On Hold

However, on 1 August 1990 the Board considered the project in some detail and endorsed the recommendations of management that:

1. The economics were not acceptable for the project as proposed.
2. The capital cost had to be reduced significantly.
3. QPL's right to the orebody **MUST BE PROTECTED**. Past expenditures (QPL had spent \$500 million in current dollars) and the importance of the orebody (most significant Australian deposit, low in cadmium) must be emphasised in support of this.
4. The Government and others involved to be advised that we cannot proceed with the project as it was.
5. QPL to work towards substantial improvement in project economics by changing external factors.
6. Possible partners (MIM, Japanese, ICI/Wesfarmers, AMP/Australian institutions) should be considered. WMC should own more than 51% of the project.
7. Meanwhile expenditure to be minimised.
8. Hi-Fert to be maintained, but must trade profitably.

In September 1990 it was announced that the project would be kept under review, in the expectation that conditions in the future may become favourable.

## Full Ownership of QPL

In the aftermath of the BH South takeover CTB Superannuation Fund had retained a 14.62% interest in QPL, mainly because the man running the Fund (Warren McCullough) decided not to sell. During 1990 they became an increasingly restless shareholder and in October 1990 offered to sell their holding for 25 cents per share.

In November 1990 it was decided to accept the offer. The purchase price amounted to \$5.7 million.

## The Project Proceeds

Richard Morgan retired in 1995. He has recorded a detailed account of the phosphate developments during his time with BH South and subsequently with WMC in an interview with Gilbert Ralph on 16 December 1996, which is in the *WMC Historical Collection*.

Richard was succeeded by R P (Ross) McCann, a chemical engineer with considerable experience in new project development for ICI. A project office was established in Brisbane. The name Queensland Phosphate Ltd was changed to WMC Fertilizers Limited on 18 October 1996. Ross was promoted to Executive General Manager - Projects for WMC in October 1996 and was succeeded in charge of the Queensland Fertilizer Project by B L (Barry) Kelly.

The project to produce 1,000,000 tonnes per annum of di-ammonium and mono-ammonium phosphate



at Phosphate Hill, approximately 150 km south of Mt Isa, at an estimated capital cost of \$700 million, was approved by the Board on 19 December 1996. Production was scheduled to commence at the end of 1999.

Construction commenced in February 1998, was officially launched by the Premier, Peter Beattie, on 3 September 1998 and completed in December 1999.

### **Project Description**

The ore resource at Phosphate Hill was estimated to contain 104 million tonnes of phosphate rock, mineable by opencut with a mining life of thirty years. After crushing, washing and de-sliming, grinding and thickening, phosphoric acid is produced by combining the phosphate slurry with sulphuric acid produced from smelter gases (and some elemental sulphur) at Mt Isa. The acid plant at Mt Isa is the largest in the world in terms of gas flows and reduces the sulphur dioxide emissions into the atmosphere by some 80%. The acid is transported to Phosphate Hill by rail.

Gypsum waste product from the phosphoric acid plant is slurried and pumped to deposition areas. Liquid ammonia produced at Phosphate Hill from natural gas from the Cooper Basin and nitrogen from the air is combined with phosphoric acid to form ammonium phosphate slurry which is granulated and railed to Townsville for despatch to markets.

There are 220 permanent employees at Phosphate Hill and more than 250 people work as contractors on site. Employees are based in either of the main regional centres of Townsville or Mount Isa and work a fly-in fly-out roster.

While on site, employees and contractors live in modern facilities at the Monument Township, a 20 minute drive from the plant facilities. The Monument Township includes recreational facilities, large private, self-contained rooms and a comprehensive communication network.

The sulphuric acid plant at Mount Isa employs 16 permanent employees. A small team of 15 administration and operational staff work and manage the Townsville Office in the city and the operational facilities in the Townsville port area. The port facilities comprise separate storage and handling facilities for the sulphur required at the Mount Isa Operations and for the end product, the ammonium phosphate fertilizer.

### **Marketing**

In March 1998 it was announced that in addition to sales to Incitec Limited and WMC owned Hi-Fert Pty Ltd, Pivot Limited will purchase 270,000 tonnes annually from WMC Fertilizers Ltd for consumption in Australia.

In August 1998 an exclusive Marketing Agreement was signed with the Fertilizer Division of Cargill Inc for the export of up to 500,000 tonnes per annum of ammonium phosphate fertilizer for five years. First shipment of fertilizer was loaded at Townsville on 21 January 2000.

### **Comment**

When production commenced at the end of 1999 the project had been in the making since 1966, for thirty three years. For nearly twenty of these thirty three years it was in the hands of WMC. It was easily the most studied and investigated of any projects WMC had ever been involved with to date, and probably had a claim for world ranking in this respect.

While the gestation period could no doubt have been shortened had the Company focussed on it more in the late 1980s and early 1990s, it was probably necessary for some time to pass before WMC could feel comfortable with a project which had led to the demise of a large and respected company with a 100-year history.

The reluctance to become involved with it was perhaps best illustrated by the fact that, when the sharing of the assets of BH South was being discussed between WMC and CRA, neither company was anxious to have Queensland Phosphate. The property was seen more as a burden than an asset. Hugh Morgan is on record that the ownership was decided by the toss of a coin. I do not recall this, but Hugh may well have tossed for it.

The perceived value of the deposits changed when it was recognised that while export of rock was not economic, manufacture of much higher unit value fertilizers on site may be economic. From this basic change in thinking it took many years to resolve the many issues and to become convinced that this was an attractive project.

One must also remember that during the 20 years WMC had the project there were many ups and downs in WMC's fortunes, as related elsewhere in this story. Work on massive new developments naturally has to take a back seat when the Company is preoccupied literally with survival during deep downturns.

The important lesson in the Queensland Fertilizer story is that major mineral deposits should not be abandoned, even if it is not possible to see how or when they may become of economic interest. The rights to these should be retained if at all possible. This reinforces WMC's experience elsewhere and is likely to be even more valid in the future while technology is making rapid progress.

### **Subsequent Events**

The project continued to have problems. Although it received two Engineering Excellence Awards production during 2000 was only 326,000 tonnes, mainly because of difficulties with the ammonia and phosphoric acid plants. The handover of the ammonia plant, after substantial changes made by the contractors, was delayed nearly 12 months. After capitalising the costs in the first half of 2000, the operating result was a loss of \$51.1 million in the second half.

It is difficult to understand why there should have been such serious technical problems, with proven technology and key parts of the plant designed and constructed by contractors of world repute.

Production in 2001 was 709,445 tonnes. Plant problems constraining production were attended to during the bi-annual statutory shutdown. Financial result for the year was a loss before hedging, interest and tax of \$59.9 million, reflecting historically low di-ammonium phosphate prices and production problems.

I understand that nameplate capacity production was achieved in 2003. It has been suggested that WMC Resources is disillusioned with the project and has been investigating possibilities of selling it.

While not sufficiently informed to be able to comment, it is well to remember that even informed opinion is at times excessively affected by moods of pessimism (and optimism). There were times when many of those involved were quite pessimistic about the future of Alcoa of Australia. I hope that the decision regarding WMC Fertilizers, whatever it may be, will be arrived at calmly and objectively.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**BUSINESSES AT APRIL 1999**

**VOLUME FOUR**

***THE TREASURE HUNT***

# ***THE TREASURE HUNT***

## **CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>405</b>
<b>Terra Australis Explored</b> Minerals Exploration In Australia	<b>417</b>
<b>Beyond the Borders</b> Minerals Exploration Overseas	<b>425</b>
<b>Looking for .....</b> Search For Particular Minerals	<b>439</b>
<b>Logbook 1992 – 1999</b>	<b>445</b>

# ***THE TREASURE HUNT***

## **OVERVIEW**

This chapter deals with minerals exploration. Oil and gas exploration is described in Book Two Part A, *DISCONTINUED BUSINESSES, Delving into Oil and Gas*.

### **Classification of Exploration**

WMC's exploration activities fall into three categories:

- a. 'Grass roots' exploration - looking for new orebodies in areas where there are no existing mining operations.
- b. 'Advanced project' exploration - further detailed exploration of an area which shows promise of developing into an orebody.
- c. 'Mine site' exploration - detailed exploration on operating mine leases to enable preparation of mining plans and to extend known ore reserves.

This chapter deals only with grass roots exploration for minerals in Australia and overseas.

Exploration related to projects or on operating mines is described under the particular projects or operations elsewhere in this manuscript.

### **Exploration Division**

The Exploration Division (ExDiv) was formed into a separate organisational entity with its own management in July 1969. It became administratively responsible for all Western Mining's grass roots exploration activities, had its own budget, and reported against this. ExDiv also provided the exploration input (personnel, and often equipment and services) at cost to Advanced Projects. Professional exploration personnel at operations were seconded from Exploration Division, which also supplied technical advice and supervision as required. Professional development and career supervision of all exploration professionals within WMC was the responsibility of ExDiv.

R (Roy) Woodall was appointed Exploration Manager as well as Chief Geologist.

Initially the headquarters of Exploration Division was in Kalgoorlie. In January 1978 Roy Woodall, together with a small central office, moved to Adelaide and his office remained there until he retired in November 1995. In June 1978 Roy was appointed to the Board and his title became Director of Exploration.

Under Roy's management the Division established a number of Regional Bases, with local bases with resident staff covering the main disciplines (geology, geophysics, geochemistry etc) in the main project areas. The advantage of this arrangement was believed to be that staff dedicated to a particular area had an greater commitment and incentive to explore that area than people based elsewhere, and developed a greater detailed knowledge of it. The disadvantages were that staff allocation, once decided, was inflexible and there was pressure on regional staff to promote projects in their area to ensure continuity of funding. To minimise the latter problem, all ExDiv projects were subject to annual peer review. A partial list of offices and bases is enclosed.



In June 1969 H C (Howard) Stapleton was appointed Assistant Operations Manager of Exploration Division (not sure who was Operations Manager). Howard became Operations Manager in August 1969 until April 1971 when he was succeeded by I J (Ian) Duncan. Ian was in turn succeeded by D A (Don) Huxtable in November 1974. When Huxtable was retrenched after a disagreement with ExDiv management in November 1977, the position was discontinued.

Not to have someone senior in charge of the non-scientific aspects of the Division's activities was a weakness, which eventually at least partly contributed to the loss of the Ernest Henry discovery in 1993.

Until 1979 ExDiv's activities were limited to Australia, with the exception of a brief involvement in New Zealand in the early 1970s.

The Kambalda discovery in 1966 resulted in a major increase in WMC exploration activity, both because of the great upsurge in nickel exploration at Kambalda and in the region and also because of the ability of WMC to fund additional exploration. Exploration overseas received major boosts after the acquisitions in North America in 1987-88, and again following the IMES (International Mineral Exploration Strategy) report in 1994.

The headquarters of Exploration Division remained at 55 McDonald Street, Kalgoorlie, until J H (Jim) Lalor, who had succeeded Roy Woodall as Exploration Manager in 1978, moved it to the Melbourne suburb of Preston in 1980. The McDonald Street Office became the centre of exploration in Western Region. Jim's successor G D (Geoff) Loftus-Hill continued to operate from Preston but when D R (David) Harley became General Manager of Minerals Exploration in 1990 he moved the WA Exploration Office to Daly Street, Belmont. When WMC's Western Australia office was moved to the QV1 Building in St Georges Terrace in 1994, the office at 191 Great Eastern Highway, Belmont, became the WA office of ExDiv.

Roy Woodall's successor, Executive General Manager Exploration John R (Jack) Parry was based in Melbourne until 1998, when he moved to Denver (USA). There was a major change in ExDiv's organisation at that time. Two major exploration centres containing the main administrative and technical staff were established in Perth (Belmont) and Denver, with local 'satellite' offices essentially looking after field work only. Jack himself, and ExDiv headquarters, were located in Denver. Specialist staff from the two centres would travel to project areas as required.

During most of the period under Roy Woodall's leadership the philosophy of Exploration Division was that it was important to maintain the professional exploration staff intact through the lean periods, reducing expenditure on field work if necessary to be able to continue employing staff. There were several periods when ExDiv was contemplating doing contract exploration for others to enable the Division to maintain its staff, but I do not recall this actually happening. The Division also did its own drilling in Australia, and had geochemical laboratories in Kalgoorlie and Ballarat.

Under Jack Parry the emphasis changed to treating ExDiv as a business. Fixed costs (mainly staff costs) had to be managed to leave funds available for drilling and follow-up of promising leads as these occurred.

The emphasis on exploration having moved from Australia to overseas, the ExDiv drilling department had been competing with outside contractors for work at WMC operations to keep the drills and crews occupied. The drills were sold and the crews transferred to Ausdrill Ltd. The geochemical laboratories were sold to Acclabs; all future WMC geochemical work would be done by contractors.

There was renewed focus on discovering world class deposits. It was pointed out that two thirds of the wealth from mineral production came from 10% of all projects. Concentrating on major discoveries, of course, also diminished the likelihood of discovery.

On his retirement at the end of January 2001 Jack Parry commented:

In my view, the most important changes of the last six years are the following:

- The introduction of a much greater emphasis on value
- The rigorous ranking of our exploration opportunities on a global scale, ensuring that we prioritise our allocation of resources to the highest-ranked projects
- The introduction of decision-point planning and budgeting to milestones
- The elimination of regions and the reorganisation of our business around the exploration value-chain
- Significant progress towards creating a truly global exploration organisation
- A much stronger emphasis on area selection
- The institution of project-based work teams
- The uncoupling of an individual's future from the fate of his or her project
- An increased focus on exploration as a business.'

In 1974 Exploration Division had 330 employees, of which 92 were professionals. In 1980 there were 390 employees, including 115 geoscientists. On 31 December 1998 there were 232 employees (down from 411 at June 1997), of whom 85 were geoscientists.

The statistics may not be strictly comparable because of 'outsourcing' of activities (such as, for example, drilling and analytical work) in the second half of the 1990s. There are also some differences in figures from various sources, and hence minor discrepancies in subsequent text.

## **Joint Ventures**

Many grass roots minerals exploration projects over the years, in Australia as well as overseas, were pursued in joint ventures with other companies or bodies. The reasons for joint venturing ranged from farming into someone else's prospect, to sharing risks, to satisfying Government requirements, to benefiting from the venturer's local knowledge, to increasing the funding available to Exploration Division.

## **Accounting**

All exploration expenditure must be charged against profit at some time.

From the Company's inception until 1987 exploration expenditure was capitalised until a project was discontinued, when the expenditure was written off. Some provision may be made against an eventual write-off from time to time; in the mid-1980s it was decided to make a provision of up to 25% of accumulated oil exploration expenditures. With expenditure increasing rapidly in the 1980s, the accumulated capitalised amount became large and continued to increase.

In 1987 it was decided to make full provision for writing off expenditure in both minerals and oil exploration, to bring the WMC policy more in line with the practices of similar companies overseas, particularly in North America. Accumulated expenditure of \$103.5 million was provided for as an abnormal item against high abnormal profits in the 1986-87 year. If economic reserves resulted from



work on a project provided for, that provision would be credited back to profit in the year commitment to development was made, added to the capital cost of the project, and amortised.

At 30 December 1990 WMC's Balance Sheet carried the following fully provided for exploration expenditure (including at operating mines):

Minerals	\$269.4 million
Greenhill	\$27.8 million
Petroleum A/Asia	\$118.9 million
Petroleum Malaysia	\$6.3 million
	-----
Total	\$422.4 million

In March 1991 a further review of exploration accounting policy was undertaken. Six categories of exploration were defined:

1. grass roots exploration away from existing operations
2. exploration where ore had been discovered, but not yet in commercial quantities
3. exploration where a commercial discovery and a commitment to development had been made
4. exploration around an existing operation looking for a new ore source
5. exploration around an existing operation looking for extension of known orebodies
6. exploration associated with ore production.

It was decided that expenditure under categories 1, 2, and 4 should continue to be fully provided for, categories 3 and 5 should be classified as Mine Property and Development and amortised, and category 6 should be expensed as cost of production.

### Exploration Expenditure

There has been great difficulty in assembling a reliable record of ExDiv's expenditure over the years. I W (Ian) Levy endeavoured to establish exploration expenditures from 1955 to 1980 in K-report K 3765, issued in August 1982 (see Book Three, *Appendix VII*). In an accompanying memo to J H (Jim) Lalor he comments that 'At times, the accounts, cost codes and project names were in a mess, making my task hopeless'. In 2001-02 a great deal of work was done by R C (Richard) Schodde and the results, as well as some information from other sources, are also given in *Appendix VII*.

Throughout its history WMC spent on exploration at a high rate relative to its income. In the four years from 1964-65 to 1967-68, just before and after the Kambalda discovery, WMC exploration expenditure was 42.4% of total income, compared with 21.7% for Broken Hill South and from 5.0 to 7.3% for North Broken Hill, EZ Industries, and Mount Isa Mines. During the 25 years I was responsible, my files include frequent notes on the need to better match the two.

In August 1974 I suggested that an appropriate rate of Exploration Division expenditure was 15% of pre-tax profits. Exploration on advanced projects and mine sites was additional to this. There was always pressure on this target rate, ExDiv was full of new ideas, and I kept reminding people that expenditure on new prospects meant reducing spending elsewhere.

A note for discussions on 26 November 1977 says 'We must plan on the assumption that conditions will not improve significantly for, say, four years'. The aim was to reduce the net exploration expenditure (after taking in a partner for Roxby Downs and other farm-ins), to the minimum, 'nil if possible'. It must

have therefore been a pleasant surprise to Roy Woodall to receive my letter of 7 February 1979, asking him 'to give some thought to what would be done if additional funds become available'.

### **The First Forty One Years 1933 to 1974**

Western Mining was founded on the basis of the belief that scientific gold exploration had the potential to discover extensions and repetitions of known gold deposits, and to discover new deposits on which a prosperous and growing gold mining business may be built. One of the first actions of the newly established company was to carry out an aerial survey of the Eastern Goldfields. Scientific advice and guidance was given to WMC by world renowned geologists, exploration staff were encouraged to keep abreast of scientific developments, and the Company endeavoured to apply the most advanced exploration technology as it emerged.

During the period as a gold miner only from 1933 to the mid-1950s, this effort was successful in finding extensions and repetitions in known mining areas but did not result in the discovery of a previously unknown deposit outside such areas.

During the next twenty years, from the mid-1950s to 1975, the additions to ore resources and reserves on the Company's existing mines continued but there were also four new discoveries - two minor (Koolanooka Hills iron ore deposit), although its importance to Western Mining was much greater than its size would suggest, and uranium at Yeelirrie - and two major: nickel at Kambalda and copper-uranium at Olympic Dam. Another very important exploration event in this period was the proving of the bauxite in the Darling Range, which was not a discovery in the sense that the existence of the bauxite was known. WMC's exploration established the nature and major extent of the mineralisation and subsequent work showed that, while low grade, the bauxite was economic.

D R (Don) Reid's two books - *They Searched, Parts I and II* - describe WMC's mineral exploration until 1975.

### **The Next Twenty Five Years 1974 to 1999**

From 1974 to early 1999, which is the period considered by this manuscript, excellent exploration performance in the known mine areas continued. Ore reserves were maintained and often increased, both through expanding the boundaries of known ore shoots and new discoveries.

In the 1980s grassroots exploration activity was expanded to prospects outside Australia which, after cautious and tentative steps in the first half of the period, became a major exploration activity in the 1990s.

Some major events in the second half of the 1990s were:

- On 2 June 1995                    - Minerals Australasian exploration budget was reduced by 17% which resulted in the Operations Manager, John Brooke leaving the Company, the Ballarat analytical laboratory closing, and various changes to reporting relationships.
- On 6 December 1995        - restructure was announced to enable greater global flexibility with regional exploration focus and commodities based team structure. Eight roles

reporting to Jack Parry, EGM - Exploration. David Harley General Manager, Exploration - Australasia left the Company and Neil Hall Manager Administration commenced.

- On 30 June 1996 - drilling and analytical laboratory services based in Kalgoorlie were closed. These functions were outsourced.
- On 17 March 1997 - programs in East Africa, Copper programs in Central Asia and Diamond exploration ceased. Jeans Balkau assumed responsibility for all Africa/Asia programs and Dan Evans Exploration Manager - Africa/Eurasia left the Company.
- In April 1997 - an announcement was made that an office would be established in Denver, Reno office was to close, and the Ottawa office remain as is.
- On 1 July 1997 - the 'Belmont Service Centre' was established to provide accounting, technology support, information services, human resources, building and office services to the Australia and Africa/Asia regions, and the Administration and Geoscience Technology departments.
- On 14 November 1997 - organisation changes were made to reduce fixed costs and increase the proportion of funds allocated to core exploration activities. 51 positions became redundant.
- On 10 March 1998 - as part of ongoing cost reviews the budget was reduced by over 20%, 79 positions became redundant. Several country offices closed or were converted to smaller satellite offices with primary support for projects coming from bases in Perth and Denver.

There were two significant discoveries: the gold at St Ives where the existence of gold mineralisation was known but the achievement was, somewhat similarly to the bauxite in the Darling Range, the discovery of the great extent of it, and the Ernest Henry copper-gold discovery which, regrettably did not benefit WMC. The Tampakan copper-gold discovery was made in this period but, while it was large, it was at April 1999 not yet clear whether it was an economic ore deposit. (In 2000 WMC decided to retire from Tampakan). There were also smaller discoveries in greenfields areas; copper-zinc at Benambra, copper at Nifty, gold at Jenipapo in Brazil, and close to the end of the period gold at Meliadine in the Nunavut Territory (previously a part of the North-West Territories) of Canada.

The Company was also involved in oil and gas exploration in this period. This is described in Book Two, *DISCONTINUED BUSINESSES, Delving into Oil and Gas*.

### **'10 in 10'**

After the major reorganisation of the Division had been completed in 1998, Jack Parry, who had succeeded Roy Woodall in November 1995, set ExDiv the target of '10 in 10', the discovery of ten world scale mineral deposits in ten years (by January 2006). The Division was running behind this target when I retired in April 1999. Proportionately, they should have discovered three deposits by that time, but could perhaps lay a partial claim to only one - Meliadine, work on which had started before January 1996 and which had been introduced to WMC after discovery by others.

## Geoscientists

The following are extracts from notes by G M Ralph on Geoscientists' Employment Record (GH1-EXDIV-21):

The Geoscientists' Employment Record, which was initially collated manually by Wilf Keddy and computerised by Hamish Patterson in about 1990, provides an excellent record of most geoscientists in the WMC Group up to 1994 when it was discontinued due to the computer program Quattro Pro for Windows being superseded and it then being impractical to convert the data into Lotus or any other 'accepted' program. A much less comprehensive record is now maintained by the HR staff in Belmont.

In December 1974 WMC had 92 geoscientists, 34 of whom were seconded to operations, 47 were involved in grassroots exploration and 11 were on study leave or some other such activity. Those at operations were; KNO (22), KLV (8), Jurien (1) and CNGC (3). There were 10 exploration centres; Kalgoorlie (19), Leonora (4), Ballarat (2), Queanbeyan (3), Adelaide (5), Preston (4), Meekatharra (4), Perth (4), Ravensthorpe (1) and Townsville (1).

The 1974 WMC Annual Report described how mineral exploration continued in WA, Vic, and NSW, and new bases were established in Qld and SA. A new laboratory was built in Kalgoorlie. Exploration was mainly directed to a search for nickel, gold and base metals in WA. Test drilling for coal began near Degulla in Queensland in a Joint Venture with Shell. WMC entered into a number of joint ventures with several oil companies exploring in the Cooper and Pedirka Basins.

By December 1980 there were 115 geoscientists; 43 at operations, 65 in minerals exploration, 1 in petroleum and 6 'other'. They were; KNO (20), ODO (9), KMA (4), CNGC (4), WNP (3), H50 (2), and TST (1). Of the ExDiv geoscientists 14 were in Adelaide, 14 in Kalgoorlie, 12 in Perth and 6 in Preston. The remaining 19 were at outposts. Additional bases had been established at Bairnsdale, Stawell, Brisbane, Wittenoom, Orange, Townsville, Yeelirrie, Bendigo and Mt Isa. One officer was involved with petroleum. Jurien was closed and other operations added included RMS (ODO), H50, WNP, TST and KMA (which replaced KLV). Nine geologists had been retained from the BHS-MEPL takeover, including J K (Keith) Rodgers and J (Jens) Balkau who were at their base in Orange.

By December 1990 there were 120 geoscientists; 50 at operations, 59 in minerals exploration (including 9 overseas), 1 in petroleum, 1 in coal and 9 in 'other'. Additional operations included; LNO, KGO, SJV and VJV. In addition there were some geologists based at overseas operations which were not included in these figures. The number at operations were; KNO (14), LNO (6), H50 (5), ODO (5), KGO (5), WNP (4), CNGC (4), VJV (2) and one at GGO, East Ops, Nic Ops, SJV and TST. For ExDiv geologists there were 13 in Kalgoorlie, 11 in Perth, 8 in Preston, 6 in Pasadena, 6 in Townsville and one to three in each of the remaining centres. There were additional bases at Pasadena, Kalgoorlie (diamonds), Throssell Range, Brazil, Denver, Toronto, Manila, Liberia and Chile.

At 31 December 1998 Exploration Division employed 85 geoscientists. In addition, 69 geoscientists were seconded to the Nickel Business Unit, 47 to the Gold Business Unit, 10 to the Copper Business Unit, 3 to the Industrial Minerals (Talc) Business Unit, 18 to Group Projects and 3 to the Alcoa gold operation at Hedges, a total of 236 geoscientists in the WMC Group.

## **Strengths, Weaknesses and Threats in 1994**

An analysis in 1994 concluded as follows:

### **Exploration Strengths**

1. Strong multi-disciplinary teamwork focussed on exploration organisation  
→ Geophysics, geology, geochemistry, knowledge of ore deposit, image processing, and interpretation skills
2. Excellent discovery record in copper, copper/gold, and nickel
3. Excellent discovery record at existing operations
4. Excellent reputation for finding orebodies in deeply weathered and concealed terrains
5. Internationally recognised reputation for exploration for copper, nickel and gold
6. Developed Iron Oxide exploration model / world leaders

### **Exploration Weaknesses**

1. Poor regional exploration record in WA gold and the Americas
2. Limited experience in developing countries
3. Procedures for accessing best exploration ground are limiting
4. Lack of exploration organisation outside of Australia and Americas
5. Under-resourced in commercial, legal and small acquisition skills

### **Exploration Threats**

1. Increasing global competition  
→ Average regional exploration expenditure of top 25 explorers in 1993 was A\$75M across 12 countries
2. Increasing difficulty in gaining access to best ground
3. Increasing social, environmental, OH&S, and legal issues particularly in developed countries
4. Discovery of another Norilsk by a competitor
5. Depressed metal prices for extended period (funding threat)
6. Competitor develops new proprietary technology significantly driving down capital and operating costs, or lowering environmental impact

## The Results of Exploration

Looking back, the major mineral interests of WMC at April 1999 - nickel, aluminium, gold, copper, and uranium - were all founded on exploration successes. The nickel and aluminium interests had been expanded substantially by acquisitions, but the Company would not have been in any of these businesses without the initial major exploration success and subsequent ongoing success in adding to the ore resources and reserves. The only operating activities based on acquisitions were the industrial minerals (talc) business, and the fertilizer plant nearing completion in Queensland.

It was also noticeable that, with the exception of gold, the initial discoveries which had established the major WMC businesses had all been made in the mid-1950 to 1975 period, and that no new businesses or substantial extensions of existing businesses had resulted from nearly 20 years of mineral exploration overseas. A very important and interesting question, the investigation of which is outside the scope of this manuscript, is why the earlier period was so successful in discovering new major orebodies and why this success did not continue.

## History of WMC Exploration

ExDiv has extensive technical records of its activities and the history of its successes and failures until 1975 has been well covered by Don Reid's two books. There are also J D (Don) Campbell's reflections 'In Retrospect' in his *Hidden Gold - The Central Norseman Story*. With some notable exceptions (such as the Olympic Dam discovery) there has been no such historical drawing together of the threads after that time, and it is virtually impossible for an outsider to construct an overview from the technical records alone.

From 1992 onwards the Metals Economics Group of Halifax, Nova Scotia, published annually *Corporate Exploration Strategies: A Worldwide Analysis*, which included a section on WMC exploration. Their assessments from 1992 to 1999 are given at the end of this chapter. The list of references in Appendix VII containing expenditure information also includes descriptions of various activities.

There is the story to be told about ExDiv's emphasis under Roy Woodall on being at the forefront of using new technology and new thinking, such as application of geophysics and geochemistry, X-ray diffraction, satellite imagery, and computers. There is the story of the contribution made by many people, from professionals to supporting staff. The people have been mentioned in appropriate places in this manuscript as far as possible but, again, the full story cannot be told by an outsider.

A start may have been made. In late November 2002 I received a letter from Professor Douglas Fuerstenau of Stanford University, explaining their Oral History programme for recording the recollections of eminent exploration geologists and suggesting that WMC may wish to financially support the recording of Roy Woodall's. I passed the letter on to Hugh Morgan, not expecting early response because of the preoccupation with the demerger. To my surprise Hugh almost immediately responded to Professor Fuerstenau, asking for a formal invoice so that the Company may send a cheque.

A littler earlier Roy had told me on the phone of his intention to write about his time with ExDiv and I sent him the list of contents of what I was writing and, later, drafts of some sections he indicated may be of interest to him. I hope he will pursue his writing. No-one else could record the history of one of the most successful exploration teams in the world as well as he can.

## Subsequent Events

The first promising discovery by the reorganised ExDiv was made after the period covered by these

recollections. On 17 April 2000 a diamond drill hole at the Nebo prospect on the west Musgrave project in Western Australia intersected 26.55 metres of 2.45% Ni and 1.78% Cu. The discovery was on an Aboriginal Reservation. Lengthy discussions with aboriginal owners and some further drilling have not to date (November 2003) resulted in the delineation of an economic orebody.

In the 2001 Annual Report there were the following comments:

'Our focus is on increasing company value through sustainable growth. Traditionally, we have grown through discovery and acquisition. We have now expanded our options to include incremental growth, improved business practices, innovation, and market opportunities and developments.

The 2001 restructure created Business Strategy and Development, which brings together strategy, exploration, projects, technology, marketing, mergers and acquisitions, information systems and supply functions.

Under the new structure all growth opportunities, from exploration to technology, compete against each other for available capital. Ideas providing the greatest yield for the capital invested receive priority. This will further drive returns and reduce costs.

.....

During 2001, exploration underwent substantial change. We decided to close our Brazilian and Chilean offices, and consolidated our exploration skills in smaller teams based in Perth in Australia, and Denver in USA. These teams will continue to seek exploration opportunities in their respective regions, while maintaining capacity to pursue projects worldwide.

The group is focusing on the early stages of exploration - conceptual target selection, validation and initial testing - where we will augment this effort by developing portfolio valuation and risk management tools, and new geophysical techniques. These skills provide us with a competitive market advantage, and have delivered major discoveries, such as copper at Olympic Dam, South Australia, and bauxite in the Darling Range, Western Australia, which form the bulk of our world-class asset portfolio.

The restructure will save around \$30 million over the next two years.'

Jack Parry retired on 31 January 2002.

Barton Suchomel, based in Denver, was appointed General Manager Exploration, reporting to A G (Andrew) Michelmore, Executive General Manager, Business Strategy and Development Division. The vital statistics were:

	In 2001	In 2002
Permanent Staff	188	40
Budget	\$57.1m	\$25m
No. Projects	17	7
Countries	9	5
Ratio fixed to variable costs	70%	50%

In 2002 about 25 of the 40 permanent staff were based in Perth.

Among countries vacated were Brazil and French Guiana, and Chile. New projects were being pursued in Peru and Mongolia.

In March 2003 Bart Suchomel listed the following as some of the key issues in minerals exploration:

First, mining industry financial performance has been less than stellar for a number of years. This had led, particularly for larger companies, to a significantly increased target threshold in terms of size and quality of mineral deposit.

Second, global exploration maturity has increased dramatically in the last 10-20 years, serving to decrease the chance for an "easy win". Several of the more recent major discoveries have been in very remote areas or under the complex and difficult cover of unrelated rocks, sediments and soils.

It is fair to say that more of the world being open to mineral exploration following the end of the Cold War has not yielded the world-class discovery bonanza we expected it would.

These factors and others, taken together, mean that the rate of discovery of world class mineral deposits has declined, and therefore they have become more expensive to find. Interestingly, this same issue has been confronted by the petroleum industry and even the pharmaceutical industry. New world class "discoveries" of many types are becoming more difficult and more expensive. Clearly, new and innovative approaches are needed.'



## ***TERRA AUSTRALIS EXPLORED***

Exploration on advanced projects or related to operating mines and the stories of new discoveries are described in the chapters referring to these activities. The chronological summary in this section refers to ExDiv activities, based mainly on Annual Reports. More comments appear in *Looking For .....*

### **1974-75**

Exploration continued in WA, SA, VIC, NSW and Qld.

Nickel exploration proceeded in the Norseman-Kalgoorlie-Wiluna region. WMC entered into a joint venture with North Broken Hill, Pickands Mather, and others to earn up to 51% interest in nickel prospects at Ravensthorpe.

Gold exploration was extended to new areas in Victoria and WA.

Uranium exploration areas in WA were retained, but little work was done pending announcement of the Federal Government's uranium policy.

Initial drilling for coal in the Degulla area of the Galilee Basin in Queensland in a joint venture with Shell was completed.

### **1975-76**

The coal exploration joint venture with Shell was terminated, the coal discovered being uneconomic.

Nickel exploration proceeded, mainly in the Eastern Goldfields of WA. Sherritt Gordon withdrew from the nickel laterite joint venture in the Ora Banda-Kunanalling area.

Gold exploration continued in WA, Vic, and NSW. A joint venture was formed with Homestake under which the latter could earn a 49% interest in gold exploration tenements in central and western Victoria by contributing 75% of the expenditure until Homestake's contribution is equal to WMC's total expenditure on Victorian exploration.

Drilling on Roxby Downs station in SA intersected copper mineralisation in four drillholes.

### **1976-77**

Intensive exploration continued at the Olympic Dam project at Roxby Downs. By the end of the year 13 vertical drillholes had been completed. Drillholes had also been completed on five other prospects between 14 and 80 km from Olympic Dam, indicating several areas requiring further drilling.

Nickel exploration proceeded.

Joint ventures were formed with Armco Resources Ltd to search for chrome and the Central Electricity Generating Board of UK to explore for uranium, both in specific areas of WA.

The Homestake Joint Venture for gold in Victoria was terminated.

**1977-78**

Exploration for copper-uranium continued at Olympic Dam and in other prospects in the region in a similar geological environments.

Copper and zinc mineralisation was discovered at Benambra in Victoria in a 51:49 Joint Venture with BP.

Tin mineralisation was outlined in the Herberton district in Queensland.

**1978-79**

An agreement with BP to Joint Venture the Olympic Dam Project was announced on 27/7/79. This now became a Project, no longer under the control of ExDiv.

The Wilga and Currawong orebodies were outlined at Benambra.

Nickel exploration continued for sulphides in the Kalgoorlie district, and nickeliferous laterites were drilled for smelter flux.

**1979-80**

Copper exploration continued in the area surrounding Olympic Dam in a joint venture with the BP Group. Mineralisation was intersected at the Acropolis prospect 27 km southwest of Olympic Dam. (This project was initially named Appendicitis Dam. It was renamed Acropolis after my intervention - I could not visualise a mine called Appendicitis Dam!).

Further drilling outlined ore reserves at Benambra.

Brown coal (lignite) was discovered 25 km north of Kingston in SA. In situ reserves were estimated at 970 million tonnes.

Nickel and cobalt containing laterite was discovered at Bulong, 20 km east of Kalgoorlie.

**1980-81**

Exploration Division at June 1981 employed 78 geoscientists amongst a total strength of 370. A further 43 geoscientists were employed on operating mines and advanced projects.

Regional headquarters were at Kalgoorlie, Perth, Adelaide, Melbourne, and Brisbane. There were 'numerous' bases throughout Australia. Analytical laboratories were at Kalgoorlie and Ballarat.

Exploration for copper continued in a joint venture with BP on the Stuart Shelf and evaluation drilling continued at Benambra. Diamond drilling for gold was in progress at Bendigo.

A 50:50 joint venture was formed with Central Norseman Gold Corporation to investigate and, if warranted, bring into production the Stawell gold project in Victoria. A decline was commenced by the end of the year.

**1981-82**

Nickel, copper, lead-zinc, and gold exploration continued throughout Australia.

Diamond drilling continued on the Stuart Shelf and in Bendigo. Evaluation drilling of the Currawong discovery at Benambra continued. Nickel sulphide mineralisation was intersected at the Blair prospect, 35 km north of Kambalda.

**1982-83**

Exploration emphasis was on gold, although exploration for base metals continued. Gold exploration, particularly in Eastern and North-Eastern Goldfields, was focussed on finding deposits which could provide feed for the Kambalda and Windarra mills.

Diamond and percussion drilling continued at Bendigo.

Exploration on the Stuart Shelf and evaluation drilling at Currawong continued. Management of the Moonta Copper Joint Venture with North Broken Hill was resumed.

**1983-84**

Emphasis throughout Australia continued to be on gold exploration. Several small opencut deposits were located to supply feed to the Kambalda and Windarra mills.

A major percussion drilling programme was undertaken at Bendigo.

Base metals exploration in the Throssell Range in WA intersected copper carbonate and sulphides at the Nifty prospect. Drilling of the sulphide zone continued.

BP withdrew from Stuart Shelf exploration in the latter part of the year (JV terminated 19/6/84). WMC continued the project on its own account. The previous licence area of 15,000 sq km granted under the Indenture Agreement was reduced to 3,000 sq km covering the Acropolis, Wirrda Dam, and Oak Dam prospects.

**1984-85**

Exploration continued for nickel, base metals, gold and diamonds.

Following encouraging drilling results at Bendigo, consideration was given to underground exploratory development.

In WA several gold discoveries were made within the ambit of the Kambalda and Windarra treatment plants.

Nickel exploration continued in the vicinity of Kambalda.

At Throssell Range the drilling of copper carbonate at Nifty was completed. The resource was insufficient to warrant development and drilling of the sulphide underneath the carbonate continued.

**1985-86**

An Agreement with the WA Government granted exploration rights over 5,700 sq km in the Throssell Range for six years. Several indications of copper and lead-zinc mineralisation separate from Nifty were located.

At Benambra an Agreement was concluded with Roche Bros under which Roche had the right to purchase the assets of the joint venture.

In WA several small gold discoveries were made in Eastern and North-Eastern Goldfields. Apart from two prospects close to the new Emu Operation near Agnew, the discoveries were remote from existing mills and were scheduled for treatment by on-site mobile plant.

**1986-87**

In North Queensland Nittoc Construction Co of Japan entered into a joint venture entitling them to earn 49% of WMC equity in the Hodgkinson Joint Venture with ACM and in the Bull's Pinnacle gold prospects. Gold exploration was also pursued in the Drummond Basin, Mt Garnet, and Charters Towers districts in Queensland.

Encouraging gold intersections were made in drilling at Clunes, Tarnagulla, and Kingston in Victoria.

In WA three small gold deposits amenable to opencut mining were discovered.

Lead-zinc values were encountered in drilling at the Warrabarty prospect 55 km from Nifty in the Throssell Range.

On the Stuart Shelf in SA the Power Nuclear Corp of Japan became entitled to earn up to a 25% interest in the 3,000 sq km exploration area.

**1987-88**

Gold discoveries were made at Jasper Hill 90 km southeast of Laverton and at Sandstone in WA, and at Yandan in North Queensland.

In Victoria, drilling at Kingston downgraded the prospect.

In the Throssell Range sub-economic zinc mineralisation was drilled at Warrabarty.

WMC's 57% interest in the Moonta Copper Project was sold.

**1988-89**

A gold discovery was made at Mt Dimer 150 km west of Kalgoorlie. Evaluation drilling at Nifty continued to define copper sulphide mineralisation.

The WMC interest in the Benambra project was sold.

**1989-90**

Exploration emphasis was on gold, with reduced activity in Victoria and increased work in WA. A small deposit was discovered at Butchers Well North 70 km south of Laverton.

Evaluation drilling at Nifty continued to delineate reserves, and a study of the economics commenced. Low grade lead-zinc mineralisation was found elsewhere.

Gold exploration continued in the Drummond Basin, close to Yandan, in North Queensland. Lead-zinc exploration north of Mt Isa recommenced.

**1990-91**

Gold exploration was reduced, while base metals exploration proceeded in Pilbara in WA (mainly in the Throssell Range) and Qld (in the Drummond Basin, around Cloncurry, and north of Mt Isa). Lead-zinc mineralisation was intersected at Walford Creek 330 km north of Mt Isa.

**1991-92**

In WA, nickel and gold exploration proceeded in the Kambalda and Mt Keith areas. Small deposits of both gold and nickel were discovered at Widgiemooltha and south of Kambalda. Drilling discovered gold at Western Queen, 100 km northwest of Mt Magnet.

In Queensland a Joint Venture with Hunter (WMC 70%, Hunter 30%) discovered copper-gold at Ernest Henry, 40 km north of Cloncurry.

Drilling for lead-zinc proceeded at Walford Creek. Copper-gold mineralisation was discovered at two locations near Tennant Creek in Northern Territory.

**1992-93**

Gold, copper, and nickel exploration proceeded in the Leinster-Mt Keith belt, the Kalgoorlie region, in South Australia, and in North-West Queensland.

**1993-94**

Gold, copper and nickel exploration proceeded in the Leinster-Mt Keith area, the Kalgoorlie region, and in the Murchison in WA, the northern Eyre Peninsula in SA, and in NW Queensland.

**1994-95**

Exploration progressed in the Mt Keith, Meekatharra, and Onslow areas in WA, on the northern Eyre Peninsula in SA, at Tanami district in NT, and in northwest Queensland. Diamond exploration proceeded, principally in WA.

**1995-96, 1996-97, 1997-98**

Before 1983-84 there was no mention of overseas exploration in the Annual Reports. In the next ten years exploration in Australia and overseas were dealt with in approximately equal manner. After 1995-96 the implementation of the International Minerals Exploration Strategy (IMES) study and various

overseas projects fill virtually all the reporting; exploration in Australia hardly gets a mention. In 1995-96, 30% of grassroots exploration expenditure was in Australia, compared with 54% in the previous year.

## **AUSTRALIAN EXPLORATION PERFORMANCE**

### **The Mackenzie-Doggett Study**

In December 1996 Brian W Mackenzie and Michale D Doggett of Queen's University, Toronto submitted their report on *Exploration Performance of Western Mining Corporation 1955-1994*. The objective of this study was 'to evaluate the exploration performance of Western Mining Corporation (WMC) in Australia during the 40-year period 1955-94. This performance was compared with the collective experience of all other explorers in Australia'.

### **Basis of Study**

The study was confined to 'those WMC exploration expenditures which relate to the search for and discovery of new metallic mineral deposits in Australia during the 1955-94 period'. The specific groups of interest were base metals (copper, lead and zinc), gold and nickel. Expenditures in dollars of the day were converted using inflation multipliers to constant 1994 Australian dollar equivalents.

Relevant expenditures in the three categories were included, regardless of whether or not they resulted in new discoveries. Expenditures related to new discoveries included primary exploration and delineation as well as ongoing additional and extension expenditures. No expenditures relating to discoveries before 1955 were included.

Expenditures on deposits acquired by WMC after discovery by other companies were not included. Expenditures on discoveries by WMC sold to other companies were included.

Expenditures and returns from economic discoveries by WMC in a joint venture with others were considered as 100% WMC.

### **Findings**

The study attempted to evaluate the economic value (net present value and rate of return) of the various discoveries. As this depends very much on numerous assumptions and I am sceptical of the merit of such evaluations, I have ignored this part of the study for my present purposes.

Conclusions of interest to me were:

#### **Base Metals**

- \* Four economic discoveries were made

#### **Gold**

- \* Of 34 discoveries, 23 were deemed economic

#### **Nickel**

- \* Typical WMC economic nickel discoveries were small

### **Overall**

- \* 73 discoveries were made, of which 48 were deemed economic on a before-tax basis; four of these became uneconomic after Commonwealth and State taxes and royalties
- \* Average discovery and delineation cost of an economic deposit was \$18 million
- \* None of the WMC 48 economic discoveries combined above average size and grade
- \* The average results were strongly influenced by the successes in the Kambalda area and the Olympic Dam discovery.
- \* Compared with other explorers in Australia, WMC discovery costs ranged from one half for base metals to one quarter for nickel
- \* On an estimated long term rate of return basis WMC outperformed other explorers for base metals and nickel, but had a lower rate of return for gold.

### **Conclusion**

WMC exploration performance during 1955-94 'represents an unqualified success story ..... It is apparent that WMC has an enormous competitive advantage'.

### **Comment**

The Mackenzie-Doggett Study excluded ExDiv costs other than in the specified three categories, and included other than ExDiv costs (i.e. project and operations' exploration costs) for successful discoveries. It was nevertheless an interesting attempt to summarise WMC Australian exploration performance during the 40 year period.





## ***BEYOND THE BORDERS***

As far as I have been able to ascertain, WMC's involvement in minerals exploration outside Australia began in 1969 in New Zealand.

### **New Zealand**

The early reconnaissance was done by Warwick Hughes, part time while he was studying for a Ph D at Otago University. P J (Peter) Shugg was subsequently appointed Officer in Charge in New Zealand.

By January 1971 several prospects had been located, the main one being a mercury (cinnabar) prospect near Waiare on North Island where some mercury had been produced in the 1940s. WMC held an 80% interest with two New Zealand vendor companies.

In November 1972 Peter Shugg's report concluded that the deposit was not viable and the WMC should sell its interest. After some arguments with the vendors, WMC finally withdrew from the venture in February 1975. Although not recorded, a part of the reason may also have been environmental concerns about mercury.

Various other prospects (including elemental sulphur and gold) were considered but not pursued, and WMC withdrew from New Zealand about 1975.

### **Overseas Exploration Generally**

Following the initial effort in New Zealand, Roy Woodall kept bringing up from January 1972 onwards proposals for overseas exploration in the United States and in South-East Asia. After discussion at the Executive Meeting on 23 January, I asked J H (Jim) Lalor to prepare a discussion paper for the next meeting. In a note to Jim on 26 January I pointed out some of the relevant issues:

- no tax deductions overseas until income is generated
- cost of expatriate staff, investigations of legal and tax issues, governmental requirements, etc to be carried by exploration
- likelihood of having to yield equity to foreign governments and/or companies
- WMC in preferred position in Australia but foreign company overseas
- welcome of foreign investment likely to diminish as development proceeds
- relative merits of grass roots exploration vs development of a known deposit or advanced prospect vs establishment of processing plants in market areas.

My own view was that WMC was not yet ready to go overseas.

### **Overseas Uranium Exploration**

Beginning in 1973 there was considerable discussion of uranium exploration in the USA. In mid-1975 a uranium exploration joint venture with British Nuclear Fuels Limited was under discussion. In July 1975 Dr Eric Cameron (who had a major role in the Yeelirrie discovery), together with Mr R Ryan of GeoPeko Pty Ltd, visited Iran (with the blessing of the Australian Government) to explore possibilities of assisting government agencies in Iran with exploration for uranium and other minerals.

None of these proposals proceeded.

## Brazil

In 1979 WMC became interested in exploration in Brazil. The Company's involvement in Brazil is described in Book Two Part A, *THE GOLDENTHREAD, The Boys In Brazil*.

## Fiji

In 1983 WMC entered into a joint venture with respect of the Vatukoula Gold Mine in Fiji, which prompted exploration in Fiji, both in a joint venture with Emperor Gold Mines and on WMC's own account out of an office in Suva, until withdrawal in 1989. The Company's involvement in the Vatukoula Mine is described in *THE GOLDENTHREAD, Gold In The Volcano*.

The 50:50 Tavua Basin Joint Venture exploration in an area surrounding the Vatukoula Mine resulted in the discovery of the Prince William Flatmake at the Nasomo Project in April 1985. Because of the differing equity interests of the parties in the Vatukoula Mine and in the new discovery, the Tavua Basin Mining Joint Venture was formed in February 1986 to develop and work this deposit.

In June 1983 WMC was invited by Anka Mineral Exploration Ltd to explore their Fijian tenements at Waimanu and Waisali. An option agreement was signed in October 1983.

A base in Suva was opened in January 1984.

During the life of the Suva office the exploration emphasis was on the Waidina area, particularly on the known porphyry copper systems at Namosi to the west of Suva. The Suva Office was closed in July 1989 as it was believed that other areas in the Western Pacific, particularly the Philippines, offered better prospects for discovery.

## Western Pacific

In February 1983, approximately coinciding with WMC's interest in Fiji, ExDiv formed the Western Pacific Gold Project (WPG), headed part-time by Jim Ross. The intention was to locate promising prospects and to seek funding from interested parties. This did not happen, and with the exception of the two exploration joint ventures in Fiji, WMC sole-funded all exploration in the Western Pacific.

Initial emphasis was on the Melanesian Borderlands, extending from New Zealand to Tonga, Fiji, Vanuatu, and New Caledonia to the Solomon Islands and Papua-New Guinea.

Frank Reid was employed on a full time basis in December 1985.

Targeting in Vanuatu and the Solomons was completed in April 1986. In May 1987 a group of WMC people led by Jim Lalor visited the Philippines for an assessment of the political, economic, and security risks.

A preliminary assessment of Thailand in 1988 concluded that the country was not sufficiently attractive.

There was a high level of interest in Papua New Guinea, which was terminated when H M (Hugh) Morgan decided (about 1990) that the political and social risks were unacceptable.

Preliminary evaluation of New Caledonia concluded that the political instability precluded further studies.

## Philippines

After a group of WMC people led by Jim Lalor visited the Philippines in May 1987, a technical proposal for a production sharing contract on Masapalid Island was presented to the Philippines Government in November 1987. The Archangel Option Agreement was signed in December 1987.

WMC Philippines was incorporated in September 1988. An office in Manila was opened in October 1988. Drilling at Archangel commenced in April 1989.

Pegging of ground was held up because of delays in registering a Filipino Corporation in which WMC would have a 40% interest, as required by Philippines Mining Act.

In 1990 WMC was evaluating a chromite deposit at Narra on the island of Palawan which promised modest early cash flow from the sale of concentrates and lump ore.

In 1993-94 several copper-gold prospects were discovered on Mindanao.

In March 1995 a Financial and Technical Assistance Agreement (FTAA) was concluded over a part of the Tampakan copper-gold project in south-eastern Mindanao. A substantial drilling programme was in progress at Gitong Bato Prospect within that area.

The Tampakan Project is described in Book Two Part A, *THE BURNISH OF COPPER, In The Philippines*.

In all, from 1987 to 1998 WMC evaluated more than 200 exploration prospects in the Philippines, of which 12 were examined in detail. Only one - the Tampakan Prospect - reached project status before it was decided in to discontinue all other work in the Philippines as a matter of policy.

## China

Early WMC exploration interest in China is described in *THE GOLDEN THREAD, The China Episode*.

Attention to the Tian Shan auriferous belt in Xinjiang province in north-west China (see map following this section) had been directed by the IMES Study in 1994. After the Chinese Mineral Resources Law had been amended on 1 January 1997, a Memorandum of Agreement over the 700 sq km area was signed in February 1997, leases for the Tulası Project were approved in June 1997, and the Joint Venture Agreement was signed in September 1997. WMC held a 75% interest, and three Chinese Government partners had 25% between them.

A community information programme began in April 1998, Chinese contract staff was employed in May 1998, and low key exploration commenced in June 1998.

I visited the project which contains a number of large tonnage low grade targets (see location maps) in September 1998, met the joint venture partners in Urumqui and Yining, and visited the Kanbouchazouta Prospect about 40 km from Yining, near the operating Arxi Mine (see map following this section). It was a tough all-day trip on eroded tracks in attractive undulating grass country on which Kazakh herdsmen were grazing their sheep, with snow-capped mountains in the distance. One of the herders joined us for a sandwich lunch near the prospect.

I was impressed with the prospect and the people. The mineralisation occurs in near-surface

sedimentary beds and, although low grade, can be mined and processed at relatively modest capital cost, and the operation could be expanded in stages. This represented a substantial advantage in a country where there was virtually no previous experience with foreign investment in the minerals industry.

One of the issues in this part of China is, that the native people in Xinjiang Province are not Chinese but muslim Uighurs of Turkoman origin. While there was no open rebellion and a number of the officials I met were Uighurs, there existed a separatist movement in north-west China to gain independence for the Uighurs.

## **Nicaragua**

In 1994-95 WMC entered into a joint venture to explore for gold in an over 30,000 sq km area in Nicaragua. WMC was the project manager and could earn up to a 70% interest.

## **Africa-Eurasia**

A new Africa-Eurasia group was established in February 1995, with initial emphasis on gold in East and West Africa and both gold and copper in the Central Asian republics.

## **United States**

In January 1972 I commented to Roy Woodall on a proposal he had submitted to Brodie-Hall regarding copper exploration in the United States. Because WMC's exploration expenditure was already higher than it should have been relative to income, I concluded that 'It is likely that if we continue to grow we would wish to expand our operations beyond Australia at some future time. I personally doubt whether this is the time to do so but would be most interested in discussing the matter further should anyone have different opinions'.

The first exploration work by WMC in USA was a limited investigation of uranium prospects by D F (Dan) Evans and, later, Hamish Paterson, in the Great Lakes area in 1976. The prospective land was all taken up and no projects resulted.

In June 1984 Bruce Kay embarked under the ExDiv scholarship scheme on MSc studies at the Colorado School of Mines, and in January 1985 he began to study gold mineralisation in western USA. Following a recommendation by him, in August 1985 it was decided to proceed with following up opportunities, and in January 1986 an exploration office, headed by Bruce Kay, was established in the basement of his house in Golden, Colorado.

Because of budget limitations, the rationale initially was to locate poorly-managed, under-geologised gold projects in old mining districts which would respond to application of WMC exploration expertise and generate early cash flow for further exploration: 'early cash flow, no blue sky' in the words of Roy Woodall.

(The Anacacho Project in Texas in early 1986, which was not initiated by ExDiv, is described in *THE GOLDEN THREAD, Gold in Texas Tar*).

## **Camp Bird**

In May 1986 Bruce Kay completed an evaluation of the Camp Bird Mine in the San Juan mountains of south-west Colorado. The mine had produced four million ounces from high grade veins. An option was negotiated with the owner, Federal Resources, who worked the mine on a small scale, with Royal

Resources (to become Royal Gold) and Ouray Partners having 20% and 5% interests in a joint venture respectively, to develop additional reserves in the existing mine and explore for a new ore position on the Camp Bird vein to the east. Estimates indicated an after tax profit of \$28.7 million over seven years, with an Internal Rate of Return of 83%.

Participation in the Joint Venture was approved by the WMC Board on 31 July 1986, and the venture commenced on 14 August. WMC participated through Chipeta Mining Corporation, a WMC subsidiary formed for the purpose.

WMC were managers but retained all existing mining and geological staff, including the Chief Geologist and the Mine Manager. A junior WMC mining engineer was added to the staff in November 1986.

In 1986-87 and 1987-88 rehabilitation of the underground mine was in progress and underground exploratory drilling commenced. High grade gold intersections were made. In 1987-88 1348 ounces of gold and 15,701 ounces of silver were produced from remnant mining. In 1988-89 the production was 2022 ounces of gold.

Drilling of cross-veins, particularly the Monument, indicated high grade gold in the undeveloped upper levels of the mine. Development reached the area in June 1989, but no gold was found in the vein. Re-assaying of all high grade intersections of the Monument vein in August and September established that all high grades had been falsified.

Surface drilling of conceptual targets on other veins and the Camp Bird vein was commenced in the summer of 1989, but not completed. The original target to the east was never drilled.

WMC withdrew from the joint venture in October 1989, after settling a claim by Royal Gold for \$3 million, and withdrew from management by late 1990 after posting a \$100,000 environmental bond with the Colorado State Government. The net WMC expenditure, including the settlement and the bond, was \$19,954,000.

The WMC involvement in Camp Bird was an unmitigated disaster. Instead of being an early source of cash flow, the project consumed a substantial sum. We were obviously extraordinarily naive in trusting the previous management and allowing them to operate without any supervision. There must have been considerable amusement about the gullible Australians.

A very similar situation arose at very much the same time with the acquisition of Seabright Resources in Nova Scotia. This is described in Book Two Part B, *THE TROUBLES*.

## **Tintic**

The Tintic mining district, located in a desert mountain range south of Salt Lake City in Utah had, since its discovery in 1869, produced more than 19 million tons of ore, 2.7 million ounces of gold, 273 million ounces of silver, 137,000 tons of copper, 1.15 million tons of lead and more than 235,000 tons of zinc.

WMC, through a wholly-owned subsidiary Grand Central Mining Corporation, formed in November 1986 a joint venture with Centurion Mines Corporation of Salt Lake City (WMC had 66% and contributed all funds).

Exploration in the past had focussed on base metal ores containing silver and some gold. There were areas favourable for gold mineralisation which were considered under-explored, and intensive

exploration of these areas was proposed. Exploration costs were to be covered by heap leaching old dumps and tailings for gold and silver. Roger Wright from Australia was to manage the venture from Salt Lake City.

Extensive sampling of the old mine dumps by costeaning with excavator and bulldozer was carried out in the hope that some of this material may be of interest, either as flux for the Kennecott Copper Smelter in Salt Lake City or for cyaniding or heap leaching. Moderate tonnages were located, but the project was uneconomic.

Exploration results, also, were discouraging and the joint venture was terminated in 1989-90. WMC expenditure had been \$3,606,000.

## **Alaska**

In May 1987 Resource Associates of Alaska (a Nerco subsidiary) and WMC entered into two joint ventures to explore for gold in the Fairbanks-Circle region of Alaska. Resource Associates was the Manager, with Russell Skirrow representing WMC.

The results were discouraging and WMC withdrew on 31 December 1987, after an expenditure of \$2,060,000.

## **Oriental Mine**

The last project in the old mining districts, on the Oriental Mine in California for hidden and lower grade reserves, was unsuccessful and terminated in 1989.

The initial basis on which WMC started exploring in USA was therefore completely unsuccessful.

## **Change In Philosophy**

The acquisition of Hog Ranch in Nevada and Carson Hill in California by WMC in 1988, the lack of success in developing early cash flow projects through application of WMC expertise in old mining districts, and the resignation of Bruce Kay in June 1989 led to a commitment to conceptually driven grassroots exploration in North America late in 1989. A combination of empirical targets and property submittals were expected to provide exploration targets.

D E (Dave) Roberts succeeded Bruce Kay in Denver office, the number of geologists was increased, geochemical and geophysical crews formed, and equipment purchased. A number of specialists in Denver supported projects throughout USA.

Data bases in gravity, magnetics, geology, Landsat structure, mineral occurrences, and stratigraphy were compiled and conceptual models developed.

## **Great Basin**

Discoveries of large gold deposits in the Great Basin in Nevada during 1986-88 led to WMC's interest in this area. Work commenced out of an office established in March 1988 in Reno, headed by Larry Smith.

A large regional program using Landsat-imagery derived structural and alteration information and geophysical data led to field checking by helicopter of a large number of anomalies in northwest

Nevada, California, and Oregon. This program, while unsuccessful, led to the routine use of Landsat imagery and the purchase of an in-house image processing system in 1990.

Following termination of the Western Centurion and Alaska Joint Ventures a team based in Salt Lake City followed up empirical targets in eastern Great Basin in Utah until closure of the office in June 1990, leaving Reno as the exploration base for the Great Basin.

Expenditure in the Great Basin to end of 1992/93 was \$11,165,000.

### **Upper Michigan Peninsula**

Following initial studies in 1988, WMC entered in July 1989 into a joint venture with Callahan Mining Corporation and Cleveland Cliffs to explore for gold and copper on the Upper Peninsula in Michigan. The region had been a major iron ore producer, but the iron ore companies had not been interested in other minerals.

Callahan managed the joint venture based in Marquette, Michigan, investigating the iron formation for gold, stratiform copper, and copper-iron-gold deposits. In January 1990 another joint venture with Callahan began to explore the Marquette greenstone for lode-hosted gold deposits. A WMC office was opened in Marquette for managing another joint venture with Kerr McGee Corporation, but this did not proceed and the office was closed in early 1991.

WMC became the manager of the two joint ventures when Callahan was taken over by Coeur d'Alene. The ventures were terminated in 1992.

During 1992 exploration of a major claim under option in the Rochford area of Black Hills, South Dakota, was managed from the Marquette office. The office closed in August 1993 as a part of the reorganisation of exploration management in North America.

Total expenditure by WMC (USA) on the Upper Peninsula was \$2,422,000.

### **Denver Office**

The Denver Office, opened by Bruce Kay in 1986, was closed in 1993 when Toronto became the central office in North America. Following a major reorganisation in 1998, one of the two main exploration bases of ExDiv was located in Denver. The Reno Office was closed in April 1997.

### **Mexico**

In February 1979 Roy proposed an arrangement with CRM (I have no record of what this entity was) under which we would explore in Mexico and have the first right to participate in further exploration of any prospective areas we may locate. This raised a number of questions regarding the 'right to participate', which I directed to Roy. There is no further record; the proposal obviously did not proceed.

### **Canada**

The acquisitions in USA and Canada in 1987-88 were followed by the establishment of an Exploration Division office in Toronto in 1989. In 1988-89, in addition to exploration on mine leases, regional exploration had commenced in New Brunswick, Nova Scotia, and Quebec.

## **Seabright Exploration**

In Nova Scotia, 50.6% owned Seabright Exploration Inc had been acquired together with Seabright Resources. Employing 42 geologists under Don Pollock, the 1988 budget was C\$17 million for exploring in the Atlantic provinces. The staffing and work programmes were reduced substantially by July 1989.

In 1989-90 and 1990-91 exploration emphasis was on areas within economic distance of the existing treatment plants in Chibougamau and Gays River.

In 1990-91 Seabright Explorations Inc, which held properties in Nova Scotia and New Brunswick, merged with Corner Bay Resources Inc with properties in the Chibougamau area, to form Corner Bay Minerals Inc, 25.6 % owned by WMC. The Corner Bay property had a drill indicated resource of 1.4 million tonnes at 4.4% Cu.

## **Chibougamau Regional**

At Chibougamau, a separate exploration office for exploration outside mine leases, led by Paul Archer, was established in 1989.

During 1990 major drill hole relogging was carried out at Lemoine and two targets were drill tested.

A conceptual targeting program, using an integrated geological-geophysical approach, was initiated in 1991.

In 1991-92 this work resulted in a small gold discovery on the Cuvier East property, which was transferred to Chibougamau Mines. Sub-economic mineralisation was located at Hazeur and Lac Winchester. The regional program was completed by 1993.

## **Nickel**

In 1991 nickel exploration began on a 6,500 sq km permit area in the Fox River area of northern Manitoba. A winter drilling programme took place in 1993.

In 1993 nickel targets were evaluated in the Abitibi and the Northwest Territories.

## **Abitibi Gold**

Studies of Canadian gold deposits in 1992 led to a targeting program in the Abitibi belt of Ontario and Quebec, and ground acquisition in the Kirkland Lake area and at Timmins in 1993.

## **Maritime Zinc**

With the decision to re-start the Gays River lead-zinc mine, a major programme for both Gays River and Irish type deposits was initiated. D W (Doug) Haynes carried out a major evaluation of the potential in the Atlantic provinces. Many targets were tested, but no significant mineralisation was encountered.

## **Newfoundland Exploration**

Following data compilation and property assessment in 1988, an office was opened in St John's in 1989. Initially the targets were lode gold, but by mid-1990 the entire emphasis was on zinc-lead deposits.



Various targets were drill tested, without success, and the office closed in December 1991, although some programs continued through a part of 1992.

## **Meliadine Gold**

In 1994-95 a joint venture was formed with two Canadian companies in the Meliadine River region near Rankin Inlet in the Nunavut Territory of Canada (formerly part of North West Territories). WMC became the project manager and was earning a 60% interest. The Meliadine Project is described in *THE GOLDEN THREAD, Gold In Frozen North*.

## **Chile**

WMC's first involvement in Chile was in 1987, when the acquisition of the El Indio Gold Mine was contemplated (see *THE GOLDEN THREAD, North American Fiasco*).

In 1988 Gordon Siddeley was retained as a consultant to acquire data and information. Jeff Gresham visited Chile in February 1989 and again with Roy Woodall in April 1989. A local company (Western Mining Exploration SA) was established in August 1989 and an exploration office opened in Santiago in March 1990. A small regional office had been established in Cohaique in January and an office was subsequently opened in Copiapo.

Bart Suchomel replaced Gordon Siddeley as Exploration Manager in February 1992. By June 1993 six geologists, one geophysicist, and one geochemist were employed.

The copper deposits and potential in northern Chile had attracted the attention of many mining companies and the potential ground was closely held. It was therefore decided to concentrate WMC's efforts in the southern part of the country, based on Cohaique, and in north-central Chile, based on Copiapo, where there had been relatively little interest.

## **Southern Chile**

The southern Chile program involved a major stream sediment geochemical survey over some 18,000 sq km, an area considered to have potential for copper, gold, and base metal deposits. Work commenced in 1993.

## **North-Central Chile**

Ground was acquired around the old silver mining district of Charnacillo near Copiapo, with 'manto' copper-iron ore systems (such as at Candelaria and Mantos Blancos) the principal target. Work here also commenced in 1993, with detailed geochemical and geophysical work followed up by drilling.

## **Andean Copper**

By 1996 WMC had become involved in exploration in northern Chile, in the so-called Andean Copper Program. Proprietary aeromagnetic data had been obtained in association with the Chilean copper company CODELCO, the largest copper producer in the world, over much of northern Chile and the Company had a 100% interest in the Altos de Pica project about 400 km north of Chiquicamata. Other possible inferred magnetic centres beneath cover were to be located, drilling targets established, and preliminary drilling on best target areas completed by end 1999.

A joint venture was entered into over the Sagasca Madre property about 70 km north-west of Altos de

Pica, which was to be drilled in November 1999.

## **French Guiana Gold**

In the late 1990s a number of gold anomalies were being explored in French Guiana. The most promising, called the Armina Project, was considered in 1998 to have potential to become one of the 'ten in ten' discoveries.

## **Exploration in the Americas**

K-Report 3545 by Gresham and Roberts describes exploration in the Americas to June 1993.

## **Liberia**

In 1988-89 there was a short lived exploration joint venture with the Government of Liberia, described in *THE GOLDEN THREAD, Liberian Adventures*. Activities were suspended in May 1990 because of a civil insurrection and the project was discontinued.

## **Expatriates**

WMC had been very successful in discovering major orebodies in the 1960s and 1970s, which was attributed to superior skills, technology and techniques. One of the reasons for going overseas in the 1980s was the view that exploration by WMC in prospective areas overseas which had not been exposed to such skills, technology, and techniques was likely to result in similar successes.

When no major discoveries had been made for ten years or so, there was some soul searching about it. The following are extracts from a memo from Dave Roberts to Roy Woodall on 28 October 1993:

The high profile Australian expatriates have gone from North America. The "ugly Australian arrogant approach" is no longer a major issue ....

There are 10 expatriates in South America (6 Australian, 1 Canadian, 2 US and 1 English and there is a problem in Chile. In Brazil, I believe, there is a "reverse expatriate" problem in that the Australians have embraced the culture and are slowly slipping into the management style that has prevented us from elevating Brazilians to more responsible positions. I sense that they do not realise this is happening...

The "colonial" attitude of Australian based managers is a greater problem than locally based expatriates. Examples of this are:

Technical arrogance of Australian visitors to Americas and to Americas visitors to Australia

- "We can't learn anything from Americas"
- "I'm surprised at the competence of people in the Americas"
- "The Americas just waste money".'

## **International Mineral Exploration Strategy (IMES)**

In 1992 Roy Woodall initiated an assessment of well mineralised areas throughout the world which became known as the International Mineral Exploration Strategy (IMES) project. The purpose of the

study was to develop a rational basis for decisions regarding WMC's minerals exploration outside Australia. The work was led by D F (Dan) Evans who had joined ExDiv in the Toronto Office in 1971 and moved to Melbourne in January 1972, and C W D (Bill) Blandy (Head of Business Development Department). The study covered the following:

1. Nickel
2. Aluminium/Alumina
3. Iron Ore
4. Copper
5. Oil
6. Diamonds
7. Mineral Sands
8. Gold
9. Zinc
10. Lead
11. Uranium
12. Tin
13. Platinum
14. Chrome
15. Phosphate

A graphical presentation of an analysis of competitors in 1993, prepared for the study, is appended to this section.

Most people in the Division contributed to the study, which resulted in a ranking system of projects on the basis of their geological attractiveness (mineral endowment, geological environment, probability of discovery etc (Georank) and economic attractiveness (markets, likely size of discovery, Net Present Value, (Gemrank). (*Gem* was an abbreviation of 'Geological Economical Model'.) The chart appended to this section shows the distribution of projects by Georank in 1998.

In a 1998 report there is also mention of 'Riskrank' - presumably a comparison of the (political?) risks of projects in different countries.

Georank determination took into account the following:

**Opportunity (weighting 80%)**

- |   |     |
|---|-----|
| - Inferred undiscovered endowment<br>(Province quality) | 50% |
| - Confidence in exploration strategy                    | 25% |
| - Multiple commodity opportunities                      | 5%  |

**Environment (weighting 20%)**

- |                                      |    |
|--------------------------------------|----|
| - Competitive advantage              | 5% |
| - Ground availability                | 5% |
| - Time to title                      | 5% |
| - Field conditions/exploration costs | 5% |

The conclusions were that:

- WMC should search for world class copper, gold, and nickel deposits containing a minimum of 1 million tonnes of copper, 2 million ounces of gold, and 0.5 million tonnes of nickel respectively
- exploration strategies and priorities should be determined largely by geoscientific merit (georank), but checked for economic merit (gemrank)
- political, commercial and social risks should be continuously monitored and managed
- while exploration strategy was driven by economic fundamentals, employee safety and security were non-negotiable.

The corporate objectives of the international exploration strategy were to discover orebodies to enable greatly increased production of nickel, copper and gold by 2005, as shown by the tabulation at the end of this section.

### **Overseas Expansion in 1995**

Following presentation of the IMES study to the Board in December 1994, Exploration Division was reorganised from three regional units: Australasia, The Americas, and Africa/Eurasia into five units: Australasia, Asia/SW Pacific (Philippines, Indonesia, China), South America (Chile, Peru, Argentina, Brazil, French Guiana, Suriname), North and Central America (Canada, USA, Greenland, Mexico, Honduras, Nicaragua, Panama), and Africa/Eurasia (Cote d'Ivoire, Burkina Faso, Ghana, Eritrea, Ethiopia, Kazakhstan, Uzbekistan, Kyrgyzstan). A special geoscience technology group was also set up to pursue the development of new geological concepts and the application of innovative search techniques.

Typical of the ambitions of the new regional units was the programme of the **Africa-Eurasia Division** comprising Africa, Europe, the Middle East, the former Soviet Union and the Indian subcontinent. In a Board presentation in May, 1995 it saw its priorities as:

1. In the **Central Asian republics** (Kazakhstan, Uzbekistan, Kyrgyzstan): lode gold in Southern Tianshan Orogen and porphyry and sediment-hosted copper in Kazakh Block
2. In **East Africa** lode gold and copper-gold in Arabian-Nubian shield, Norilsk type nickel in east African Rift
3. In **West Africa** lode gold in Ghana, Mali, Cote d'Ivoire, Burkina Faso, and copper-gold in Mauritania.

In June 1996 Exploration Division was active in 15 countries, compared with 6 countries two years earlier.

The expansion overseas resulted in a substantial increase in exploration expenditure overseas (to 68% in 1996-97) and in total greenfields exploration expenditure (from \$48.0 million in 1993-94 to \$70.2 million in 1996-97).

## Rethinking

This rate of expenditure could not be sustained. The Exploration Division budget was limited to just over \$50 million in 1997-98, resulting in withdrawal from Africa, Central Asia, and the Philippines.

In a Board presentation on 5 July 1997 it was reported that two regions (Asia SW Pacific region and Africa/Eurasia region) had been merged into one Africa/Asia region, administrative support in the Americas had been reorganised, drilling and analytical services groups had been sold, and WMC had retired from diamond exploration.

The three 'hottest' ExDiv projects in July 1997 were Meliadine, Goias Velho, and Tulasi. Of the budget, 72% was to be spent on gold, 14% on copper and 13% on nickel.

In March 1998 there was a major restructuring of the Division, with the five regional clusters being consolidated into two main base offices in Perth and Denver. Small satellite offices supporting regional activities were located in Melbourne, Adelaide, Santiago, Lima, Jakarta, Rio de Janeiro, Goias (Brazil), Cayenne (French Guyana), and Urumqui (China).

In June, 1998, the 'hottest' projects remained Meliadine, Goias Velho, and Tulasi. The Division had 24 projects in 9 countries, instead of 64 projects in 17 countries in 1995-96.

In September 1999 there were 15 projects in 6 countries. The top four projects were Sagasca Madre in Chile, Sao Martim in Brazil, Tulasi in China, and Lawn Hill in Australia. Meliadine had been passed on to Group Projects.

## Comment

The hard commercial judgement after more than 20 years of minerals exploration overseas is, that so far it has been a failure. The Jenipapo discovery in Brazil was too small to justify the major effort in that country since the early 1980s. The Meliadine project has been a success in a major enlargement of a previous discovery, but has not become an operation. The IMES study was impressive and thorough, but did not result in the discovery of orebodies.

Interestingly, the conclusions of the Mackenzie Doggett Report in December 1996 included the following comment:

To the extent that WMC exploration activities in jurisdictions other than Australia take place at the expense of exploration in Australia, there is a high opportunity cost associated with this international investment. This is the cost, documented here, of the attractive traditional returns on investment realised from exploration in Australia. The returns realised in Australia represent the minimum economic returns required on investment in other jurisdictions.'

By then, the Company had already become over-committed overseas.



## **LOOKING FOR .....**

Until the mid-1950s WMC's interests were limited to gold as a matter of policy. The Board decided in 1953 to diversify into other minerals, and in 1973 a decision was made to explore for energy minerals.

### **Gold**

Book Two Part A, *THE GOLDEN THREAD* describes WMC interests in gold, including exploration, during the period in

Kalgoorlie WA	Stawell Vic
Norseman WA	Bendigo Vic
Mt Magnet WA	Fiji
St Ives WA	Brazil
Agnew WA	Canada
Northern Territory	Uzbekistan
Small deposits in Eastern Goldfields WA	China
Lancefield WA	

The section on *Liberian Adventures* is relevant.

In addition to the work described elsewhere as shown above, there were numerous gold exploration projects such as at Clunes, Tarnagulla and Kingston in Victoria; Mt Dimer, Jasper Well, Sandstone, Butcher Well North, etc in Western Australia; Y andan, Drummond Basin, Bulls Pinnacle, Hodgkinson, Charters Towers, Mt Garnet, etc in Queensland; and Tennant Creek and Tanami in Northern Territory.

Interest in gold exploration waned somewhat after the discovery of Kambalda in 1966 and during the period of unfavourable conditions in the early 1970s when GMK and Central Norseman almost ceased operations. In June 1974 I wrote to Roy Woodall, questioning whether we were putting sufficient effort into gold. The renewal of interest came during the nickel market downturn in the late 1970s -early 1980s, which coincided with a spectacular surge in the gold price and led to the development of St Ives into a major gold producer.

### **Bauxite**

Book Two Part A, *THE BRIGHTNESS OF ALUMINIUM*, describes WMC interests in aluminium.

#### **The Walpole Project**

In addition, in 1970 and 1971 WMC carried out bauxite exploration in its own right in the karri forest area in the south-west of WA, which became known as the Walpole project. It was thought that, if a substantial position of bauxite could be established in this area, it could be a useful addition to the Alcoa reserves and enable WMC to improve the terms of its participation in Alcoa of Australia.

By June 1971 a total of 536 mineral claims had been applied for. By December 1972 these had been reduced to 100, retaining the key areas.

Krome George, the President of ACOA, was briefed on the project during a visit to Melbourne in March 1973.

The conclusion was that access restrictions in forest areas, the low quality of the bauxite and its location and quantity did not form a basis for an economic operation. On 31 October 1973 ExDiv recommended that the project be abandoned. In April 1974 the information and the areas were offered to Alcoa of Australia, who declined.

## Nickel

Book Two Part A, *THE SHINE OF NICKEL* describes WMC interests in nickel, including nickel exploration, during the period in:

K ambalda	Mt Keith
Great Boulder	L aterites in Eastern Goldfields
Windarra	L aterites in Cuba
Agnew/L einster	

In addition to these, numerous nickel projects were explored in the Eastern Goldfields of WA such as at Mt Clifford, Leonora, and Ravensthorpe.

In 1990 the Company's nickel exploration strategy was reviewed. It was realised that the entire WMC experience and success had been in Western Australia with Archaean komatiite-hosted deposits such as at Kambalda, which are very low in by-products such as copper and precious metals. With the search for nickel now extended overseas, it was decided that attention should be also directed to the mafic-intrusion hosted deposits, such as at Sudbury and Norilsk, which contained besides nickel appreciable value in copper and precious metals. From 1992 until the end of 1994 the major deposits of this type were visited and targeting models developed, culminating in a meeting and workshop in Ottawa in March 1995.

Weeks earlier the discovery of a major discovery at Voisey's Bay in Labrador had been announced, which the WMC targeting models had failed to predict. One of those present recorded that 'The three day gathering was characterised by robust debate that at times turned fiery'. Major improvements to the targeting models resulted and over the next several years several projects discovered nickel sulphides, although none were economic.

## Copper

Book Two Part A, *THE BURNISH OF COPPER* describes the search for copper by WMC in 1957-1975 and the subsequent developments, including copper exploration, at Olympic Dam, Nifty, and Tampakan in the Philippines, the Benambra copper-zinc project in Victoria, the copper investigation in Poland, the Ernest Henry copper-gold discovery in Queensland, and copper in Zambia.

### Stuart Shelf SA

The Olympic Dam Indenture Agreement included exploration rights over 15,000 sq km surrounding the Joint Venture area. Joint exploration with BP resulted in discoveries of mineralisation at the Acropolis (27 km south-west of Olympic Dam) and Wirrda Dam prospects.

After the withdrawal of BP on 19 June 1984 WMC continued alone. The area was reduced to



3,000 sq km in 1985-86. In the following year Power Nuclear Corporation of Japan entered into an agreement to earn up to 25% interest in the area by contributing exploration funds.

There were also copper (base metals) exploration projects in Chile, Fraser Ranger WA and elsewhere.

## **Uranium**

In *THE BURNISH OF COPPER*, the section on Olympic Dam includes the description of uranium co-product developments. The Yeelirrie uranium discovery and various uranium exploration efforts in Australia and overseas are described in Book Two Part A, *THE GLOW OF URANIUM*.

## **Talc**

See Book Two Part A, *THE WHITENESS OF TALC*.

## **Diamonds**

### **New South Wales**

Exploration for diamonds was carried out near Inverell, NSW, from February 1973 to November 1975.

### **WA and NT**

Areas investigated in WA and NT from May 1984 onwards included Lily Pond Well near Laverton, Peak Hill, Bulljah, Jungarra, Telfer, Pyke Hollow, Bonaparte Gulf, Sholl Lakes.

### **South Australia**

WMC diamond exploration in SA began in mid-1985, partly in anticipation of the imminent relinquishment of large areas on the Stuart Shelf. Sampling in 1985 and 1986 gave considerable encouragement and a project was established in June 1986. In May 1990 R Hamilton concluded that the Stuart Shelf 'is considered to have a place in a balanced diamond exploration programme'.

## **Lead-Zinc**

### **Throssell Range**

Exploration in the Throssell Range in WA began in 1971. The first tenements were taken up in 1975.

The first mineralised gossan was discovered in 1981 by Mark Neville, whose nickname was 'Nifty'. The copper deposit discovered by drilling in 1983 was also named 'Nifty' (see *THE BURNISH OF COPPER*).

In 1984 lead-zinc mineralisation was intersected at the Warrabarty prospect 55 km north of Nifty. Further intersections were made in various locations on the 5700 sq km exploration area during 1985-86 to 1989-90 but none of the discoveries were economic.

The Throssell Range exploration area was sold with the Nifty project in 1998.

## North-West Queensland

Conceptual studies in 1983 defined numerous exploration targets for stratiform lead-zinc and base metal pipe deposits in north-west Queensland.

At **Walford Creek**, 300 km north of Mt Isa, a prospective area was acquired in 1984 (see map at end of this section). Following TEM (transient electromagnetic) surveys and drill testing, the ground was relinquished in 1986. A part of the area was taken up and tested by CRA (Conzinc Riotinto Australia).

WMC re-applied for the ground in 1989 and carried out a major evaluation over a number of years, commencing in 1990. The Pb-Zn-Cu-Ag mineralisation located was uneconomic.

Exploration tenements at **Lawn Hill** (about 100 km south-east of Walford Creek) were taken up in 1992. Two native title claims over the area and a *Heritage Protection Agreement* with the Carpentaria L and Council made land access for exploration difficult. When I retired in 1999 Lawn Hill was one of the top four projects for the Exploration Division. Subsequent work must have been unsuccessful.

## Chromium

Attempts to explore for chromium are described in Book Two, Part A, *DISCONTINUED PROJECTS, Chromium Around the World*.

## Coal

### Various

In 1971 ex-WMC geologist Cor Bekker (then with Bekker Rix Pty Ltd) had been engaged as a consultant to advise on prospective areas in the Bowen and Galilee Basins when these were released by the Queensland Government.

Because of the market in Japan the interest at that time was mainly in coking coal, but in 1973 WMC joined with The Shell Company in an application for a large steaming coal area in Queensland (see Degulla below) on the basis that, if the cost of oil continued to escalate, hydrogenation of coal to produce petrol may become economic.

In November 1973 I suggested to E D J (Doug) Stewart that, if this was true, oil shale should become even more economic.

In August 1974 there were discussions about WMC participating in the purchase of Peabody Coal's Australian interests.

### Degulla

Following a decision in 1973 to take an interest in exploration for energy minerals, a Joint Venture was formed in early 1974 with Shell Development (Australia) Pty Ltd to prospect for coal in the Degulla area of the Galilee Basin in Queensland. Drilling in 1974-75 disclosed uneconomic quantities of coal and the venture was terminated.

## **Hail Creek**

WMC participated in a Joint Venture for coking coal at Hail Creek in Queensland from 1971 to 1975. The project is described separately in *DISCONTINUED PROJECTS*.

## **Kingston**

WMC discovered brown coal (lignite) at Kingston in South Australia in 1979. The project, which is described in *DISCONTINUED PROJECTS*, was discontinued in 1988 because of lack of demand for the coal.

## **Otway Basin**

In November 1979 there was interest in coal exploration in the Otway Basin, where any finds would be of considerable value to the South Australian and Victorian Governments and to Alcoa at Portland. I found no record of such work proceeding.

## **Clutha**

While not exploration, for the sake of completeness it should be recorded that at the time WMC and BP entered in 1979 into the agreement to joint venture at Olympic Dam, BP granted to WMC an exclusive option to purchase 50% of Clutha Development Pty Ltd, mining black coal in NSW. The option was not exercised.

## **Manganese**

Exploration for manganese was carried out in 1978 and 1979 in the West Pilbara, Pilbara, and Ashburton Goldfields.

## **Tin**

Tin exploration was carried out at Mt Misery on the Herberton tableland in Queensland in late 1970s-early 1980s. It was a relatively low grade occurrence of about 8000 tonnes per vertical metre. A calculation in June 1977 indicated that the orebody would have to continue at this size to at least 1250 metres to yield a possibly economic tonnage.

In August 1978 there was interest by Loloma Ltd in participating in the project.

Keith Parry and I visited there on 28 August 1980. There was extensive underground driving off a vertical shaft with black spots of tin mineralisation showing in the walls, rather like small currants in a cake. In the event there were not enough currants to make it an economic cake.



***LOGBOOK 1992 - 1999***

The Metals Economics Group in Halifax, Nova Scotia, published the following description of WMC minerals exploration from 1992 to 1999 inclusive as a part of its *Corporate Exploration Strategies: A Worldwide Analysis*.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**VOLUME FOUR**

***DISCONTINUED BUSINESSES***

***DISCONTINUED BUSINESSES*****CONTENTS**

	<b>Page</b>
<b>Bogged In The Sands</b>	<b>447</b>
Mineral Sands At Jurien Bay, WA	
<b>Delving Into Oil And Gas</b>	<b>453</b>
Petroleum Exploration & Production In Australia & USA	
<b>Gas To The Goldfields</b>	<b>471</b>
Goldfields Gas Transmission Joint Venture, WA	

## ***BOGGED IN THE SANDS***

### **Background**

Mineral sands have been mined in Australia since 1870, when operations began in the vicinity of Byron Bay, NSW. By 1970 the industry had grown to become a significant supplier to the world of rutile (about 85% of world demand), zircon (about 70%), and ilmenite (about 50%).

### **Uses of Rutile**

The major use of rutile is as a raw material for the production of titanium white pigment used in the manufacture of paint, paper, textiles, plastics, floor coverings and inks. It is widely preferred to alternative white pigments because of its non-toxic and superior opacity qualities.

Because of the low levels of undesirable elements in rutile, it is also the preferred raw material for titanium metal production. The main application for this light, strong metal is in the aircraft industry and it is finding increasing application as a corrosion resistant construction material in chemical plants.

### **Uses of Zircon**

Zircon sand is used extensively in the foundry industry and in the manufacture of refractory bricks, mainly for the iron and steel industries. It is also in demand for ceramic glazing.

Zircon is the raw material for the manufacture of zirconium metal which, because of its high corrosion resistant properties, is finding increasing application in the chemical industry. Zirconium is also increasingly being used in nuclear power plants.

### **WMC Interest**

WMC became interested in mineral sands as early as 1971 when discussions were held with Allied Minerals regarding their activities and holdings in the Eneabba area. Mineral sands had been a growth industry and WMC was interested in diversification. In March 1972 Sir Lindesay Clark expressed the view that the Company should endeavour to acquire zirconium containing deposits because zirconium would be in demand for nuclear power developments (it is used as sheathing for the fuel rods). I asked my then assistant, J H (Jim) Lalor, to prepare a summary of mineral sands companies and known deposits in Australia.

### **Mineral Sands at Jurien Bay WA**

Heavy minerals were found near Jurien Bay, WA late in 1970 by a prospecting joint venture, Kamilaroi Mines Ltd, ASEAMCO (not sure what the acronym stood for) and Mining Corporation of Australia (MCA). The joint venture incorporated in July 1972 into a company called West Coast Rutile Limited, owned two-thirds by Kamilaroi and one-third by MCA. The name West Coast Rutile Limited was changed to Black Sands Limited in February 1974.

Heavy sands were also found at Cooljarloo, about 40 km south-east of Jurien Bay, but were of lower grade than those at Jurien.

Proven reserves in 1973 amounted to 53,412,000 tonnes at 6.2% heavy media product at Jurien Bay and



1,000,000 tonnes at 4.5% heavy media product at Cooljarloo.

The heavy media product at Jurien Bay contained an estimated 55% ilmenite, 11.6% zircon, 8.5% rutile and other minor quantities of heavy minerals. The reserves at Cooljarloo were lower in rutile but higher in zircon and ilmenite, being 5% rutile, 14% zircon, and 60% ilmenite.

The low phosphorus and sulphur content of the Jurien Bay rutile made it ideal for inclusion in the flux covering of welding electrodes.

The planned mining operations at Jurien Bay involved a bulldozer pushing the sands to a bucket wheel reclaimer which conveyed the material to a hopper in which a slurry was produced. The slurry was then pumped to a nearby primary plant with the throughput expected to be about 2 million tonnes per annum. By the latter half of 1974 Black Sands had established a mining plan and were operating a research plant which established the processing flowsheet. In addition the mining equipment had been acquired and a treatment plant was under construction. It was expected to begin production in the first half of 1975.

The Chairman of the company was E Sternberg. The Project Managers were Griffin McSweeney & Co and their company was registered at 22 Mount Street, Perth, WA. The technical staff were W R Jones, Managing Director, K W A Summers, Special Projects Assistant Co-ordinator, T Coles, Mine Manager, and about ten other supervisory and administrative staff.

### **WMC Acquisition of Black Sands Limited**

L C Brodie-Hall in Perth was approached in July 1974 by a Mr Galland, indicating that Black Sands Limited was for sale. Brodie and I discussed the opportunity and we felt that WMC was in a good position to enter this part of the minerals industry.

Mr Galland advised us that other interested parties had already investigated the project for a month and a half, that a decision would be made about 10 August 1974, that the price was between \$15-17 million and that WMC could not have an option.

On 25 July I rang Mr Galland and said we could not agree to \$15 million, but that we would be prepared to inform ourselves in more detail and would make our best offer. This was agreed.

B J (Bernhard) Cox, who had been with me at the University of Adelaide and had worked in the mineral sands industry in Queensland, was engaged as a consultant to review the project.

On 20 August I recommended to Sir L indesay that an option be obtained to study the project further.

On 8 October 1974 WMC announced that for a non-refundable payment of \$100,000 it had signed an option until 31 December 1974 with Kamilaroi Mines Limited (K amilaroi) and Mining Corporation of Australia Limited (MCA) to purchase Black Sands Limited for \$5.15 million, payable by 31 March 1975, and repayment by WMC of \$3.6 million advanced by Kamilaroi and MCA. WMC would also provide loan funds of up to \$4.6 million to Black Sands to finance completion of development, repayable no later than 31 December 1977.

The option was exercised and the company was formally transferred to WMC ownership in December 1974. The first Chairman was D P (Doug) McIntyre, and H O (Hugh) Clark and H S (Harold) Amos were directors. McIntyre was followed as Chairman in June 1975 by A J (Allen) Gittos, and in 1977 by Hugh Clark. Bernhard Cox was appointed General Manager.

## **WMC Activity**

After taking over Black Sands, WMC completed building the treatment plant which was commissioned in June 1975. The separation of the various heavy mineral components, was made difficult by a thin oxidised coating on the particles. The main products were rutile, zircon and ilmenite.

By 19 May 1975 I was concerned about some aspects of the project:

- the low proportion of sales contracts for 1975-76
- the small estimated cash surplus (\$0.7 million) which even then depended on achieving all hoped for sales and WA Government agreeing to certain requests
- the very substantial increase in the number of employees, from about 100 planned in November to in excess of 170 planned now.

I also asked Doug McIntyre to ensure that Bernhard Cox was clearly responsible for all aspects of the project.

## **Mining and Primary Concentration**

Mining was by opencut using bulldozers, a bucket wheel reclaimer, and rubber tyred loaders to feed the primary screening unit. The undersized sand was pumped as a slurry to the primary concentration plant. Both the screening unit and the concentrating plant were mobile, being moved as mining advanced.

Concentration was by passing the sand through multi-stage gravity concentrating cones and trays. The heavy minerals were concentrated to 85% in this operation.

## **Secondary Concentration and Separation**

The primary heavy mineral concentrates were trucked by road to a central secondary concentrating and separation plant where further gravity concentration increased the grade to 95% heavy minerals. This was followed by wet magnetic separation, during which a major part of the ilmenite was removed.

After the non-magnetic fraction had been subjected to attritioning to clean the surface of the mineral grains the material was washed, filtered and dried in an oil fired rotary dryer.

The dry mineral passed to high tension separators with the conductor fraction proceeding to electrostatic and electromagnetic units for recovery of a market grade rutile product.

The non-conductor fraction was subjected to further gravity treatment and to flotation and electrostatic and high intensity magnetic separation to produce a high grade zircon product.

Ilmenite produced from the wet and dry magnetic separation operations was stockpiled for future processing to a final product.

## **Production**

Production began in the latter half of 1975 and by June 1976 1,962,000 tonnes of sand had passed through the primary plant at a head grade of 8.88% heavy minerals. The product from the secondary plant was 9,600 tonnes of rutile product and 2,580 tonnes of zircon. About half to two-thirds of this product had been sold, mainly bagged and railed to Geraldton or Fremantle for shipment overseas.

Production at Jurien during the first year was lower than expected due to treatment problems. Numerous modifications and additions were made to the plant in an endeavour to improve mineral recoveries.

By October 1975 re-estimates put the project into a much worse light than believed in May. On 1 December 1975 I wrote a memorandum to Directors which advised that "The mineral sands project at Jurien Bay is not progressing satisfactorily". While the rutile capacity of the plant was about as expected, the zircon capacity was less than 50% and installation of additional plant was necessary. Commissioning had been slower than expected and demand for the products was depressed.

The project was not economic at the present capacity. All options, including further capital expenditure to expand capacity and the alternative of a shut-down would be reviewed.

At a Board Meeting on 9 February 1976 it was decided that:

- (a) The project will continue.
- (b) The zircon plant should be completed (at a cost of \$0.5 million).
- (c) During the next six months a programme should be carried out to:
  - (i) Ascertain the potential for additional ore reserves within an economic reach of the Jurien Bay plant.
  - (ii) Investigate in as much detail as possible the higher grade proportions of such potential reserves.
  - (iii) Investigate ways of reducing the costs of mining with a view to improving the economics of lower grade reserves.
  - (iv) Investigate ways of reducing capital and operating costs generally.
- (d) The objective of this work is to establish within six months that the capacity can be upgraded to approximately 30,000 tonnes of rutile and 45,000 tonnes of zircon per annum and that at that level of operation the project will be economic.

In May 1976 it was reported that exploration had disclosed only lower grade additional material which would not warrant expansion of plant capacity. The poor market outlook because of the low level of world economic activity had been made worse because of the Australian Government's imposition of minimum prices.

It was decided to continue until the Zircon Plant had been completed in August and some operating experience was gained. All non-essential expenditure was to be minimised to reduce the continuing operating loss.

The inherent difficulties in resolving the problems of treatment led to suspension of mining operations in December 1976. From then on operations were confined to the re-treatment of stockpiled material. By this time the market had declined substantially and prices were very weak. The high freight and operating costs prompted the Company to discontinue production in June 1977. The plant was put on a care and maintenance basis.

Production for 1976-77 was only 698,900 tonnes but the head grade improved to 18.5% heavy minerals. The secondary plant had produced 6,746 tonnes of rutile and 4,024 tonnes of zircon product. The reserves at Jurien by June 1977 had diminished to 30.7 million tonnes at 7.7% heavy minerals. Although some exploration had been done at Cooljarloo, no reserves were quoted.

During 1978 sales were made from stockpiles but no further production was undertaken. During 1979 the plant and all associated equipment was sold.

## **Management**

E T (Tom) Coles, who had been with Black Sands and was a consultant to that company prior to WMC acquiring it, continued to be a consultant. The WMC-appointed General Manager for the company, Bernard Cox, was succeeded in 1975-76 by Allen Gittos, and in 1977 by I R (Ian) Letts.

## **Financial Outcome**

The net loss to WMC of the venture into mineral sands was approximately \$20 million.

## **Comment**

In retrospect the attempt by WMC to enter the mineral sands industry was very badly handled in a number of ways.

The Company had no experience in this industry and did not inform itself adequately about the problems of the mineral sands industry in general and the Black Sands Project in particular. We were quite unaware of the particularly heavy coating problems of the sand grains in this area, although in retrospect I recall that when I met Sir Henry Somerset on one occasion walking down Collins Street he did raise the issue with me. By then the deal had been done and it was too late to turn back.

Sir Henry had, in fact, told me after a visit to the Eneabba area in October 1971 in his capacity as Chairman of Australian Titan Products that the area in his opinion was not as rich as generally thought and that he thought the holders of the various tenements (Australian Titan Products, A V Jennings, Western Titanium and Allied Minerals) would have to eventually combine to ensure economic operation. He also said that the kaolin content of the sands made them very difficult to treat. We were at that time having discussions with Allied Minerals.

The only person with some experience in the industry WMC acquired from the outside was Bernard Cox, who had worked in this area in Queensland. Bernard did not turn out to be the right person for the task of making a success of the project, which was discontinued because of unresolved treatment problems and deteriorating economics.

The decision to become involved in this half-baked manner was probably influenced by our then recent success in entering the nickel industry, where we had overcome very substantial problems in spite of our lack of experience. The challenge in the mineral sands area appeared to be much smaller. We did not appreciate that, regardless of the size of the project, the fundamental issues could (and did) defeat us.



## ***DELVING INTO OIL AND GAS***

### **Background**

Spurred by the Rough Range oil discovery in Western Australia on 4 December 1953, WMC had a brief unsuccessful foray into oil exploration in WA in 1955 through a proposed 10% interest in a company to be formed called Copart, the other participants being Shell (75%), North Broken Hill Limited (7.5%), and Broken Hill South Limited (7.5%). The Shell Australia history *Go Well* records that '... the venture was still-born when the government declined to hand over attractive Wapet acreage'.

The interest in petroleum was rekindled some fifteen years later. After having been approached by a junior oil exploration company with an enquiry regarding a joint venture, I wrote to R (Roy) Woodall on 26 January 1971: 'My own view (unofficial) is that we should take a conscious interest in energy sources as a means of diversifying WMC's mineral interests. Such sources would be coal, uranium, gas and oil.'

Esso-BHP's highly successful Bass Strait field began producing in 1970. Also, this was the time when concerns began to be expressed that the world would quickly run out of resources, including energy. Paul Ehrlich had been vociferous for some time. The Club of Rome published its widely read report *The Limits to Growth* in 1972. My suggestion was probably influenced by both these factors. It was not a novel thought; we were already involved in uranium exploration and in 1970 there had been an informal agreement between WMC and BH South to jointly pursue any opportunities to become involved in coal production.

WMC's entry into oil exploration was approved at a Special Board Meeting called to consider a number of issues in November 1972.

The sudden increase in the price of oil from US\$2.80 per barrel to just under US\$5.00 per barrel by the end of 1973, and the price more than doubling again to US\$11.65 per barrel by early 1974 must have further encouraged the interest in oil.

In 1980 oil averaged US\$37.37 a barrel and it was widely predicted (by economists!) that the price would soar to US\$100. There was frenzied development of high cost oil production in the North Sea and at Beaufort in Alaska, as well as from Colorado oil shale and Utah tar sands.

The latter two did not get to the producing stage before the price collapsed to US\$15 a barrel in 1986 and the OPEC cartel had to defend its market share in an environment of world oversupply. The price recovered to a high of US\$24.49 a barrel during the Persian Gulf crisis in 1990, but averaged US\$19.17 over the next nine years. The average was US\$14.42 in 1998, US\$19.24 in 1999, and around US\$30 in 2000.

In 1971 Roy sought the advice of Professor Eric Rudd and Dr Helmut (Heli) Wopner in Adelaide. Heli, a German, had been a Luftwaffe pilot during the War and had later come to Australia and made a name for himself with SANTOS and the Department of Mines and Energy in South Australia. Roy endeavoured to attract Heli to WMC, but his ambitions were frustrated by limited funds and Dr Wopner's appointment to Cologne University as Professor of Applied Geology. He was subsequently appointed Consultant to WMC and was later responsible for recommending WMC's entry into numerous areas, including offshore Western Australia and the Canning Basin.

## Organisation

In spite of doubts in Melbourne Office as to whether WMC could afford to be in oil exploration, a new company, Western Mining Corporation (Exploration) Pty Ltd was set up on 14 December 1972 for oil and gas exploration. Roy had to redirect funds from minerals exploration to cover the costs in the first year or two.

Roy Woodall believed that the search for petroleum could benefit from the application of the geological thinking applied in the minerals industry. Another attraction of petroleum was that, while the exploration was expensive, the benefits from a large discovery were greater and available much more quickly than from a minerals discovery.

At about the same time an energy group was established in Melbourne Office to handle the commercial and marketing aspects of coal, uranium, and petroleum. It was initially under Ken Lamin with help from D J (Don) Esdale and D (Don) Huxtable. E J D (Doug) Stewart was appointed General Manager - Fuel and Energy Minerals on 1 March 1974, aided by I J (Ian) Duncan and B J C (Basil) Jenkins.

## The Initial Strategy

The initial strategy in petroleum was to explore onshore where costs were much lower and more predictable than offshore and where, it was thought, the prospectivity in Australia was underestimated.

In February 1973 WMC took over Flinders Petroleum's interests in the Cooper Basin which included a 25% interest in the Innamincka Block and 37.5% in the Patchawarra East Block, both of which were regarded as highly prospective by the operator, Delhi Petroleum. C R (Chris) Porter was engaged as a consultant on 3 February 1975. In September 1975 he was appointed Exploration Manager Petroleum, based in Adelaide, and was soon joined by geophysicist Ken Seedsman and in 1976 by geologists S (Simon) Ashton and S (Stephen) Keenihan.

Porter had graduated as a geologist from the University of Adelaide in 1961 and worked with Phillips Petroleum in Queensland and overseas. He won a scholarship to do a post graduate degree in geophysical engineering at Colorado School of Mines. Initially Porter was very cautious, taking only small interests in a diversified range of companies and regions.

The general philosophy in the petroleum industry was to participate in a large number of projects to minimise the effect of any one failure and to improve the chances of success. WMC, as a participant with modest financial means, felt that it should follow this practice, even if the corollary of this was that the rewards of success were modest, also.

## The First Success

WMC's first participating well was Durham Downs 1 in the Innamincka Block of the Cooper Basin in south west Queensland. There was great excitement on Monday 24 September 1973 when this wildcat well flowed gas at a rate of 2.9 million cubic feet per day from a depth of 2570 metres. This greatly encouraged the petroleum exploration effort, even though the well was beyond an economically viable distance from the Moomba Field, and hence the market in South Australia, at the time. (In the 1990s gas from this area found a market in the Mt Isa area, including at WMC's fertilizer operation at Phosphate Hill).

## In The Pedirka Basin

Early in the following year the Company took a 30% interest (with an option to increase to 50%) in the Pedirka Basin which covers a large area in the Simpson Desert in the far north of South Australia.

On 5 and 6 November 1976 I visited the area with Roy Woodall, Chris Porter, and J H (Jim) Lalor. We set off by chartered light aircraft from Adelaide.

The plan was to stop over for the night in Oodnadatta (about 1100 km north of Adelaide), which would free most of the next day for visiting the petroleum exploration activities. We would pass very close to the diamond drilling then under way at Olympic Dam, and decided to call in for a visit.

When we got to the drill site of RD10, the driller (Ted Whenan) had just pulled core, which was laid in core trays out on the ground. The section on view showed beautiful sulphides and was obviously much better mineralisation than encountered in the previous holes which had shown zones of about 1% copper. On subsequent assay, the core contained 170 metres averaging 2.1% Cu.

We were naturally all elated and there was much good natured banter about this having been all arranged for our visit. From that day onwards, Olympic Dam had been transformed from an exploration prospect to a likely mine.

We arrived in Oodnadatta in the late afternoon and stayed overnight at the Transcontinental Hotel.

Oodnadatta, I read later, is an aboriginal name - *utnadatta* - meaning 'the blossom of the mulga'. In the far north of South Australia, it has the distinction of being the hottest town in the State. However, it was not hot when we were there - it was still the cool part of the year.

Its reason for existence was as a supply and servicing point on the Adelaide - Alice Springs narrow gauge railway for the surrounding stations and the overland telegraph line from Adelaide to Darwin passed through Oodnadatta. The population was perhaps 150 people. Subsequently the railway line, which was subject to periodical heavy flooding, was closed when a new standard gauge line was opened further west.

During our brief stopover we did not see much of the locality, arriving late in the day and leaving early next morning. My main recollection is, that going outside the hotel after dark there was the most absolute silence I had ever experienced - not a sound of any kind. No traffic, no lights, no movement, not even the bark of a dog.

The stay, however, was not without some incidents. After dinner we amused ourselves drinking beer and playing billiards. One way or another we finished fairly late, around midnight. One of the participants was the cook.

The crack-of-dawn departure planned for the next morning did not happen because the cook had apparently enjoyed himself a little too much in our company the night before and did not turn up at the appointed early hour. After a delayed breakfast we took off for the exploration camp in the Pedirka.

Once there, we transferred to Land Rovers and set out to find and observe the seismic crews in action. In much of the inland desert country there are regular wind blown sand dunes trending about N20°W and in the Simpson Desert these reach heights of about 30 metres or so. The bulldozed roads to the exploration areas cut across these dunes and travel on them was a real rollercoaster ride. On several occasions we could not make the top of a dune at the first attempt and had to roll backwards down into the valley to gather momentum for another charge at the summit.



The seismic surveys were highly organised, specially fitted trucks taking readings at regular intervals along survey lines. The seismic shock was created by heavy weights operated on the survey vehicle hitting the ground at appropriate places, the resulting shock waves being picked up by reading microphones on parallel lines.

During the afternoon we returned to the camp and flew back to Adelaide.

Following extensive seismic surveys, Poolawanna No 1 Well, drilled in September 1977, encountered a modest oil flow - this being the first occurrence of oil in a well in which the Company had an interest. The discovery, however, was uneconomic. There were no subsequent successes.

### **Other Areas**

Varying interests and rights to acquire increased interests were taken up in a number of the prospective basins in Australia in addition to those in the Cooper and Pedirka Basins over the following years, without any further significant discoveries. We began to understand the frustrations of this high cost activity and the reason why explorers tended to spread the risk by farming in and farming out. By 1980 WMC held varying interests in a number of basins - Pedirka, Abrolhos, Surat, Cooper, Otway, South Perth, Bonaparte Gulf, and Canning.

### **Going Offshore**

In spite of the initial strategy of exploring onshore, WMC was soon tempted offshore in a joint venture with Esso in the Abrolhos Basin 100 km west of Geraldton in Western Australia. In the nationalistic environment at that time, Esso needed an Australian partner. Discussions started as early as 1974 and a 50:50 application for exploration permits was made on 9 January 1976. The commitment was for a two year programme costing \$3.5 million of which the WMC share was \$1.75 million.

In 1977 WMC offered Alcoa of Australia an interest in the Abrolhos Prospect, which was declined.

The Company's first offshore well was Houtman No 1 in the 50% owned tenement in the Abrolhos Basin in January 1978. There was also some offshore activity in the Bonaparte and Whicher Range tenements in Western Australia and in the Otway Basin in South Australia and Victoria. An interest was held in at least nine wells drilled during 1980-81, but with little result.

### **In The Canning Basin**

The Company took up a 100% interest in the Canning Basin in Western Australia where, because of a lack of interest, a very large area could be had for low work commitments. The thought was that good farm-out deals could be made on any attractive prospects which the Company may develop.

ExDiv built a very attractive exploration camp about 170 km from Fitzroy Crossing, with an airstrip capable of taking small commercial aircraft. This was shown for some time on Western Australian airline maps under the name 'Western Field'. Because of the remote location and difficulty of land access during the wet season, it was essentially a fly-in fly-out operation. Access to drill rigs was often by helicopter; there was a helicopter based at the camp for extended periods. The camp was built to be expanded into a permanent base if the exploration was successful.

Encouraging hydrocarbons were recorded in the first of a planned seven holes. Acacia No 1 encountered oil in September 1981, pushing the price of WMC shares up 37 cents to \$4.95. The well collapsed and was plugged and abandoned, but this did not deter the Company from proceeding with the

programme. In 1982 the CONICO oil company offered to farm in for \$45 million for 45% equity but the offer was, with hindsight unwisely, declined. Subsequently partners (Australian Hydrocarbons and Poseidon) were brought in to finance further work. Poseidon's interest was generated mainly by the then Chairman Professor Eric Rudd who had a great interest and belief in oil exploration on the Australian mainland. This was WMC's first experience as Operator with partners.

In the Canning WMC pioneered the drilling of 'slimline' stratigraphic holes using modified diamond drill equipment - a technique which provides a continuous core not available by normal rotary oil drilling and was considerably cheaper than coring by oil drilling rigs. This enabled the application of geology to guide the extensive and expensive seismic surveys to a much greater extent than is customary in the petroleum industry. A special drill 'Rockdrill Rig 22' with blowout prevention was designed by Haydn Egan and built in Brisbane for this unique application. Beginning in December 1985 about six holes were drilled, the deepest 2600 metres.

There were no commercial discoveries.

In the Canning project area there were numerous full blood nomadic Aboriginals of two tribes and the WMC people got on very well with them. The Elders frequently visited the camp and the project people drilled many water holes for them over a very large area. When the project was abandoned, the Aboriginals took over the camp.

A number of directors, including myself, saw the Canning project. After visiting various locations by four wheel drive all day, I recall having a barbecue dinner in an attractive open dining area at the camp. This was the home of the resident pink and grey galah who, I was told, had been imported all the way from Port Lincoln in South Australia. After being given some bourbon, which it liked, it started swearing. According to the recollections of the Field Co-ordinator, Allan Eddy, who had been my guide, I thought the swearing was in either Russian or Latvian!

Meanwhile further seismic and drilling activity continued in most of the other basins in which the Company held an interest. While there were occasional flows of gas and oil, none brought the bonanza the Company was looking for and some rethinking took place at the operational level and by the Board.

### **Acquisition of Mesa**

Following encouraging gas and oil flows in the South Pepper, North Herald and Chervil wells in the Barrow Basin offshore Western Australia in 1983 WMC took over Mesa Australia Limited for \$35.4 million, thus gaining a 40% interest in and management responsibility for a number of tenements both onshore and offshore in the north west of Western Australia. This became effective from 1 October 1983 when Wesminco Oil took over the management of Offshore Exploration Permit No WA-149-P south of Barrow Island. The staffing of the petroleum exploration section, which had been about 25 people, increased to some 100 as a result.

### **First Commercial Oil**

Commercial quantities of oil were discovered in 1984 in the Bodalla Block in south-west Queensland which was quickly brought into production, giving rise to the first regular oil income from WMC's 12% interest. A number of other small fields in the Eromanga Basin were brought into production over the next few years, but none were of major significance. WMC gradually withdrew from its various interests in Queensland and South Australia to concentrate on the more promising offshore developments in Western Australia, in which it had not only a greater interest but the status of Operator.

In an historical review of WMC's petroleum interests in 1985 Chris Porter recorded that to that date the

Company had spent about \$91 million on acquisitions, exploration and development. He regarded the Eromanga/Cooper Basin as the lowest risk acreage in Australia, the Canning Basin as worthy of further effort and the NW Shelf as an assured production field.

### **Oil In The Barrow Basin**

To carry out the offshore exploration drilling of WA-149-P WMC inherited the lease of the three legged jack-up rig Glomar Main Pass III at \$80,000 - \$90,000 per day on a three year contract. It was such a drain on the Company's funds that D M (Don) Morley took over the financial management of the rig, which then became known as Morley's Drilling Vessel - a bottomless one at that! It was certainly an anxious time, especially when several of the wells failed to find sufficient hydrocarbons. Further drilling resulted in encouraging flows from the South Pepper 4 well. Other wells to flow oil included the Chervil and North Herald wells.

In June 1987 WMC and its partners began development of the North Herald and South Pepper reserves using sub-sea pipelines to bring the oil to Airlie Island where they established the appropriate facilities. It was an unusually small field even by Australian standards - equivalent to about 16 days' production from the Bass Strait field. The productive capacity of the field was enhanced by an innovative technique of drilling horizontal holes from the centrally placed jack-up rig to cover the field and enable the drilling platform to become a production platform. This creative idea was the brainchild of H W (Hugh) White, a former Mesa Drilling Engineer who came over to WMC at the time of the acquisition and later became WMC's WA General Manager, Petroleum. There were strict environmental requirements to be observed. Production commenced in December 1987 with crude oil flowing from the drill rig to Airlie Island. The WMC Board visited the project at about this time. Unfortunately this coincided with a slump in world oil prices.

In August 1989 the Chervil Field, south of Airlie Island, was brought into production using horizontally drilled production wells and piping the crude to a processing plant on Airlie Island. It had an expected life of between three and five years at a rate of about 6000 barrels of oil per day.

WMC was also associated with the development of the Saladin Field off the WA coast which came into production in November 1989, with production facilities located on Thevenard Island. WMC held a 10% interest in its output of about 50,000 barrels a day. By June 1990 WMC's annual production in Australia had risen to 2.6 million barrels and the operating profit reached \$24.5 million. The major emphasis was offshore WA. Exploration was more widespread, with interests in the Timor Sea and Malaysia, neither of which resulted in any economic finds.

### **WMC Petroleum Activities in Australia 1990 - 1996**

With production continuing in the Airlie Island area and from the Saladin Field, it was decided in 1991 to confine petroleum exploration in Australia to the Carnarvon Basin. Two of the three wells drilled in this Basin in 1991-92 produced gas and condensate. Further successful drilling in 1992-93 confirmed by 1993-94 that the development of the East Spar gas and condensate field was technically viable. A new discovery (Crest Field) was made near Thevenard Island, in an area operated by WAPET.

In 1994-95 it was decided to develop East Spar using an underwater gas gathering system, with processing on Varanus Island before delivery to customers via the Goldfields Gas Transmission and the Dampier - Bunbury pipelines. Gas was scheduled to flow by October 1996 (see *Gas To The Goldfields*).

### **To New Zealand**

In 1991-92 WMC acquired a 40% holding in a Petroleum Mining Licence in the undeveloped Kupe

South and Toro oil and gas fields off the south-west coast of the North Island in New Zealand at a cost of \$23 million. WMC became Operator of the joint venture.

The announcement on 23 April 1992 included the comment:

The Kupe South field was originally discovered in 1985 and since that time a total of 5 wells have been drilled in the field. Subject to Joint Venture approval it is intended to commence a feasibility study of the development of the field in order to meet an emerging demand for additional gas in New Zealand. In view of the relatively small size of proven reserves, and the location of the field in 35 metres of water 30 km from the Taranaki coast, a low cost method for developing the field will be required before the Joint Venture could consider committing to its development'.

Development studies and negotiations with prospective customers continued until the project was sold in 1997 (see below).

### **In The Timor Sea**

In the late 1980s - early 1990s WMC had an interest in petroleum exploration in the Timor Sea, in a disputed area between Australia and Indonesia. In a very complex series of events the exploration permits in which WMC participated were compulsorily seized by the Commonwealth without compensation. WMC took the Commonwealth to Federal Court seeking \$60 million in compensation and had a favourable judgment in 1994.

The decision was upheld on appeal to the Full Court of the Federal Court in 1996.

Information about what happened subsequently is not readily available and I have not pursued it because it was a minor involvement. As far as I know, WMC did not receive any compensation.

After the favourable judgment in 1994 Hugh Morgan was quoted as saying 'The issue was taken up because there was a cavalier attitude developing towards property rights in the mining industry generally'. Perhaps having established that exploration permits could not be resumed without compensation was considered a sufficient outcome.

### **Offshore Malaysia**

In 1988 a production sharing agreement with Petronas (a Malaysian government enterprise) was negotiated to gain an 85% interest in two blocks offshore Malaysia. Four wells were completed in 1990.

Following further seismic surveying in 1991-92, two wells were drilled in the second half of 1994. Both intersected non-commercial oil and gas.

### **Management**

Regnl. Explan. Mngr. – Petroleum	Chris R Porter	10.09.75	-	02.01.85
General Manager Petroleum A'sia	" "	02.01.85	-	30.11.88
" "	Hugh W White	30.11.88	-	03.04.93
" "	Ray Hutchinson	20.08.93	-	24.11.94
Exec. GM Petroleum	Ray Hutchinson	24.11.94	-	01.07.97
.....				
Manager Wesminco Oil P/L	George M Edmond	1.10.83	-	14.01.85
" "	John K Copping	14.01.85	-	31.01.86
" "	Hugh W White	09.03.88	-	07.11.88

Hugh White, originally a drilling engineer with Mesa Petroleum who joined WMC after the takeover of Mesa in 1983 was, following the resignation of Chris Porter, appointed General Manager - Petroleum (Australasia). He introduced several successful innovations, but his management of the New Zealand venture proved unsatisfactory and Hugh resigned on 3 April 1993. The position remained vacant until R (Ray) Hutchinson (ex Shell and subsequently BHP) was appointed Executive General Manager - Petroleum, based in Melbourne.

Wesminco was the operating company for WMC Australian petroleum interests, following the Mesa takeover. The first Manager, George Edmond, an ex-Mesa employee, was followed by John Copping who had previously been Resident Manager of Kwinana Nickel Refinery and the Olympic Dam feasibility study and experimental phase. This position was subsequently filled by Hugh White, until he became the General Manager Petroleum (A/sia).

### **Greenhill Petroleum**

The following description draws freely on *Brief History of Greenhill Petroleum Corporation* by G M Ralph, in *WMC Historical Information Collection* (GHI-GPC-2)

Early in 1986 Roy Woodall and Chris Porter discussed ways and means of becoming involved in the US oil and gas industry. On 29 June 1987 Hugh Morgan wrote to Directors reviewing WMC's oil exploration to that time, including the question of whether WMC should continue oil exploration.

Hugh's conclusion was that WMC had the talent and skills to be in oil exploration and should continue, but that there should be a change in emphasis. The focus should move from greenfields exploration to acquiring interests in wells or small oil fields which were not properly managed and testing and upgrading these.

Following presentations at the July meeting, the Board agreed to focus WMC's petroleum activities in USA to acquiring currently producing properties which had potential for increased production through the application of more detailed exploration and improved production technology. The company formed to do this, Greenhill Petroleum Corporation (GPC), was named after Greenhill Road which was the location of WMC's office in Adelaide where Roy Woodall and Chris Porter were located and the preparations for the US activities were made.

In October 1986 S (Simon) Ashton was given the responsibility for initiating investigations, selecting areas for investment, and establishing the appropriate facilities.

### **Initial Investigations**

Ashton joined WMC at Kambalda in 1974. His background had been in sedimentary geology and when the need arose for a geologist to represent WMC in a coal joint venture with Shell in Queensland, Simon was chosen. He worked on coal exploration for a few years which included discovery of an extension to the Anglesea coal deposit, later sold to Alcoa of Australia, and of the Kingston brown coal deposit in South Australia.

When the Petroleum Exploration Group was formed in 1975 and Chris Porter was appointed Manager, Simon Ashton was transferred to the new group and Steve Keenihan was recruited. Simon gained experience in petroleum activities while representing WMC in a number of joint ventures. When WMC became Operator of tenements in the Canning Basin in WA Simon, with others, was responsible for the innovative slim hole drilling programme. He was working out of Perth as Regional Exploration Manager - Petroleum before moving to USA.

Simon's involvement in the Canning Basin had brought him in contact with Bob Sneider, a US petroleum consultant. They had met earlier at an exploration course in Sydney in 1983 where Sneider was one of the overseas speakers. Sneider had been engaged by WMC to advise on exploration in the virtually unexplored Canning Basin region in Western Australia.

## **Consultants**

When Chris Porter and Simon Ashton went to the US in November 1986 they visited Bob Sneider and his associates and others including Professor Bob Weimer and Professor John Haun, both formerly of the Colorado School of Mines and both ex Presidents of the American Association of Petroleum Geologists (AAPG). Porter and Ashton were very impressed with the Sneider Group and their views on the Permian Basin in Texas and New Mexico. Sneider was also recommended by Weimer, who in the past had been instrumental in getting Sneider and John Masters of Canadian Hunter together.

Robert Sneider was a veteran of the Korean War, had a PhD in Geology from Wisconsin University and had spent 17 years with Shell to become pre-eminent in subsurface geology before forming, together with Larry Meckel, a small consulting company in 1974. They had an important role in many successful developments. Sneider's reputation around the world resulted in him being awarded Honorary Membership of AAPG in 1994.

Porter and Ashton were excited by the opportunities to acquire operating fields and to initiate studies with the Sneider Group and Cypress Petroleum Consultants.

Later in November 1986 Porter and Ashton had a brief session with Roy Woodall at Denver airport where they discussed their ideas on the Permian Basin properties and got Woodall's approval to initiate field studies and screening techniques to recognise properties with upside potential. It was decided that Ashton should move to Denver where WMC had a Minerals Exploration Office under the direction of Bruce Kay. This occurred in February 1987.

## **Denver Office**

The Ashtons found a house with room for office facilities at 28396 Clover Lane, Evergreen, Colorado which became the registered office of WMC's USA Petroleum Division. The same address became the registered office of Greenhill Petroleum Corporation (GPC) on 30 July 1987 when it was registered in Delaware, USA. Roy Woodall and Chris Porter were busy preparing submissions in support of a multi-million dollar investment in US petroleum properties. After numerous presentations, the WMC Board in July 1987 approved \$50 million to be allocated to property acquisitions.

## **The First 18 Months**

In February 1988 Andy Lydyard and John Thomson moved from Australia to Denver to provide technical and commercial support. About the same time the office was moved to Lakewood where they shared space with the minerals exploration group. The first 18 months were frustrating. While numerous offers for properties were made, none were successful.

Simon recalled the situation some years later when he said, 'We started slowly and did a lot of studies for about 18 months. We had been negotiating a lot in the last 6-12 months with various companies, but didn't actually purchase our first property until June 1988. It was in West Texas and was called The West San Andres Unit, which is a waterflood. It was purchased off Mobil for about US\$2.3 million and of course that triggered the need for us to bring on staff, because we were the operators of the field. Also it was felt that because all the work we were doing was focussed on studying fields in Louisiana,

West Texas and New Mexico, the natural place to start recruiting people was in Houston, which is really the center of the oil business. We focussed our operation down in Houston and established an office there in July 1988 for the newly engaged staff including Gary Countryman, Vice President Operations. The Denver office was closed and we moved to Houston in August/September 1988.'

### **Permian Basin Properties**

In May 1988 Cypress Consultants and Jim Hartman introduced GPC to potential Louisiana field acquisitions. Chevron had just commenced a field divestitive program and GPC acquired two fields in late 1988.

On 4 May 1988 it was learned that the bid for the San Andres Unit in New Mexico had been successful. In July some other non-operated Mobil interests were acquired in the West Lovington Unit and Lovington San Andres Unit.

Things were not moving quickly enough for Hugh Morgan who wrote to Simon Ashton from Melbourne saying that he was concerned that, 'the exposure is neither exploration (the risk and appraisal of which we are accustomed to understanding) nor acquisition of known oil and gas reserves that can give an assured financial return, but, rather the purchase of speculative oil and gas reserves...', 'the exploration group has to be profit driven', 'we embarked upon an adventure with the \$50 million allocation and I need to have tangible evidence of its commercial success. How this is done I don't care. Whether such success is by farm-out, by sale, by offers to buy or something else is irrelevant.'

Roy Woodall visited GPC in October 1988, discussed proposals for the waterflooding (a secondary recovery method where water is injected into the reservoir at strategic locations to drive the oil to selected production wells) of wells on the Permian Basin fields and further purchases of properties in that area.

Subsequent bids for six New Mexico properties in the Permian Basin were accepted and GPC took over operations of these on 15 December 1988. The largest properties purchased in the Permian Basin were the Lovington Paddock, Lovington San Andres and West Lovington Units. Drilling to enhance production commenced in October 1989.

### **Into Business**

GPC now held seven Permian Basin and two Louisiana properties (Delta Farms and Bully Camp for US\$22.3 million). To handle the Louisiana interests GPC hired Lawton Barton (ex Shell engineer with over 40 years experience) who set up office in Gum Swamp Road, Louisiana.

Sneider encouraged GPC to invest more in exploration, but WMC's limit was about \$8 million annually. The Board wanted to see more revenue from sales before committing heavily on exploration.

In the 1988 WMC Annual Report there were two brief paragraphs under the heading Exploration - North America describing the establishment of an office in Houston and the intention of Greenhill Petroleum to evaluate, acquire and manage oil and gas properties in North America. The 1989 Annual Report devoted a whole column to this topic.

Production for 1988-89 amounted to 384,000 barrels of oil (22% of the Group's total) and 120 million cubic feet of gas. It described the seven Permian Basin fields in West Texas - New Mexico and the Delta Farms - Bully Camp properties in Louisiana. There was some exploration and a gas discovery reported from onshore areas in south-east Texas.

GPC had now invested much of the US\$50 million earmarked for acquisitions. Hugh Morgan was pressuring to see financial benefits and obtain more comfort from the investments made. One option was to bring in a partner to share in future developments. Canadian Hunter were contacted in 1988, but after several meetings and evaluations they declined to participate. It was then suggested by Hugh Morgan that if GPC was to commit more dollars they needed to get an experienced North American President.

Another reason for this appointment was that the business had grown to the stage where Roy Woodall and other senior Exploration Division people had to spend much of their time on management matters in which they were not necessarily experts, instead of focussing on their real expertise in exploration.

This prompted the appointment of R F (Ralph) Cox on contract in November 1989 as CEO and President, prior to him becoming an employee in April the following year. The business grew appreciably during 1989 with further acquisitions of Grand Bay (US\$17 million) and Timbalier Bay (US\$18 million), bringing the total purchases in Louisiana to US\$57 million.

Ashton later said of Cox, 'Ralph came from a history of many years working in senior management positions with Arco. He was in charge of Anaconda at one stage, which Arco purchased and then sold. He left Arco and joined Union Pacific for two or three years and I think he was either President or Assistant to the President in Union Pacific when we went out looking for a President for Greenhill Petroleum and he was one of the candidates and was selected. He was there for about four years and I think Ralph might have struggled a little bit with going from the big company to the small company. Things didn't necessarily work out too well and he left the position early 1994'.

Further progress was made in 1990. An offshore exploration well was drilled on the South Timbalier Block. By June the number of employees had increased from 27 in the previous year to 157. Production of oil more than trebled and gas production increased sevenfold.

The Jones Creek and Fucik discoveries in May 1990 were significant exploration results and WMC's non-executive directors were encouraged to visit the GPC interests before the Annual General Meeting. Offshore exploration, however, was discontinued in favour of work on the Louisiana properties and GPC committed itself to significant third party deals in the area.

In December 1990 Simon Ashton returned to Australia, after having done much to establish the business and build up a spirit of teamwork.

## **Growth and Expansion**

The Linscomb discovery was made in January 1991, but its development was delayed due to the Wetlands issue and technical and engineering problems. The first well became the 'well from hell' and the discovery never lived up to expectations.

Efforts to acquire more properties from Chevron and Texaco were in vain - the bids were unsuccessful. There was some success, however, in acquiring a small oil and gas property, the Midway State Unit in the Permian Basin of New Mexico. The property was adjacent to the Lovington San Andres and Lovington Paddock, both of which were principally owned and operated by GPC. In 1990-91 GPC drilled 46 development wells, performed 54 workovers and converted 54 wells to water injectors in the Permian Basin. In Louisiana in the same period the Company drilled 22 development wells and performed 54 workovers.

In June 1991 there were over 200 people working for GPC under the direction of Ralph Cox, President. All but three of these (Paul Chapman, Andy Lydyard and Robert Weeden) were Americans. For the



most part the Australians were there to gain experience rather than to manage. Later these people moved out and the whole business was then run by Americans.

Greenhill operations were disrupted in August 1992 by shut-ins of its Louisiana properties due to a hurricane. On 29 September Greenhill lost control of an oil well at Timbalier Bay. The well caught fire during a workover operation and was not brought under control until 9 October by well-control specialists named Boots and Coots Corp (true!).

### **The Board Demands Profit**

To the WMC Board the GPC venture was an investment made in keeping with its policy of diversification both geographically and by product. On those counts there was no argument with the venture, but there was also the need to compare its profitability with other potential investments. In 1989-90 there was an operating loss of \$4.2 million on assets of \$147 million. In a handwritten note to Hugh Morgan on 19 April 1990, following a presentation on Greenhill Petroleum, I commented: 'I am a bit concerned that there is a great deal of hype about how great we are at Greenhill and not enough down-to-earth good hard look at the bottom right hand corner'.

In the next year, after a further expenditure of \$123 million, the operating profit before interest and tax was \$29 million, but dropped to \$20 million the following year, then to \$17 million in 1992-93 on assets of \$369 million. In 1994 the situation was even worse.

Production meanwhile had risen from 1,371,000 barrels of oil in 1989-90 to 3,292,000 in 1993-94 and gas from 1907 million cubic feet to 5250 million over the same period. Why was it, the directors asked, that the bigger the business the less the profit?

The declining profitability was partly due to the declining average price of crude oil to US\$15.59 per barrel in 1993-94 compared with US\$24.00 in 1990-91 and partly to higher operating and capital costs than anticipated.

Staff members had grown to over 200 and in an endeavour to improve the return numbers were cut by 10%, with little improvement in costs.

The management, from Ralph Cox down, were under pressure to improve their performance.

Despite the declining profitability further investments were made, notably the purchase in June 1993 of a 75% working interest and operating responsibility for Eugene Island 208, an offshore Louisiana oil and gas property. Subsequently four wells were drilled and extensive remedial work was undertaken to increase productivity. A 3-D seismic survey was also carried out as part of the exploration programme on the Eugene Island 208 field.

After selling two small properties, Greenhill was in 1993 operating four fields in Louisiana and eight in the Permian basin in New Mexico and Texas. With the exception of Timbalier Bay and Eugene Island, the major fields were substantially developed.

Roy Woodall's assessment (in an interview with Gil Ralph in 1997) was, that the key problem with Greenhill under Ralph Cox's management was that he did not get on with the consultants and severed Greenhill's connection with them. Ralph's stated reason for this was that he thought the consultants had a deal (consulting fees plus a percentage of profits from any properties introduced) which was one-sided, with WMC taking all the risk and the consultants none. Thus it was fundamentally in the interests of the consultants to encourage WMC to acquire more properties.

(It is relevant to note that WMC's first petroleum exploration manager, Chris Porter, also had difficulties with the consultants. In this case the consultants refused to work with him because he did not accept their technical recommendations without question and Chris was forced to leave WMC).

In 1994 further serious attempts were made to turn around Greenhill's performance and Ralph Cox was replaced by W G (Billy) Hargett as the President. Hargett reduced staff further and focussed on adding value and reserves.

Hargett came from experience with medium sized oil and gas companies in the US and was in his mid 40s when he joined GPC. The focus was now on efficient operating practices and adding significant reserves at GPC's two largest fields, Grand Bay and Timbalier Bay. Two large 3-D seismic surveys were carried out on these fields.

### **A Retrospective View**

Simon Ashton summed up his views up during an interview in 1994 as follows:

It was a big decision for Western Mining to go overseas and it was felt that we needed to gain some additional experience from a global perspective. The industry was in a major downturn in the mid 80s, so we felt that there was an opportunity to go to North America and at least get involved at the bottom of the market. There was the need for us to get more international experience and from a training point of view, move people into the North American environment from Australia and get them to learn from that experience. The best place to do that is North America as they have the most experienced business environment in petroleum in the world. So that was basically the philosophy of going there. To land in the middle of the States and say well here, let's start investing in the oil and gas business in the most competitive market place in the world, it's not an easy task. So we took it very slowly in the initial phase, we got an arrangement with a local consulting group in Houston, which was Bob Sneider of Sneider Exploration. In fact, at that time it was Bob Sneider, John Sangree and Joe Richardson who were from Shell and Esso. They were very highly regarded people within the industry. Then there was another group called Cypress Petroleum, which was Bob Beardsley and Larry Cochran. We had them on contract to look at specific opportunities for us.

The initial brief was to invest in producing properties, so it was to acquire production. We didn't want to go in there and purchase production that didn't have any potential upside, because the returns or the potential returns would not be great. So we ended up looking at properties where we could interpret with a certain amount of work you could build the production up and maybe get better than an average return. So that meant with that strategy of course, taking extra risks. So it was a combination of production acquisition strategy with upside or exploration strategy in a field. We focussed on existing old fields where we felt with new technology and new application of modern technology, we could turn around the field and increase the production. From the training or the experience aspect one must not lose sight of the fact the Australians, Don Poynton, Tony Williams, Robert Weeden and Hong Sit (who have spent time with GPC and it's consultants) have made a significant contribution to WMC's efforts in the Carnarvon Basin with the transfer of knowledge'.

### **How GPC got into Louisiana**

James A Hartman, a long time employee of Shell Oil Company, retired in 1986 after many years with the Field Studies Task Force. Being the sort of person who couldn't sit about doing nothing, Jim formed an association with Bob Beardsley and Larry Cochran, two other former Shell employees who had established Cypress Petroleum Consultants with interests in South Louisiana fields. About this time

Chevron Petroleum Company announced its intention to divest itself of some major producing properties in South Louisiana including Delta Farms and Bully Camp.

Hartman, Beardsley and Cochran contacted Bob Sneider, another ex Shell man who had a consulting business in Houston, the capital of the oil business in USA. Sneider had been involved with Western Mining over a number of years in Australia and more recently when Greenhill Petroleum Corporation had been established in the US. He had advised Greenhill on acquisitions in West Texas - New Mexico and was aware of WMC's interest in making further purchases of producing properties.

Cypress (Beardsley and Cochran) and Hartman made a presentation to Roy Woodall, Chris Porter and Simon Ashton in Houston and encouraged GPC to support a study of the available data prior to making a bid.

This suited both parties. GPC were anxious to buy established fields with an immediate production capacity and potential for increasing production from workovers. Cypress and Hartman for their part were keen to have someone agree to pay for the time-consuming job of assessing the two fields.

GPC agreed to fund the study and work started immediately in viewing the public record and then on 13 June 1988, Beardsley, Cochran and Hartman were waiting on the doorstep of Chevron's Data Room when their data was to be made available. To assist in the evaluation they also took Roy Coles, Ken Pfau, and Andy Lydyard into the Data Room. They all worked frantically collecting information and assessing the Delta Farms field mainly, with lesser effort spent on the Bully Camp location.

Hartman and his colleagues worked up a bid which was reviewed by Simon Ashton, John Thomson and Andy Lydyard at GPC's Denver office. They discussed details of the bid for most of the day and in the end Ashton authorised them to not only bid for both fields, but to increase the recommended bid slightly. Hartman revised the bid ready for lodging with Chevron in New Orleans on 9 August. He recalls in his account of *The History of GPC in Louisiana* that:

'On the night of August 8 began a tradition by having a Chinese dinner with its fortune cookie. The saying in the cookie was "Your past success will be overshadowed by your future success" - a propitious omen'.

Several anxious weeks later GPC were told of its successful bid for both fields and there was jubilation in the office that day and a hurried fax/call to Roy Woodall in Adelaide with the good news.

## **Barton and Louisiana**

Lawton E Barton was engaged by GPC on 27 September 1988 to manage the Louisiana properties of the company after the acquisition of the Delta Farms and Bully Camp fields on the next day. He set up a temporary office at 19000 Gum Swamp Road, Livingston, LA - an address which caused some suppliers, who visualised having to deliver wading through a swamp, a degree of concern.

Barton was a retired 38 year veteran from the Shell Oil Company. He was appointed as consultant to get the business set up in six weeks. He took on David Freeman as Production Foreman. Karen Prieur was first in the office. Barton gave a good account of how they went about setting up an office at 2121 Ridgelake, Metairie, engaging staff, selecting consultants, negotiating with contractors, carrying out due diligence procedures and subsequently managing operations in a paper given to Hugh Morgan on or about 12 January 1989 (refer GHI-GPC-3).

Barton was a frugal fellow: 'We also began looking for office furnishings hoping to save some money by obtaining previously owned furniture where possible'.

The effective date of the sale was 1 September 1988. The closing was 15 November and in the interim period due diligence was conducted and contract personnel were engaged to take over operations.

Barton supervised the workover of the fields including the dredging, bringing in drilling rigs, replacing Christmas trees, laying flow lines, repair and recommissioning of plant and equipment. He reported in 1989 that this work had 'tried us to the fullest, but has been satisfying and enjoyable. We have crossed the threshold, but cannot let up'.

The operations office was in Metairie, Louisiana. Greenhill also owned and operated a dock and warehouse facility in Belle Chasse, Louisiana. Boats and barges were used to move personnel and equipment between field locations and shore bases.

The Louisiana operations found 'undiscovered' or 'bypassed' oil in the very complicated and numerous reservoirs in the fields.

The Delta Farms field was restudied by Doug Everson, a production geologist, and Kenny Champagne, a production engineer, both former Shell employees. As a result of their study 12 new wells and over 50 workovers were performed, dramatically increasing production from about 400 barrels of oil per day to 2800. Barbara Crozier, a former Shell employee, was hired to assist with reservoir engineering.

### **Grand Bay Fields**

The Beardsley - Hartman team were also engaged to review the data and prepare a bid for The Grand Bay field which was offered for sale early in 1989. They were first through the door of the data room when it opened. Hartman tells how;

The data-collecting team consisted of Beardsley, Coles, Richter, Prieur and Resor. Again, every piece of data was copied; all missing logs, PNC logs and pertinent 5" logs, and all production data were Xeroxed and all structure maps were traced. Chevron had included some seismic in the data room and had indicated that there were some prospects based on the seismic. Hal Sawyer was contracted to review that data and he did not concur with Chevron's prospects. No value was included in the bid for them'.

Beardsley and Hartman prepared a bid (US\$17 million) which was accepted by GPC and Hartman had his traditional Chinese dinner the night prior to lodging the bid on behalf of Greenhill to Chevron. That night the fortune cookie read, 'Get ready. Good fortune comes in bunches'. Several weeks passed before they learned that the bid was accepted.

The due diligence phase was prolonged due to some problems with surface facilities but all was finally resolved and GPC assumed ownership and control of the Grand Bay field late in 1989.

### **Timbalier Bay Field**

Chevron announced in July 1989 its intention to offer a former Gulf Oil property at Timbalier Bay for sale. This was the largest field yet offered and Beardsley - Hartman group were engaged to collect and assess the data and prepare a bid (US\$18 million) which was submitted to Chevron on 31 October 1989. Hartman's Chinese fortune cookie on the previous night read 'It is the hope and dreams that we have that makes us great'.

Greenhill learnt the next day that theirs was the highest bid. After the usual due diligence work by Chris Janke and Paragon Engineering the closing was signed early in May and GPC had acquired the largest

field yet purchased.

For such a large property with an anticipated comprehensive well drilling programme and dozens of workovers, additional geologists and engineers were engaged. Amongst these were Darrell Smith, a 32 year Shell geologist, Rob Tepper, a 10 year Chevron petrophysical engineer, Tony Richards, a 10 year Exxon reservoirs engineer. Garrett Holt, a short term Shell production engineer and Bob Monahan, a four year Exxon production geologist. These people, and some others, moved into a new office GPC had set up at 3300 West Esplanade, Metairie, Louisiana.

### **Sale of Petroleum Division**

With WMC's commitment to expansion of Olympic Dam, it was decided in 1996 that the Company was not able to finance both this expansion and the growth of the Petroleum Division into a significant producer. The Company's petroleum assets were therefore put up for sale.

In early 1997 Greenhill Petroleum Corporation, holding all WMC's petroleum interests in the USA, was sold to Mesa Operating Co for US\$270.5 million. Western Mining Corporation (NZ) Limited, holding a 40% interest in the Kupe South Joint Venture in New Zealand, was sold to Fletcher Challenge Energy Limited for A\$34 million. WMC's Australian petroleum assets were sold to the Santos Group and Novus Petroleum for a total of A\$187 million. All sales were effective as of 1 January 1997.

### **Petroleum Exploration Expenditure**

The expenditure on petroleum exploration by WMC is shown in *Appendix VII*.

### **Petroleum Production**

The production of oil and gas by WMC is shown in *Appendix V*.

### **Financial Results**

The financial result of WMC's involvement in petroleum from inception in 1972 to sale of the assets on 1 January 1997 was:

#### **Gain on Disposal of Assets (all amounts in A\$):**

	<b>Assets Being Disposed Of</b>	<b>Proceeds</b>	<b>Net Book Value</b>	<b>Estimated Selling Costs</b>	<b>Taxes</b>	<b>Profit (1)</b>	<b>Interest (2)</b>
WAPET	Assets	35.0	12.0	0.0	5.7	17.3	1.3
Greenhill	Entity	338.1	226.9	22.3	1.8	87.1	9.3
Australia	Assets	194.8	98.0	6.2	32.6	58.0	4.0
New Zealand	Entity	35.8	8.5	0.3	0.0	27.0	0.5
Total		603.7	345.5	28.7	40.1	189.4	15.2

Note: All US\$ amounts converted to A\$ at 0.7962 (Rate at 31/12/96)

(1) Abnormal after tax profit at effective date

(2) Interest earned on funds between effective date and receipt of proceeds

<b>Cash Flow</b>	<b>\$ of the day (M)</b>	<b>1997 \$ (M)</b>
Petroleum Australasia - Inception 1972/73	124.3	(53.3)
Greenhill Petroleum - Inception 1988/89	65.0	12.7
Petroleum Malaysia - Inception 1988/89	(30.8)	(33.3)
WMC New Zealand - Inception 1991/92	4.1	1.1
	-----	-----
Total	162.6	(72.8)
Included in the above: Exploration Exp.	370.4	568.7

### **With Hindsight**

WMC's involvement in petroleum can be considered satisfactory in that the money invested was more than returned in the dollars of the day and for some 26 years there was the possibility that a major discovery could have been made which would have lifted the Company to a new level of prosperity. For a company which owed its rapid growth almost entirely to exploration successes in the previous 30 years, this was an attractive gamble. That no major discovery was made was a risk inherent in exploration, but the Company in effect had a free ticket in the lottery.



## **GAS TO THE GOLDFIELDS**

Drilling in the northern part of the Carnarvon Basin in WA during 1992-93 resulted in some very encouraging gas discoveries in the Maitland and East Spar wells, which flowed at high rates and contained a high proportion of condensate. Based on this resource, WMC led a joint venture with BHP Minerals and Normandy Poseidon to build a gas pipeline from near Onslow to the Eastern Goldfields.

K R (Kym) Saville comments:

WMC was the chief proponent of the pipeline proposal, but readily enlisted Normandy for its Kalgoorlie gold operations. However WMC and Normandy's combined demand was insufficient to make the proposal economic. BHP was therefore approached, but they were able to drive a hard bargain because they had other alternatives (I think they were also looking at building a gas fired power station on the coast to the west of their operations, connected by a powerline). The final formula for participation therefore emphasised distance more than volume, hence BHP's relatively lower joint venture interest (and liability for costs).

One other aspect requires elaboration. The pipeline proposal was initially promoted within WMC by the Petroleum Business Unit who needed to find a market for East Spar gas. The Nickel and Gold Business Units, who they were relying on as their major customer (for both gas supply and pipeline haulage), were interested in the proposal, but only if it gave them lower energy costs. This meant that East Spar's gas price aspirations were not met when they came to negotiate a long term supply contract. I can still hear the sound of jaws dropping when Stephen Keenihan (WMC Petroleum's East Spar JV representative) and other East Spar JV participants came to see me for the first time (I was responsible at that time for major supply contracts and commercial negotiations for the Nickel and Gold businesses) and I told them that their price proposal was about double what I had in mind and that I thought that we would have to go to competitive tender to ensure we got the best outcome for WMC shareholders. Not only was this a complete surprise to them, but it became clear that they were expecting that we would just accept their proposal as a *fait accompli* because it was what our Petroleum Business Unit wanted.

Eventually it became clear to Hugh Morgan that the pipeline proposal had to be driven by the customer (Nickel and Gold) within WMC, as it was on the Normandy and BHP side, rather than by the aspirant supplier, and management responsibility for the pipeline within WMC was transferred from Petroleum to Nickel and Gold (Andrew Michelmore).'

The Goldfields Gas Transmission Joint Venture, comprising Western Mining Corporation through Wesminco Oil Pty Ltd (62.664%), Normandy Pipelines Pty Ltd (25.493%) and BHP Minerals through Pilbara Energy Pty Ltd (11.843%.) was formed in June 1993. The Joint Venture was invited on 8 September 1993 by the Western Australian Government to provide additional information relating to the development of a Goldfields gas pipeline.

On 30 January 1994 it was announced that the Government had approved final proposals for the development of the Goldfields Gas Pipeline. The pipeline was to be 1370 km long with nominal diameters of 400 mm to Newman and 350 mm to Kalgoorlie, and was estimated to cost \$400 million. The initial utilisation was expected to be approximately 70 terajoules/day; throughput could be more than doubled with additional compression. WMC at Mt Keith, Leinster, Kalgoorlie and Kambalda would be the largest customer.



The project would be managed by Goldfields Gas Transmission Pty Ltd (GGT), a wholly owned subsidiary of WMC. First gas deliveries were scheduled for mid-1996.

On 15 February 1994 it was announced that the East Spar Joint Venturers (WMC 30% and operator, Ampolex Limited 35%, Apache Oil Australia 20%, Bridge Oil limited 15%) had determined that the development of the field was technically feasible. 'East Spar is a significant gas resource, expected to supply the West Australian gas market over the next 15 to 20 years'.

An agreement with the Western Australian Government was signed on 23 March 1994.

On 30 January 1995 it was announced that the WA Government had approved the final proposals for the \$400 million pipeline to K algoorlie.

On 27 June 1995 it was announced that the East Spar field would be developed using a subsea gas gathering system. Gas would be transported by pipeline to processing facilities next to the existing Harriet Joint Venture facilities on Varanus Island. Condensate would be exported from Varanus Island by tanker, and the gas would be delivered to both the Goldfields pipeline and Dampier-Bunbury Natural Gas pipeline.

On 19 July 1995 the award of a \$175 million contract for the construction of the pipeline to Saipem Australia Pty Ltd was announced. Contracts in excess of \$100 million for the supply of pipe and provision of corrosion coating had already been let.

Saipem intended to use two construction spreads starting in August, one at Yarraloola working eastwards and the other at Newman working westwards, together completing seven kilometres of pipe installation per day. Completing this section first was expected to minimise exposure to the northern cyclone season.

When the Y arraloola to Newman section was completed, the main spread would continue laying pipe southward towards Leinster. The second spread would commence work near Wiluna, before re-locating to K algoorlie in March 1996 and, working northwards, connecting with the main spread near Menzies in July 1996.

Contracts for compressor stations at Y arraloola and Ilgarari and gas measuring equipment at Y arraloola, Newman, Mt Keith, Leinster and K algoorlie were awarded later in 1995. Gas was also supplied for a new power station for K algoorlie-Boulder.

The final weld in the now \$450 million pipeline was completed on 18 July 1996. Gas began to flow to the power stations in the Goldfields in early August.

The Premier of Western Australia, Richard Court, officially opened the pipeline on 4 October 1996.

### **Sale of WMC Interest**

On 1 October 1998 WMC announced that it had agreed to sell its natural gas pipeline assets in Western Australia, including the 62.664% interest in Goldfields Gas Transmission Joint Venture, the lateral pipelines connecting WMC operations to the GGT pipeline, and the pipeline management company Goldfields Gas Transmission Pty Ltd.

The laterals were 200 mm spur pipelines to the operations at Mt Keith, Leinster, the K algoorlie Nickel Smelter, and K ambalda.

The purchaser was Southern Cross Pipelines Australia Pty Ltd, owned by AGL Pipelines Ltd (45%), CMS Gas Transmission and Storage Company (45%) and Trans Alta Energy [Australia] Pty Ltd (10%). The purchase price was \$402 million, subject to working capital and other adjustments, compared with the book value of \$290 million. The transaction was expected to be completed before the end of 1998.

Although not stated in the announcement, the reason for the sale was to reduce the borrowings needed for the Olympic Dam expansion.

### **Subsequent Events**

In September 2003 it was announced that the Goldfields gas pipeline would be extended 380 km from Kambalda to Esperance, thus becoming Australia's longest gas pipeline (1764 km).

# **BOOK TWO**

***WMC 1974 - 1999***

***PART A. OPERATIONS AND PROJECTS***

**VOLUME FOUR**

***DISCONTINUED PROJECTS***

## ***DISCONTINUED PROJECTS***

### **CONTENTS**

	<b>Page</b>
<b>Frustrations At Hail Creek</b>	<b>475</b>
Hail Creek Coal	
<b>Kingston Drained</b>	<b>483</b>
Kingston Brown Coal	
<b>The Pilbara Punt</b>	<b>485</b>
Coal in the Pilbara	
<b>Ilmenite Upgrading</b>	<b>487</b>
Discussions With Mitsubishi Chemical Industries	
<b>The Titanium Temptation</b>	<b>489</b>
Possible Joint Venture With General Dynamics	
<b>Armour For The Army</b>	<b>491</b>
Silicon Carbide Tiles	
<b>Chromium Around The World</b>	<b>493</b>
<b>Eyeing Iron Ore</b>	<b>497</b>
<ul style="list-style-type: none"> <li>- Background</li> <li>- Geraldton Operations</li> <li>Joint Venture (GOJV)</li> <li>- Robe River Limited</li> <li>- Efforts in Mid-1990s</li> <li>- Overview</li> <li>- CAEMI</li> <li>- CVRD</li> <li>- North Ltd</li> </ul>	
<b>Some Odd Ones</b>	<b>507</b>

## ***FRUSTRATIONS AT HAIL CREEK***

### **Background**

In the 1960s there were large coking coal discoveries and developments in the Bowen Basin in Queensland, primarily to satisfy the demand in Japan. In 1970, in informal discussions between W M (Bill) Morgan (Managing Director of Western Mining) and Murray Howell (Executive Director of BH South), it was found that both WMC and South were interested in participating in coal projects. So as not to compete unnecessarily against each other, a gentlemen's agreement was reached that if one company found an opportunity, the other would share equally in it. This was recorded in a letter from Morgan to Howell on 10 September 1970.

While there was nothing in sight at the time of these discussions, soon thereafter WMC was invited by Eric Avery, Chairman of Australian Associated Oilfields NL (AAO), to join in the development of a large coking coal deposit at Hail Creek, inland from Mackay in Queensland. That company's subsidiary Mines Administration Pty Ltd (MINAD), owned 85% by AAO and 15% by Interstate Oil Ltd (IOL), the latter owned 52% by Conzinc Rio Tinto Australia (CRA), had discovered and owned the deposit.

### **The Agreement**

MINAD's staff consisted of technical specialists, mainly geologists, and they had discovered the Hail Creek deposit. The purpose of inviting WMC to participate was to assist in financing and to have a company with experience in large scale development and management to manage the project. MINAD also wished to bring in a Japanese partner, Marubeni Corporation, which had a previous relationship with them through the Yarrabee Anthracite Project in Queensland. WMC suggested adding Sumitomo Corporation.

The indicated reserves were in excess of 100 million tons of high quality coking coal, mineable by opencut. A further 650 million tons were inferred to be available for underground mining. There would be a 77 km new railway to a new deepwater port north of Mackay, able to accommodate 100,000 ton vessels. The initial capital cost was expected to be \$140 million and production at the rate of 5 million tons per annum was expected to start in 1974 or 1975.

Of the capital cost, it was expected that \$30 million would be financed by equipment manufacturers. Of the remainder, 60% (\$66 million) would be borrowed against the project. Of the remainder, 60% (\$26 million) would be guaranteed by Marubeni and 20% (\$9 million) by Sumitomo.

The terms for WMC entry were:

- payment of \$2.5 million to MINAD for an initial 5% equity
- payment of between \$4 million and \$8 million for a further 20% equity by 7 July 1975
- WMC to guarantee the finance for the 20% of loan funds not financed against the project, up to a maximum of \$10 million, with a return of not less than 13% per annum to WMC

WMC would manage the Project at cost under the direction of a Management Committee.

The final ownership of the Joint Venture would be: AAO 51% (initially 71%), WMC 25% (initially 5%), Marubeni 10%, IOL 9% and Sumitomo 5%.

## **The Joint Venture**

The Hail Creek Joint Venture was formed on 4 July 1971. J B (John) Oliver of WMC was intended to be appointed General Manager, but was unable to take up his appointment immediately because of a broken femur suffered in a car accident. The work commenced with B J (Brian) Hurley as Resident Project Officer, supported by R G (Robert) Kennedy and R J (Ray) Hardy, accommodated in the MINAD Office in Brisbane. E D J (Doug) Stewart would exercise general supervision and he and D P (Doug) McIntyre would represent WMC on the Management Committee. The latter was replaced by K (Ken) Lamin in February 1972. John Oliver took up his appointment on 2 September 1971.

## **The Dispute With Broken Hill South**

The Agreement caused a lengthy and, at times bitter, dispute with Murray Howell of Broken Hill South (BHS), who believed that on the basis of the gentlemen's agreement they were entitled to a half share of WMC's interest. It was particularly difficult because Sir Lindesay was the Chairman of both companies and it did not help that Bill Morgan was at that time already quite ill with cancer and took little interest in the dispute. It was left to me to attempt to clear the matter up.

The arguments are too complicated to summarise but, while not a matter of great consequence, the dispute is of historical interest. In Book Three, *Appendix XXXII* there are such copies of relevant correspondence and memoranda as I have been able to retrieve from files. Perhaps an independent reviewer at some future time can impartially judge the merits or otherwise of the stance of each of the two participants.

The matter ended by WMC asking AAO to agree to BHS's full and direct participation in the Joint Venture, accepting one half of all the rights and responsibilities of WMC. AAO declined.

## **Project Planning**

Several alternative plans were prepared for a range of outputs up to about five million tonnes of washed coal per annum from Hail Creek for export to Japan.

Discussions regarding a long-term contract with the Japanese Steel Mills was actively pursued. European steel makers had also shown interest in this class of coking coal and had requested samples for testing in their own laboratories.

Pilot plant washing tests were carried out on bulk samples of Hail Creek coal from trial mining slots which had been excavated in 1971-72.

By 1973 the Project Manager had completed the feasibility study. This was presented with technical details to the Japanese Steel Mills and commercial negotiations took place during 1974. While the technical work on the Project was on hold, John Oliver returned to Kalgoorlie from May 1973 to August 1974 as General Manager Kalgoorlie Lake View Pty Ltd and Ken Lamin became Acting General Manager of the Hail Creek Project.

Agreement was obtained from the Queensland Government and discussions with the Federal Government indicated that its approval to export could be anticipated.

John Oliver returned to Brisbane as Managing Director of Hail Creek Associates Pty Ltd in August 1974.

## The Difficulties

While on the surface the project was progressing satisfactorily, all was not well within the Venture.

WMC had the management responsibility, but AAO as the discoverer of the deposit and the major equity owner in the Joint Venture found it difficult not to feel that it was in charge of the Project. There was also some embarrassment during commercial negotiations because the Japanese tended to regard me (representing WMC), rather than the Managing Director of AAO (Doug Travers), as the senior person. This naturally annoyed him.

The biggest problem, however, was that while the Japanese Steel Mills were happy to conclude agreements in principle, we could not get them to commit to a definite project schedule. The mills did not need additional coking coal and were happy to keep a possible competitor to the existing suppliers at the gate, but would not go beyond it.

In 1974 Australian Associated Oilfields NL was renamed Australian Associated Resources Ltd (AAR).

In May 1974 CRA, 52% owners of IOL, bought a 12.6 % shareholding in AAR. This was thought to have triggered a provision in the Agreement that, in the event of a change of control of AAO (as it then was), WMC was entitled to buy within six months an additional 18% equity in Hail Creek from AAO and IOL. While the legal situation was not clear, we considered serving notice to AAR and IOL on 6 November 1974. In the event, we did not do so. The immediate effect of the CRA purchase was great consternation by R F X Connor and Sir Lenox Hewitt because of the increase in foreign ownership and withholding of Government's approval for the Project. Eventually CRA sold their AAR shares to IOL.

The first round of discussions on a sales offer of 66 million tons of coal over 15 years commencing in 1978 were held in Tokyo during the week commencing 15 July 1974. The offer was for a floor price, to be escalated on both capital and operating cost increases (including interest rate increases), on which financing could be based. Actual price, to be determined annually, would be higher if world prices were higher. Discussions continued later in the year, but with no progress.

On 25 November 1974 I wrote a lengthy personal letter to Eric Avery, expressing serious concern about progress of the Joint Venture. I had come to the conclusion that

- The Steel Mills were concerned about the credibility of the Joint Venture. This was evident from comments by Steel Mills' representatives at the end of the first sales visit to Japan, following which we made certain organisational changes. A subsequent letter from Mr Dosako and Mr Nakai on 18 October 1974 showed that these changes failed to impress and the problems were still there, confirmed by oral advice from Messrs Kawasaki, Uesugi and Ono of Marubeni, Byakuno of Sumitomo, and three separate oral messages to me from the Senior Managing Director of Nippon Steel and the chief negotiator for the Steel Mills, Mr Tanabe.
- The reason was continuing disputes regarding the Joint Venture agreement and the delay in completing it, insufficient detailed preparation and agreement before sales negotiations in Japan, and the delay in resuming these negotiations
- The Mills were concerned that the disagreement, disputes and arguments would continue and result in weak and ineffectual management

- I had been told by Mr Tanabe that to re-establish the credibility of the Project I should personally assure the Steel Mills that the management arrangements were satisfactory and lead the next sales negotiations. These views were expressed not only to us, but also to outsiders.

This put me into an embarrassing and very difficult situation because, if I did not accept this suggestion, I would be either snubbing Mr Tanabe or showing lack of confidence in the Project. On the other hand, I could not accept it without clear-cut authority by the Joint Venture partners.

I told Eric that, for WMC to continue, we needed:

- finalisation of all disputes regarding the Joint Venture, signing of the Agreement, and restoration of the Government's approval
- explicit assurance from all joint venturers that WMC had their full approval and backing in trying to restore the standing of the Joint Venture in Japan.

The latter had the following prerequisites:

- A clear statement of how policy decisions were made, to demonstrate that positive decisions can be made in all circumstances and that there will be no deadlock.
- Clear management authority for WMC. The most satisfactory arrangement would be for WMC to be officially appointed Manager. This was different to present arrangements where WMC was responsible to a Management Committee, but it was necessary if we were to accept the responsibilities to the Steel Mills.
- I would require full authority from all joint venturers to act within agreed limits in sales negotiations.

This very strong letter shows that we were thoroughly fed up and disillusioned with the internal politicking and lack of purpose of the Joint Venture.

Eric replied to me on 6 December attempting to deflect the criticisms, but not being able to refute it. There was an attempt to blame WMC for the delays and in a telex to all Joint Venturers on 9 December, re-stating the necessary actions stated earlier, I included the following comment:

I strongly resent any implications that WMC is in any way responsible for the delays. Such implications are absolutely incorrect.

WMC has been doing its honest best to cooperate in any solution acceptable to other parties involved and will continue to do so. WMC responses to any proposals have been practically immediate. I have personally spent more of my time than I can afford on Hail Creek recently and in my absence Mr. Stewart has been and will be fully authorised to act on behalf of WMC.'

I had earlier advised Sir Lenox Hewitt, who was expecting a visit from Mr Tanabe, in similar terms, with copies to all Joint Venturers.

In trying to help extricate the bogged down Joint Venture, I offered in a letter to Eric Avery on 12 December 1974 'to relax the conditions under which the additional 18% equity would be available to WMC'.



The records I have are then silent until a partners' meeting in E J (Ted) Weatherstone's AMRAS office in Tokyo on 17 December, for which I personally prepared a detailed agenda. The main items were:

1. Report on Resolution of Problems Between Australian Partners
2. Report on Government Approval
3. Project Management
4. Pre-Commitment Expenditure
5. Marketing

Approval of the project by R F X Connor was advised by telex on 16 December. Regarding management, WMC proposed that Hail Creek Associates Pty Ltd (HCA) would be converted into a 100% subsidiary of WMC and be appointed Manager, responsible to Policy Committee. A fee would be payable from commitment date to the project by the Joint Venture. Regarding marketing, AAR and WMC proposed that HCA administer all sales contracts and prepare for sales negotiations. After approval by the Policy Committee, HCA would carry out all working level negotiations. All Joint Venturers were entitled to appoint one representative to a Marketing Policy team, with Chairman appointed by AAR.

The partners agreed to these arrangements. A Basic Sales Agreement for 66 million tons of coking coal over 15 years commencing in the third quarter of 1978 was signed with some ceremony in the Palace Hotel in Tokyo on 20 December. However, the Steel Mills stated that there were some (unspecified) areas of the Joint Venture arrangements which they wished to discuss in more detail. Commitment of the Joint Venturers depended on satisfactory financing agreements and Queensland Government approval.

I wrote to John Oliver on 23 and 31 December 1974 and pointed out that, after fighting hard to be given the management authority, it was now up to us to progress the Project. We would be watched critically by various people, including the Japanese Steel Mills, and had to make sure that we were above criticism in all respects.

On 10 January 1975 Doug Stewart and H O (Hugh) Clark were appointed as our representatives on the Policy Committee. John Oliver became Managing Director of HCA and I would, for a time, be the Chairman, with Doug Stewart the Deputy Chairman. H S (Harold) Amos had been already appointed Chairman of the Loan Committee.

### **Purchase of Australian Associated Resources Ltd (AAR) Shares**

One of the concerns we had was our small equity in the Hail Creek Project, and during 1974 we bought approximately 1 million shares in AAR, at a cost of \$0.7 million, intending to buy more as opportunity offered. There was a possibility that the 18% of AAR shares bought by CRA, which had upset the Federal Government, may be sold to WMC to overcome the problem. In the end, they were sold to IOL.

The shares we had bought in AAR were sold after we retired from the Hail Creek Project.

### **Western Mining Withdraws**

In my letter to Eric Avery on 19 November 1974 I had included the following:

It could well be that ..... WMC could not proceed with the joint venture ..... We have no wish to withdraw from the joint venture or to cause any difficulties. However, we are being put into

a position through no fault of ourselves where in all sincerity, and bearing in mind the responsibilities to our shareholders, we may not have any choice.'

On 25 November I was more specific:

'Also, according to the existing agreements our last chance to withdraw is by 30th June, 1975. We are therefore faced with a decision in the next few months.'

In a reply on 12 December to Eric Avery's response to the above, I again said:

'WMC is being asked to accept responsibility of the Hail Creek Project under conditions which I believe are untenable ... WMC has the right to decide whether it wishes to remain in the joint venture and I regret to say that unless the venture can be pulled together promptly and made workable my recommendation to the WMC Board will be not to remain in the venture.'

In May 1975 I wrote to Eric Avery, pointing out that the timing in the Basic Sales Contract assumed that infrastructure arrangements and financing and the remaining negotiations would be completed by September. It was now clear that this was unlikely to happen and there were indications that the Steel Mills had decided not to hurry the Project along. This needed to be cleared up in the 'coming meeting in Japan'.

I was also concerned about the steadily increasing capital cost which had risen from \$140 million to \$520 million, the latter on the assumption that construction started virtually immediately and inflation would be 20% per annum for the next three years. In the previous 12 months cost increases had been between 30% and 50%. In December the Steel Mills had agreed to finance infrastructure by way of State Government guaranteed bonds, but they seemed to try to back out of this as the cost of the infrastructure escalated.

An exchange of letters in late June 1975 between Eric Avery, Rus Madigan of CRA and myself made it clear that AAR and IOL would not agree with the request in my letter of 4 June to extend the date by which WMC had to purchase the additional 20% equity beyond the now agreed 14 July 1975, to coincide with the date by which the Joint Venturers had to decide whether or not to commit to the Project, so that WMC could make an informed purchase decision. I asked WMC directors on 2 July 1975 to confirm that they agreed with giving notice of withdrawal on 7 July.

On 4 July I made a rush trip to Tokyo to inform Marubeni, Sumitomo, and Mr Tanabe of our decision. The only time I could see Tanabe at such short notice was in the corridor at the New Otani Hotel where he was attending a function. When I told him, he did not seem surprised!

In a joint statement issued on 7 July 1975 the Directors of Associated Australian Resources NL, IOL Petroleum Limited, and Western Mining Corporation announced that, under the terms of agreement established on 4 July 1971, WMC had given notice of its intention to withdraw from the Hail Creek Project. The Directors of Associated Australian Resources NL and IOL Petroleum Limited stated that they could not extend the time within which WMC could make its decision under the 1971 Agreement unless payment for the purchase was substantially increased.

The respective positions being too divergent to reach an effective compromise, WMC formally gave notice of withdrawal which took effect on 14 July 1975.

The last event was an exchange of letters between Eric Avery and myself on 24 July, assuring each other that there were no hard feelings. I expressed my best wishes for the success of Hail Creek and

offered to do what we could to minimise the adverse effects of our withdrawal.

### **Comment**

The Joint Venture was flawed in that the various parties had different interests in the outcome. Any differing benefits to the participants should have been settled at the beginning, so that thereafter all would have been in an identical position.

It was also flawed in that a minority participant was given the management responsibility, to be supplied at cost, and the respective rights and responsibilities of the manager and the joint venturers had not been clearly specified.

By the time we rectified this at the end of 1974 the market had turned against the Project and the Steel Mills were happy to let it remain in suspense against a future need.

While WMC was out of pocket from this exercise, the Company did benefit by learning the hard way what to do and not to do in joint ventures. The view subsequently stated from time to time within WMC, that the complications of joint ventures increase in proportion to the cube of the number of participants, may well have had its origin in this experience. It consumed a large amount of senior management time over several years.

WMC's decision to withdraw was subsequently endorsed by the Project remaining undeveloped for the next 25 years. In retrospect, we should not have become involved in the first place.

### **Subsequent Developments**

In November 1975 (after the Whitlam Government and R F X Connor had lost office and Australian ownership, although still an important consideration, was handled more flexibly) CRA joined the Hail Creek consortium with a 31% interest and became the operator. CRA, Marubeni, and Sumitomo contributed a further \$4 million to the study of the proposal to mine and export 5 million tonnes per annum. On commitment the three participants would provide the first \$10 million of expenditure and the final interests would be AAR 42%, IOL 12%, Marubeni 10%, Sumitomo 5%, and CRA 31%.

By 2000 the ownership had changed further to CRA (now Rio Tinto), through its subsidiary Pacific Coal 92%, Marubeni Coal Pty Ltd 5.33% and Sumitomo Coal Development 2.67%.

Finally, in May 2001 it was announced that the mine would be developed at a cost of \$425 million. First shipments were expected in the third quarter of 2003 and production would build up to 5.5 million tonnes a year within four years.

Of the total resource of 1200 million tonnes the 200 million tonnes mineable by opencut were expected to be mined over 25 years.



## ***KINGSTON DRAINED***

### **The Discovery**

In their search for energy minerals WMC exploration people considered that there was potential for an occurrence of coal along the northern margin of the Otway Basin in the south-east of South Australia. Drilling began and in 1979 lignite (brown coal) was intersected about 25 km north of Kingston. Subsequently more than 500 holes were drilled in the region and by April 1982 the indicated and inferred reserves of coal were estimated to be 985 million tonnes.

The discovery was announced in December 1979. The deposit has an average thickness of about eight metres and it is overlain by about 40 metres of sedimentary overburden.

### **Plans For Development**

In 1981 bulk samples were sent to West Germany and North America for testing and the coal was shown to be suitable for power generation.

During 1981-82 extensive geotechnical and hydrogeological investigations were completed and planning of an opencut utilising conventional strip mining techniques was undertaken. An *Environmental Impact Statement* was submitted to the Government in April 1983. It remained open for public comment until June. There were strong objections to this development from the local pastoralists and farmers who feared that the drop in the water table would affect the viability of their farming activities.

For various reasons the opencut proposal was ultimately abandoned (principally because of the problems with the water table) and an alternative technique using floating dredges was devised. The overburden would be removed by a suction dredge and the coal by a bucket dredge. The promoter of this scheme was the Project Manager, R G (Bob) Cant, an engineer who worked industriously on the project for some years.

In July 1985 the South Australian Government announced that two other coal deposits (Lochiel and Sedan) would be investigated in more detail as a possible source of fuel for the next major power station in South Australia. The WMC proposal was 'put on the back burner'.

The Company continued making representations and submitting proposals to the South Australian Government on the bucket dredge/drag line proposal and several brochures were produced to illustrate this.

### **Project Discontinued**

By 1988 it became obvious that a new power station at the south-east of South Australia in the vicinity of Kingston was not favoured by the State Government, nor perhaps even warranted. As a result the Company discontinued further work on the project.

### **Comment**

The Kingston Power Station would have been sited on the route of the interstate power link between Victoria and South Australia. A power station in the vicinity of Kingston would have been well located to feed into the system.

After retirement, the former General Manager of WMC's Energy Department, E D J (Doug) Stewart, became a consultant to the South Australian Government and subsequently Chairman of the SA Energy Planning Executive which reviewed the longer-term power requirements for South Australia. We were always hopeful that Doug Stewart may have been able to bring some wisdom to the South Australian scene with respect to the deposit at Kingston, but that was not to be.

Bob Cant was certainly an enthusiast for the project. I am not sure whether it was he who perceived the idea of dredging, but he promoted it with enthusiasm. Plans were drawn up and the practicability of such dredges established. A lot of work was done by Alluvial Dredges Ltd, a company with a great reputation in that business. The wet method of coal winning did receive approval over the opencut mining technique, mainly because it did not require lowering of the water table.

With hindsight, following the subsequent worldwide concern about the greenhouse effect and consequent campaign to reduce CO<sub>2</sub> emissions, there is a possibility of a carbon tax being introduced in Australia at some time. Such a tax would affect brown coal based electricity generation more than other sources. The forced abandonment of the Kingston Project may have been one of the events (not infrequent in human affairs) which appeared to be a setback at the time, but may turn out to have been a blessing in disguise.

## ***THE PILBARA PUNT***

In October 1979 WMC was granted 103 Temporary Reserves covering about 20,000 sq km of the Fortescue River valley in the Pilbara, for the purpose of exploring for coal.

The concept was brought to WMC by a small Perth company, Swan Resources Ltd. Swan's geologists Brian Breese (ex BHP) and Harry Mason postulated that the Fortescue River valley was a rift valley, potentially very deep and containing rocks of carboniferous age. Gravity anomalies were consistent with the concept of buried basins. WMC geologists were intrigued by the theory and, although it was a long shot, decided to test it. The thought of finding a major coal resource in the immediate proximity of large iron ore deposits was a tempting prospect.

WMC had a 80% interest in the venture, with Swan Resources and an associated company, Eagle Corp, 10% each.

The valley had been drilled only to shallow depth (about 30 metres). The initial program was for WMC to drill 5 holes, after which it had the option of withdrawing. If WMC continued, it had to spend \$5 million before Swan Resources had to contribute.

All five holes encountered Proterozoic basement rocks at depths of 120 metres or less, showing that the valley did not contain significant thicknesses of sediments in which a major deposit of Permian coal could exist.





## ***ILMENITE UPGRADING***

While in Tokyo in February 1974, Executive Vice President of Mitsubishi Chemical Industries (MCI), Mr Hasegawa, raised with me their interest in an ilmenite upgrading plant in Western Australia. His approach to us was based on our involvement in the Mineral Sands project. Mitsubishi Chemical had developed a process for converting ilmenite into rutile.

I pointed out to Mr Hasegawa that WMC did not own any ilmenite deposits, while other companies in Western Australia did. Hasegawa said these were not substantial companies and he preferred to work with us. If we had a joint upgrading plant, we could purchase the ilmenite feed until WMC exploration discovered ilmenite. Another possibility was a three company joint venture with Westralian Sands, who produced ilmenite.

Again in Tokyo in May, I told Hasegawa that our analysis of the information provided by them had indicated a discounted cash flow of 4%. We believed for a new project such as this it should be at least 15%. Prices had to be 33% to 100% higher than in recent times to achieve this. We were also concerned about the availability of experienced WMC metallurgical staff which depended on the progress of the Yeelirrie Project, and the environmental aspects of the proposed location of the plant in Kwinana.

In May 1975 I wrote to Hasegawa, who was by then Senior Adviser to Mitsubishi Chemicals, expressing again strong concern regarding the economics of such a plant, especially in view of the high inflation rate in Australia.

In November 1975 we had an approach from Rutile and Zircon Mines (Newcastle) Limited (RZM), who were aware of our discussions with Mitsubishi. Akzo Zout Chemie of Holland (50%), Peko (25%) and Kathleen Investments (25%), the last two the owners of RZM, had been developing their own ilmenite beneficiation process and plant in Bunbury, WA. It was suggested WMC may want to acquire the Kathleen Investments equity.

We were not enthusiastic, not least because of our prior discussions with Mitsubishi. The situation was further complicated because, simultaneously with the discussions on ilmenite upgrading with Mitsubishi Chemical, there was a serious dispute between MCI and Alcoa of Australia regarding a large alumina contract. I was acting as an informal go-between in trying to resolve the issue and certainly did not want to upset MCI. (See *THE BRIGHTNESS OF ALUMINIUM.*)

In the event, discussions regarding the project petered out, partly because Hasegawa, who was the main proponent, left Mitsubishi to become Chairman of Asia Oil Co Ltd.



## ***THE TITANIUM TEMPTATION***

### **Background**

Titanium (Ti) is a relatively abundant metallic element comprising 0.6% of the Earth's crust. Its main ore is natural rutile ( $\text{TiO}_2$ ) which occurs in some beach sands or synthetic rutile produced from ilmenite ( $\text{FeTiO}_3$ ). Australia is the predominant supplier of rutile to the world.

Titanium metal is produced initially as an impure sponge or granules which is refined to pure metal. The processes have similarities with nickel refining and aluminium smelting.

In 1980 titanium sponge was produced in nine plants - three in USA, three in USSR, two in Japan and one in UK. The world production of sponge in 1979 was estimated at 70,000 tonnes per annum.

The market in 1980 was mainly in civilian and military aerospace industries because of titanium's lightness. In structural parts an alloy of 90% Ti, 6% Al and 4% V was used. High quality alloys were also used in jet engine rotor blades because of temperature and corrosion resistance.

### **The Wogen Proposal**

In January 1979 a group of merchant banking type entrepreneurs operating under the name of Wogen submitted to WMC via Hugh Morgan a study of the titanium market, hoping to interest WMC in pursuing a titanium metal project with themselves a prominently involved intermediary. In a memo to Hugh Morgan on 16 February 1979 I was definitely lukewarm about this, questioning whether we wanted to be involved in producing titanium metal, the ability of Wogen to contribute beyond market and potential competitor analysis, and pointing out that we had plenty on our plate with Yeelirrie, Roxby Downs and Benambra. I also thought that such a venture should include an experienced titanium metal producer or someone experienced in very similar technology as an equity partner.

I concluded that

'... we should put the matter on the shelf for at least twelve months and that if we subsequently decide to pursue this matter Wogen's role should be much more limited than they propose'.

### **The General Dynamics Project**

In 1980 the Royal Australian Air Force was considering re-equipping with modern fighter aircraft, the two alternatives being the F16 and the F/A18 A Hornets. To make their offer more attractive General Dynamics, the builders of the F16, and United Technologies Corporation whose subsidiary Pratt and Whitney built the engines, offered as an 'offset' to construct a titanium sponge and ingot plant in Australia. Titanium was used extensively in the F16 airframe and engines. General Dynamics and Pratt and Whitney between them accounted for about 30% of the titanium metal consumed in USA.

General Dynamics visited Western Mining in July 1980 and subsequently proposed that WMC should take a 50% interest in a joint venture, undertake a feasibility study, and manage the joint venture if it proceeded. WMC's experience in nickel refining was an important factor in this invitation.

A preliminary feasibility study, carried out under the direction of J B (John) Oliver, WMC's General Manager - Projects, who was advised by a number of consultants (Bechtel Corporation, Dravo

Engineering, and US Steel of USA, Longworth and MacKenzie of Sydney, and Wegens Limited, a major trader in titanium products), was favourable. The capital cost of a plant capable of producing 5000 tonnes of titanium sponge per annum was estimated at \$140 million and a similar size ingot plant at \$186 million.

The basis of the project was agreed between the parties at a meeting in Honolulu over the weekend of 11 October 1980. The project was to proceed upon the selection of the F16 fighter by the Australian Government. A final Feasibility Study would be undertaken to confirm the economics, select the technology, and the site for the plants. WMC would have 50% equity and be the Manager. WMC would contribute \$1 million to the cost of the feasibility study, but the US partners would contribute all other capital. At the end of 10 years General Dynamics and Pratt and Whitney would assign 50% of the plant to WMC free of debt but continue to be entitled to 50% of the production. WMC would be responsible for its share of the capital cost for any expansion beyond 5000 tpa capacity.

H M (Hugh) Morgan, Executive Director of WMC, drew up a submission to the WMC Board which was approved in October 1980. An announcement of the Project, conditional on the RAAF purchasing the F16, was made on 27 October 1980.

In the event, the Minister for Defence, Mr Jim Killen, announced some months later that the RAAF's Mirage F111 C Mirage fighters would be replaced with 75 Hornets. The joint venture was abandoned.

### **Subsequent Events**

In 2000 WMC took an Option over the Corridor Sands heavy minerals project in Mozambique, containing mainly ilmenite. In 2002 the Company gained 100% ownership of the project. In 2003 this was the only major new project being pursued by WMC. The Company may therefore become involved in the world titanium industry at some time in the future.

## ***ARMOUR FOR THE ARMY***

In 1986 WMC became involved in investigating the production of silicon carbide tiles.

There was a general view that metals may be increasingly substituted in a number of applications by non-metallic advanced materials. R (Roy) Woodall gave a mineralogist on ExDiv staff, N A (Norman) Trueman, the task of assessing what opportunities this may present to WMC.

Norm's conclusion was that plastics were too far from WMC's skills and experience, but that ceramics were essentially synthetic rocks and therefore within WMC's ambit. Attention was initially directed towards production of ceramic powders, but market studies revealed a need for lightweight armour in defence applications.

Silicon carbide was known as effective armour, but the manufacturing processes were tightly held under patents. However, CSIRO's Division of Materials Science and Technology was conducting research into non-oxide ceramics (principally carbides and nitrides of silicon) and were seeking industry cooperation.

A joint venture was formed between Foseco Pty Ltd and WMC in 1988 in which Foseco earned a 50% interest by matching WMC's expenditure and sharing expenses equally thereafter. Foseco was a subsidiary of Foseco plc in the UK, manufacturer and supplier of chemicals and materials for the foundry, steel, construction and mining industries, active in more than 35 countries.

CSIRO, under contract, and with the assistance of the Joint Venturers, developed a novel process for sintering silicon carbide which was patented in 1990 in a number of countries, including USA, Japan, and in Europe.

The Joint Venture, with the business name Advanced Materials Enterprise (AME), was contracted in 1992 to supply silicon carbide tiles for armour plating light armoured vehicles for testing under an Australian Defence Department Defence Industry Development Contract. Initially, production was carried out using facilities of the Australian Nuclear Science and Technology Organisation (ANSTO) and a high temperature vacuum furnace at Dow Chemical Company in the USA, with whom the Joint Venture was attempting to develop a commercial arrangement.

In October 1992 tests were in progress using a vacuum furnace at ANSTO, which was not designed for this application and had to be modified. Cost estimates for the production of 35 tonnes of silicon carbide tiles were submitted to the Army, assuming use of facilities in Germany to minimise infrastructure cost and lead times.

In December 1992 one hundred AME silicon carbide tiles were delivered to the Defence Department for evaluation and a payment of \$120,000 was received. Production of tiles for ballistic tests and thick tiles for assessment by the UK Ministry of Defence and Wegmann & Co in Germany continued. 'Thick' tiles were 30 mm which could only be produced by our process. Competitors could not obtain sufficient strength in large blocks because of excessive grain growth in the pressureless sintering process. The thick tiles were tested for use on main battle tanks, in the Wegmann case for the Leopard 2. They were very successful but the testing coincided with the collapse of the Warsaw Pact and consequent defence cut-backs in the West.

Test pieces for tests by an international test authority for civilian uses were produced.

Samples of tiles produced by a novel injection method from AME formulated silicon carbide powder were received from a US company. These were sintered at ANSTO and gave very satisfactory results.

A response to the US Patent Office in respect to the product claims for the AME sintering process was lodged as the process claims were granted previously.

In October 1993 optimisation trials of the AME silicon carbide process were completed and a report issued. Department of Defence was invoiced for the final \$40,000 of the total contract of \$692,000.

Pre-production trials commenced using facilities of Fine Ceramics Technologies, Germany.

Negotiations with Dow Chemical Company and with Coors Ceramic Company proceeded over several years. Both eventually declined; Dow terminated its ceramic activities and Coors remained committed to oxide ceramics although it had acquired a carbide business which had an arrangement with The Carborundum Corporation for silicon carbide for seals.

In 1994 Advanced Materials Enterprise was constituted as a wholly owned subsidiary of WMC. The Joint Venture with Foseco Pty Ltd was terminated after Foseco was taken over, through its UK parent, by Burmah Castrol Oil plc.

Marketing efforts were frustrated because of the higher cost of silicon carbide tiles compared with alumina tiles, the traditional material for armour tiles, although these were not as effective as silicon carbide. Diminished defence budgets following the collapse of the Soviet Union were a factor in this.

The total cost of the project to WMC when it was terminated in 1995 was \$2.0 million.

Norm Trueman left WMC in 1995 and, through N A Trueman and Associates Pty Ltd, acquired an exclusive licence to the technology and an option to purchase AME. This was subsequently negotiated following restructuring and local and overseas capital raising. The purchase price was \$2 million, payable as a proportion of sales profit.

### **Subsequent Events**

Licences were subsequently negotiated with FCT Systeme der Strukturkeramik GmbH, Germany, and with Cercom Inc and LOI Industrial Furnaces Inc, USA.

## ***CHROMIUM AROUND THE WORLD***

### **Background**

In contemplating involvement in future mineral developments from time to time, chromium was considered a possibility. After WMC entered the nickel industry, one attraction of chromium was its use in alloys and stainless steel together with, or as an alternative to, nickel.

In March 1974 I reflected in a memo to D P (Doug) McIntyre that we should consider obtaining chromium supplies which we could offer to our nickel customers, either by purchasing chromium or by forming an alliance with a chromium producer and supplying our partner with nickel for their customers.

In 1988 about 75% of the world production of 10.5 million tonnes of chromite was used in the stainless steel industry, the remainder split between the refractory and chemical industries.

### **Central Norseman Minerals NL**

The chromium (and platinum) deposits in Southern Africa occur in massive east-west dyke structures. Central Norseman Minerals NL was formed in February 1970 for the specific purpose of exploring an area some 120 miles long containing east-west striking basic and ultrabasic dykes (such as the Jimberlana Dyke) with evidence of sulphide mineralisation at a number of localities, near Norseman in Western Australia. Anomalous base metal values had been found. In addition to areas held on the Jimberlana Dyke, claims held in the Mission area north-west of Norseman were also to be prospected for base metals. While chromite was not mentioned in the prospectus, there was a possibility that this mineral may be discovered.

Shareholders of Central Norseman Gold Corporation were entitled to subscribe to the issue of 1,300,000 shares at 15 cents in Central Norseman Minerals in the ratio of one share for each two shares held in Central Norseman, with 35 cents remaining to be called up. Approximately 95,000 shares were offered on similar terms to staff of Central Norseman and Western Mining.

Two years of exploration work was unsuccessful. Nickel and copper was intersected in drillholes but not in economic quantities. Anomalous zones of mineralisation containing platinum were intersected, but none of economic significance.

The Board proposed to the shareholders that the company be wound up. The shareholders rejected this at a meeting held for this purpose and in August 1972 WMC sold its 47.7% controlling shareholding and management rights to CWR Minerals Pty Ltd.

From then the company was involved in small scale exploration and changed its name and control several times. It became Kemple Mines NL in 1973, Western Coal and Uranium NL in 1980, and had other names later. The company eventually finished up in the Joseph Gutnick stable and was wound up, with no return to shareholders.

### **The Armco Joint Venture**

In 1976-77 WMC and Armco Resources Ltd formed a joint venture to search for chromium over specified areas in WA. In April 1979 R H (Richard) Mazzucchelli reported that eight areas had been

explored, with emphasis on the margins of the Yilgarn and Pilbara Blocks. It was considered that scope existed for further exploration for 'layered' type deposits, particularly in the south-west province of the Yilgarn Block and in the Kimberley region.

Several prospective areas were investigated, but none was found to be of economic interest.

### **The Stillwater - Swaziland Options**

On 17 February 1989 WMC announced that it had been granted an exclusive option until 1 May 1989 to acquire certain ferrochrome interests, including a chromite mine and associated ferrochrome plant, at Stillwater in Montana, USA, and a ferrochrome plant to be constructed in the Kingdom of Swaziland. The two projects were linked and not separable.

The Stillwater area had produced chromite intermittently since 1917, largely on a cost plus basis for the government during World War II and in the 1950s. Production had been 2.1 million tonnes of ore for the recovery of 920,000 tonnes of 39.5%  $\text{Cr}_2\text{O}_3$  concentrate. The Mountain View Mine (underground mining) was the largest and most accessible chromite resource in the United States. The renewed interest in 1989 was partly because all US chrome supplies came from South Africa. Also, a new metallurgical process developed by Krupp (CODIR) made it possible to produce ferrochrome direct from the low grade (22%  $\text{Cr}_2\text{O}_3$ ) ore, with the low Cr:Fe ratio of 1.4 - 1.6. The ore potential was thought to be of the order of 10-15 million tonnes of plus 20%  $\text{Cr}_2\text{O}_3$ , with substantial upside potential for Cr, precious metals, nickel, and copper.

WMC would, if it exercised the option, acquire a 50% interest in the Stillwater Project in a joint venture with a subsidiary of Boulder Gold NL, and a 32.5% interest in the Swaziland Project in a consortium including Australian Overseas Mining Limited (17.5%), Boulder Gold NL (5%), German Mines Limited (10%), International Metals SA of Luxembourg (5%), Tibiyo Takangwane of Swaziland (15%) and the government of the Kingdom of Swaziland (15%). WMC would manage both projects on a fee basis.

The option had to be exercised over both projects. If WMC elected to proceed, it would contribute the first US\$5 million of expenditure on the Stillwater Project and fund the contributions to be made by Boulder Gold for the development of a chromite mine and construction of the ferrochrome plant at Stillwater on commercial terms. The purchase price of WMC's interest in the Swaziland Project was A\$13 million in cash upon exercise of the option. There would be additional payments according to project profitability and market conditions.

The Swaziland Project would process chromite mined in South Africa. There were possible alternative sources in Zimbabwe.

It was contemplated that WMC, Australian Overseas Mining Limited and Boulder Gold would participate jointly in future chromium and ferrochrome developments worldwide.

Peter Webster visited the locations and Krupp in Germany and reported in December 1988. Ian Letts visited the Stillwater site. Discussions were held with Boulder Gold representatives in December 1988 and early in 1989.

Irrespective of the inherent merits of the proposals, it became evident that the arrangements would be extremely complicated, involving many parties of different nationalities and backgrounds including Australian promoters, the Swaziland government, Swaziland entrepreneurs, German process vendors, German promoters, South African ore source, and a Swiss marketing company. The interests of these



parties were clearly not identical.

Other problems were that there were serious environmental concerns with the Stillwater Project - if the tailings dam leaked, it would flow into the Yellowstone National Park. Also, the vendors had an unrealistic view of the future price of chrome (US\$0.65 per lb Cr in constant 1989 dollars, versus WMC assessment of US\$0.50 - 0.55 per lb).

On 19 April 1989 WMC announced that it had elected not to exercise the options.

### **Subsequent Events**

As far as I am aware, neither the Stillwater nor the Swaziland Project have proceeded.

In retrospect, WMC should not have wasted time and resources on such a complicated and promotional proposal. It had virtually no chance of success.



## ***EYEING IRON ORE***

### **Background**

From *Group Historical Information Collection*, GHI-GOJV -10, compiled by G M Ralph:

WMC was one of the first companies to recognise that the iron ore potential in Western Australia was much greater than generally believed and that the ban on the export of iron ore which had been applied by the Joseph Lyons Government in May 1938 was unwarranted. Lindesay Clark and Bill Morgan had discussed the subject in 1958 when Morgan, who was well informed on the redevelopment and growth of Japanese industry, had observed that there was a substantial and growing market for iron ore in Japan and that Western Australia was well placed to supply that market. In 1959, while Lindesay Clark was lobbying the Menzies Government to lift the export embargo, Morgan explored the market and Don Campbell, the Chief Geologist, initiated an assessment of potential iron ore resources in Western Australia.

David Barr, a geologist involved in the search, recalls how he and Roy Woodall undertook a survey of the Yalgoo area using an old Avro Anson aircraft, flying at the lowest possible altitude, with Roy laying on the floor looking through a hole and calling out rock types to David who plotted them on his trusty Shell road map.

Early in 1960, WMC and CRA were invited to look at an iron ore deposit at Mt Goldsworthy in the Pilbara. Some of the party had a rather frightening flight out from Port Hedland in a small aircraft piloted by Lang Hancock. The parties couldn't agree and went their own ways, WMC electing to stay south of the 27th parallel where Lindesay Clark argued the climate was better and capital costs would be much less.

The iron ore export embargo was lifted in November 1960, clearing the way for development of what, by then, were identified as enormous reserves - it seemed that almost every hill in the Pilbara was a mountain of iron.

Under the enthusiastic leadership of Charles Court, the Minister for Industrial Development, the Western Australian Government were keen on any development.

In July 1961, WMC's tender for the Talling Range deposit, 160 km east of Geraldton, was accepted. Jim Lalor, the young geologist assigned to explore the area, covered the region well and soon after discovered another superior deposit at Koolanooka Hills, near Morawa and it too was incorporated in the agreement which WMC had signed with the WA Government.'

### **Geraldton Operations Joint Venture (GOJV)**

While most of the activity by this Joint Venture occurred before 1974 and it is a discontinued business rather than a project, a brief description of it is included here as background to later attempts to enter the iron ore business.

In 1962, whilst on a visit to the United States, the late Sir Lindesay Clark approached the Hanna Mining Company to ascertain if it were interested in joining WMC in the exploration for iron ore in Western Australia. It transpired that Hanna had already decided to join the Homestake Mining Company in the search for iron ore. The result was the formation of Geraldton Iron Ore Exploration Joint Venture in September 1962, in which Western Mining had a 50% interest and was the manager. Hanna and

Homestake had a 25% interest each.

Further exploration resulted in the discovery by a team of WMC geologists led by J H (Jim) Lalor of the Koolanooka Iron Ore Deposit and the development of mining operations under the umbrella of the Geraldton Operations Joint Venture which came into effect in July 1965. The Joint Venture shipped its first iron ore to Japan in the specially built 'Margaret Maru' (named after the wife of WMC's Managing Director, Mr W H [Bill] Morgan) from Geraldton on 16 March 1966. This was also the first commercial export of iron ore from Australia under long-term contract. Operations continued over the next seven years at an annual production rate of 750,000 tonnes, with the total production being sold to what were then called the 'Ten Steel Mills of Japan'. Total value of the production was (in dollars of the day) some \$58 million.

Despite further exploration, no new viable deposits were found by the Joint Venture. Competition from the emerging and large scale Pilbara producers effectively made the small additional deposits which were discovered uneconomic and operations terminated when the orebody had been mined out in 1972. Shipping of stockpiled ore continued until 1974.

During this time attempts were made to sell some 1.2 million tonnes of iron ore fines stockpiled at Koolanooka and to follow this with opencut production of high grade lump ore at Talling Peak. Under the terms of the Joint Venture agreement, WMC's equity in any future projects would fall to 37%, with Hanna 36% and Homestake 27%.

Negotiations foundered because the small scale operation at Talling would require above-market prices. The Japanese had agreed to this for the Koolanooka Hills Project because they regarded this as 'key money' for access to the lower cost Pilbara ore, but had no such incentive for the Talling proposal.

Other possibilities investigated included a pellet plant producing 5 million tons per year of pellets from the large deposit of low grade magnetite ore at Koolanooka and production of high grade lump ore from the Mt Jackson area in the Yilgarn.

In the event, none of these proposals proceeded. The Joint Venture continued to operate until June 1991 operating the shiploading facilities at Geraldton for the export of talc and other minerals, and was then wound up.

## **Robe River Limited**

In April 1975 WMC was approached by P C Lucas, Managing Director of Robe River Limited, with a suggestion to take an interest in Robe River iron ore. (Peter Lucas had worked as a lawyer for WMC in Perth, but left to join Alan Bond because WMC was too conservative for his ambitions. Bond must have controlled Robe River in 1975.)

WMC in 1975 was concerned about the minerals markets and the priority was on financial security. Robe River was in financial difficulties, did not offer the likelihood of early returns, WMC was not offered a management role, and had the (troublesome) Hail Creek Project on its hands. We declined the offer in May 1975.

## **Efforts in Mid-1990s**

### **Overview**

WMC management in the early 1990s had an internal target of growing the Company at 15% per annum

and diversifying in terms of commodities and countries, subject to prudent financial management.

The Company was heavily dependent on London Metals Exchange (LME) daily priced metals (nickel, aluminium and copper) and had no involvement in bulk minerals such as iron ore and coking coal where the prices were negotiated annually and more stable. While demand and prices of all minerals depend on the state of world economic activity, non-LME priced products do represent additional stability and diversification. The value of this was particularly clear in the aftermath of the break-up of the Soviet Union in 1991 when large quantities of Soviet production of the three metals were directed to the western market, causing serious oversupply and uneconomic prices. Bulk minerals were not affected.

It was decided to look into becoming an iron ore producer. Because of the scale required to be economic it was virtually impossible to do so by developing a new project from the ground up; the only realistic possibility was to buy equity in, or acquire, an existing producer or producers.

It was decided to engage McKinsey & Co to prepare a report on the world iron ore industry. Because McKinsey's in Australia were working for BHP, the study for WMC was carried out by their Chicago Office. Some WMC personnel were seconded to work on the project in Chicago.

The McKinsey study took about two years and cost, I think, \$4 million (McKinsey's are not known for their modest fees). A report - *Executing 'Project Ferrum'* - on 14 August 1995 concluded that:

- iron ore represented an attractive growth prospect for WMC
- industry leaders earned attractive returns
- the industry was large and offered several potential entry opportunities
- demand appeared to grow

a new entrant may be able to exploit 'significant discontinuities .... introducing new risks and opportunities' (whatever that meant? It was probably consultantspeak reference to potential major changes in steelmaking technology.)

It was proposed that over the next seven months

- the possibility of acquiring or merging with North Ltd ('Project Warrior') should be assessed (3-4 months)
- a global 'vision' for WMC iron ore involvement should be developed (2-3 months)
- a 'winning' entry strategy and implementation program should be developed (1-2 months)

McKinsey would lead the work, with C W D (Bill) Blandy and other part and full time WMC staff involved.

The report on *Project Warrior* was issued on 5 March 1996. It was decided not to proceed. This was a management decision; it did not go to the Board.

Also issued on 5 March 1996 was a parallel McKinsey report *Scoping an Iron Ore Growth Strategy*. It concluded that WMC could best participate in the iron ore industry by acquisition of several medium-tier producers to achieve a scale of operations comparable to the three world leaders: RTZ, BHP, and

CRVD. It was recommended that this should be linked to downstream initiatives using emerging new technologies, to achieve a low cost position.

Separately, H M (Hugh) Morgan had in 1995 become aware of the second largest iron ore producer in Brazil, Caemi Mineracao e Metalurgia SA (CAEMI). McKinsey, in two reports issued on 2 July 1996, reported on WMC options for collaborating with CAEMI. When these reports were about to be completed, I had a three-hour briefing on the iron ore industry from McKinsey on 25 June 1996 when in Chicago to attend a Sara Lee Board meeting.

The possibility of acquiring an interest in CAEMI was pursued for some years, but came to nil because of the truly byzantine complications of the conflicting interests of the various shareholders.

On 1 June 1995, the Brazilian National Privatisation Council (CND) announced that some of the Government's shareholding in Companhia Vale do Rio Doce (CVRD) would be sold. WMC spent around \$6 million in 1996 and 1997 investigating the possibility of bidding, but in the event did not proceed.

When I retired in April 1999, the WMC quest to enter the iron ore industry had not succeeded. The investigations had been conducted in a methodical and exhaustive manner, at a cost in excess of \$10 million (excluding time of WMC staff).

### **North Ltd**

The investigations of WMC entering the iron ore industry commenced with considering the possibility of acquiring North Ltd, which among its various activities produced iron ore at Robe River in the Pilbara and, through the Iron Ore Company of Canada, in Labrador in Canada. The McKinsey & Co report on North Ltd, codenamed *Project Warrior*, was issued on 5 March 1996. *Warrior* was seen as an attractive 'entry vehicle'. The market value was A\$2.6 billion, suggesting an acquisition price of A\$3.1 billion - \$ 3.6 billion.

However, it was decided not to proceed for a number of reasons, the most important being that whatever WMC could sensibly bid, RTZ and BHP would be in a position to bid more making use of their synergies with North's operations in the Pilbara.

During my time the possibility of a takeover offer for North was never considered at Board level.

### **CAEMI**

Brazil's second largest iron ore producer in the second half of the 1990s was Caemi Mineracao e Metalurgia SA (CAEMI). It was a holding company founded in 1942, with businesses in iron ore, transportation, kaolin, and refractory bauxite. In iron ore it had an 85% interest in MBR in the Iron Triangle area centred on Belo Horizonte in Brazil (production 26.3 million tonnes of ore in 1998) and 50% in QCM in Canada (production 9.1 million tonnes of pellets in 1998). The markets for the iron ore were mainly in Europe.

CAEMI was owned 40% by Mitsui, 20% by the Frering family of Brazil through Cia Auxiliar, and 40% by pension funds, financial institutions, and Brazilian and foreign corporate and individual investors. The voting rights, however, were 60% the Frering family and 40% Mitsui, all Board decisions requiring a 65% majority. The effect of this was that both parties had equal voting rights. A shareholder agreement provided for independent management, with the Frering brothers non-executive directors.

I was not involved in discussions with CAEMI, although Hugh Morgan kept me and the Board generally informed. The following account is based mainly on Hugh Morgan's recollections in an interview with Gilbert Ralph in 2001.

Hugh first became aware of CAEMI through seeing their Annual Report as a member of the World Business Council for Sustainable Development. He subsequently met one of the two Frering brothers, Guilherme, in the United States in 1995. The company was well known to Alain Belda, the President of Alcoa in Brazil (subsequently President and then Chairman and Chief Executive of Alcoa Inc), who had been a director of CAEMI.

The business had been established by the grandfather of Guilherme and his younger brother Mario. Mitsui had entered the company in the grandfather's time. It took a separate report by McKinsey & Co to explain the complicated family company structure including other family members! Potential financial stress on the family company in connection with capital expenditure for developing the iron ore business created the opportunity for a possible WMC entry. However, Guilherme and Mario did not see eye-to-eye regarding the future.

The considerations of a possible WMC entry into CAEMI were extremely complicated because of disagreements between the Frering brothers, the involvement of Mitsui, and the two-tiered shareholding. It became even more complicated when it was realised that CAEMI was dependent on a railway line which they did not own, although they had a shareholding in it. FERTECO, a Thyssen owned iron ore producer next door, also had a shareholding in the railway, and CAEMI and FERTECO between them controlled it.

Hugh Morgan had discussions with Professor Rösener of Thyssen, who was known to me through earlier discussions regarding the nickel business. Rösener, who had been in charge of all Thyssen's raw material procurement, did not want to sell FERTECO but, if it was to be sold, he preferred a sale to WMC. He, however, was beaten to the top post in Thyssen by a rival whose view was that there was no merit in Thyssen owning raw material sources; he was quite happy to buy these materials at the same price as everyone else.

After the merger between Krupp and Thyssen the new management decided to trade their interest in FERTECO to the Brazilian steelmaker CSN in exchange for some of their steelmaking capacity. In the end CSN bought FERTECO, and this in effect terminated the possibility of WMC becoming a shareholder in CAEMI.

## **CVRD**

### **Background**

On 1 June 1995, the Brazilian National Privatisation Council (CND) announced that some of the Government's shareholding in Companhia Vale do Rio Doce (CVRD) would be sold, and that the sale was expected in the fourth quarter of 1996. The CVRD privatisation was seen as a rare opportunity to pursue WMC's iron ore strategy. As the world's largest iron ore producer, CVRD was well placed to participate in the technological change which was taking place in the steel industry.

There were delays, and preliminary information was not released until 11 October 1996. Further information became available in March 1997, and the auction took place on 6 May 1997.

## **Companhia Vale do Rio Doce**

The Companhia Vale do Rio Doce was Brazil's largest minerals producer and industrial conglomerate, the ordinary shares in which were owned 81% by the Brazilian Government, 15% by Brazilian pension funds, and 4% by the public. After allowing for preference shareholdings, the ownership was 55% Brazilian Government, 18% Brazilian pension funds, and 27% the public.

It was the world's largest iron ore producer (102 million tonnes per annum, with very high grade reserves for at least 400 years). It was a world class bauxite producer (8.5 million tonnes per annum), held large highly prospective exploration areas for gold, copper, and other minerals, and produced 565,000 ounces per annum gold, to be expanded to 900,000 ounces per annum by 1998. It owned two major railways and ports and forestry, wood pulp, kaolin, etc assets.

Iron ore represented about 60% of its assets. In March 1997, CVRD had a market value of US\$9 billion and a debt of US\$2.8 billion.

CVRD occupied a special place in Brazil, being large, diverse, globally competitive, and having a 'mystique' comparable to that held by BHP in Australia at that time.

### **Additional Reasons For WMC Interest**

CVRD's large mineral tenement holdings in the vast essentially unexplored Carajas mineralised province held promise for substantial copper/gold discoveries and developments. CVRD ownership of two railway/port systems was an important strategic asset. The bauxite/alumina interests were attractive as potential amalgamations with Alcoa World Alumina's interests in Brazil.

### **The Sale Process**

Initially there would be 45% of the ordinary shares in CVRD auctioned to the highest bidder and 4% issued to employees, reducing the Government's shareholding to 32%. The employees would be also issued 6% of the Government-held preference shares. After these transactions had taken place, the total shareholdings would be 29% the successful bidder, 27% the public, 21% the Government, 18% the pension funds, and 5% the employees.

Subsequently there would be a further reduction of the Government's ordinary shareholding to 4%, with the successful bidder being able to increase its ordinary shareholding to 50% and the remainder being issued to the public.

The bidder had to be a consortium of at least three members, no member with more than a 45% interest for five years.

### **WMC Intentions**

Informal discussions had taken place over some time at Chief Executive level between WMC and Anglo American/Minorco about making a joint bid at the CVRD sale. Other parties approached by WMC had been Mitsui & Co of Japan and CAEMI of Brazil.

Hugh Morgan had decided and told Minorco that WMC would not join with any other company if Minorco did not wish to proceed.



## Board Discussions

The Board of WMC became involved after the initial information regarding the bid conditions was released in October 1996.

The WMC Annual General Meeting in 1996 was held in Adelaide on 15 November and the CVRD topic was introduced to the Board at a meeting on the previous day. There was insufficient opportunity to consider the matter fully and no conclusion was reached.

In discussions with Hugh Morgan, I expressed my personal concerns about the proposal:

- WMC would have a small (of the order of 10%) holding of ordinary shares in CVRD, through a consortium of which it would be just one member. The consortium would have to be unanimous on all issues to wield influence on the management of the company. The extent of this influence was, in any case, open to question.
- WMC's borrowing capacity was fully used in financing the Olympic Dam expansion and the Queensland Fertilizer Project. We would have to raise in excess of A\$1 billion through a share issue to finance our likely share in the consortium.
- While the opinion of our brokers (E L & C Baillieu) was that such an issue could be made at \$6 per share (WMC shares were about \$7.50-\$8 at the time), I was concerned about making such a major issue because the return from it through what may be expected as dividends from CVRD would be only 2% to 4% per annum. Improved returns would depend on the consortium being able to bring about major improvements in CVRD's profitability.
- If WMC made such an issue, we would not be able to make another issue for some time to finance any other opportunities which may present themselves.
- The ability to issue at \$6 would depend on market conditions at the time, which could not be predicted.
- The preparation of the bid and, if successful, our participation in CVRD, would take priority on the time of senior management which was also needed to ensure the success of the major projects already committed.

The Board was holding a farewell dinner to Dame Leonie Kramer on the evening of 9 December 1996, the day before the regular Board meeting. It was arranged to set several hours aside before the dinner to discuss the CVRD proposal further.

The Board, including myself, was concerned about a number of aspects of the proposal, but agreed that management should proceed with investigating the possibilities without making any commitments.

There were further discussions at the Board meeting on 12 February 1997 and the subsequent non-executive directors' meeting over dinner that evening.

## Investigations

The investigations turned out to be extensive; the cost of consultants was estimated at \$4.2 million and travel and accommodation expenses at \$1.4 million. The cost of the time of the many tens of WMC

staff involved or the opportunity cost of engaging them on this rather than other tasks is not included in these figures.

An Advance Team had visited Brazil in January 1997. In March, after further information about the bid conditions had been released, several 'due diligence' teams reviewed the information available in the data room, reviewed individual assets, and undertook site visits. There were also meetings with CAEMI and other parties. As all information in the data room was in Portuguese, many thousands of pages had to be translated. Lawyers were busy on legal due diligence. I was told that at one time WMC had 65 people in Brazil, and these had to be among our best people in the various areas.

Apart from WMC staff, outside advisers were engaged in various areas, including McKinsey & Co.

### **Further Board Discussions**

The Board had an extensive review of the CVRD Project at a meeting on 3 March 1997. After a two hour discussion of the issues and progress there was an hour's audio link with a number of foreign businessmen in Brazil who made brief introductory comments and answered directors' questions in their areas of experience and expertise.

A programme of subsequent Board reviews was scheduled for March, with a final presentation on 6/7/8 April and a final Board meeting to approve the bid and the conditional underwriting of the share issue on 17 April. The formation of a bid consortium was to take place in parallel with progressing the investigations.

### **The Outcome**

By the end of March the concluding sentence on a series of presentation slides was: 'Conclusion: Probability of Happening Very Slim'. In fact, it was zero.

The determining event was Minorco declining to proceed with WMC and joining a consortium led by a Brazilian company, Votorantim; our loyalty to Minorco was not reciprocated. WMC advised CAEMI and Mitsui that it was most unlikely to participate in a bid and that they should make arrangements with others.

However, the internal WMC bi-weekly report on 'Brazil and CVRD Issues', in reporting this, also records that 'WMC will continue to evaluate CVRD with the goal of being prepared to bid .....'.

Once a project has been started it is difficult to stop it - it tends to acquire a life of its own.

The auction finally took place on May 6 in the Rio Stock Exchange. In the words of the internal report on 9 May:

In just four minutes the Brazil Consortium led by steelmaker CSN successfully outbid the favoured Votorantim - Minorco group to buy 41.73% of ordinary shares for 3.3 bn reais (US\$ 3.1 bn). The sale price of 32 reais per share represented a premium of almost 20% above the minimum set by the government and a record sale for the Brazilian privatisation program'.

### **With The Benefit Of Hindsight**

With the benefit of hindsight, this was a good outcome for WMC.

The minerals markets plunged into a deep recession in mid-1997, just a few months after the auction. Had WMC committed to raising more than A\$1 billion from shareholders, the issue would have come on the market just as share values were plunging and would have been left in the hands of the underwriters.

Not long afterwards WMC shares fell to \$4.15 a share, compared with the intended \$6 issue price. There would have been many very unhappy financiers and shareholders; certainly our reputation in the markets would have suffered. WMC would probably have had to write down the carrying value of its CVRD shareholding by a substantial amount and the drastically reduced profitability during the downturn would have reduced dividends on the increased number of shares on issue to a negligible amount.

Quite apart from this, my own view remains that while the mineral assets of CVRD are unquestionably of the highest calibre and probably unique, WMC's participation in these as a small shareholder would not have been in the best interests of shareholders. The management arrangements would have been a nightmare and WMC as a relatively modest size foreign company could not have hoped to exert a significant influence.

In hindsight, one can question whether such an extensive investigation should have been undertaken. The likelihood of success was always slim and there were at the Board level serious misgivings about the proposal. At a post mortem, the benefits from the effort were presented by the management as an investment in understanding Brazil, iron ore, CAEMI, and CVRD and in increasing our skills and knowledge of the key processes. There was no doubt a benefit from all this but I believe that we could have achieved most of the benefit at a fraction of the expense, particularly as the main expense was consultants' fees. Also, in the course of the various subsequent restructurings, virtually all WMC staff who had participated in the investigations had left the Company four years later.

## **In Retrospect**

While I agreed with the basic attractions of iron ore to WMC, I felt relieved that we had not become involved in the almost unbelievable complications of entry into either CAEMI or CVRD.

I understand that WMC's interest in North Ltd was subsequently revived and discussions were held with North regarding a possible merger. The alternative of a takeover was also reviewed. The Board considered it in early 2000, but had decided not to proceed just before a takeover offer for North was made by Rio Tinto which, after a battle with Anglo-American, succeeded at a substantially higher price than considered by WMC in 1996. The assessment that RTZ or BHP could outbid any offer WMC may make was confirmed.

In retrospect, it was probably not realistic for a company the size of WMC to expect to buy its way into the iron ore business, control the investment, and expect to build it into an operation of comparable size to the industry leaders. It would have taken extraordinary circumstances for WMC to be able to make such acquisitions on acceptable terms. The consultants, of course, had no reason to dampen the enthusiasm for further studies and considerations.

One of the lessons is that, while it is important for companies to grow, the growth has to be on acceptable terms. There are many examples of corporations which have come to grief through wanting to grow at all costs; Alan Bond's empire in the 1980s is an extreme example. BHP in 1997-1998 is another example of unwise decisions because of the desire to grow, coinciding with an unforeseen serious downturn in the industry, nearly bringing the company to grief.

On the other side Alcoa Inc in the 1990s is an excellent example of carefully managed growth through acquiring compatible operations and companies which came under Alcoa management, and on terms which improved earnings per share from the first day. The severe downturn in the industry while this was going on was skilfully turned to an advantage in making the acquisitions on excellent terms.

## ***SOME ODD ONES***

While not of any significance, it may be of interest to record that some rather odd involvements were considered by the Board from time to time.

### **Cement**

In 1980 there was a brief period when consideration was given to acquiring a cement company (I think Goliath Cement). The project did not proceed.

### **Johns Perry Ltd**

Similarly, in 1981, the engineering company Johns Perry Ltd in Adelaide was under consideration. Again, no action was taken.

### **Television**

In February 1988 the Board discussed a proposal to purchase shares in Channel 7 television stations in Adelaide and Perth and actually approved an expenditure of \$5 million for that purpose. The proposal did not proceed.

### **Brewery**

In May 1988 a proposal was discussed to build, at an estimated cost of \$12 million, a brewery in Kalgoorlie to replace the Alan Bond-owned Hannans Brewery which was being closed. John Anderson was authorised to discuss this further with a brewer he knew in Singapore, who was behind the proposal. It was not until December that it was decided not to pursue this any further.

### **Shares In Poseidon**

In 1976 a Committee reviewing WMC's gold mining activities recommended that WMC consider increasing its equity in Kalgoorlie Mining Associates (KMA) by taking over Poseidon Ltd. It was decided not to proceed.

A proposal which did proceed was purchase of shares in Poseidon Ltd, then under takeover offer by Normandy Resources, in January 1989.

The justification was financial. WMC could earn 13% after tax, instead of 15% before tax, on the cash invested. A memorandum from Don Morley to directors on 29 January advised that 8.5 million shares had been bought at \$2.40 and a further 2.5 million may be bought. As Poseidon was under takeover offer, WMC had advised the Stock Exchange that it owned more than 5% of Poseidon shares.

Some reporters speculated about hidden, and perhaps sinister, motives behind the transaction. Much to their chagrin, nothing untoward happened and WMC liquidated its investment in due course, as planned.

### **Diamond Cutting**

In June 1991 WMC was approached to take the lead in establishing a diamond cutting and polishing business in Australia (suggested location Darwin). The Board had many apprehensions about this, and the investigation did not proceed far.

# **BOOK TWO**

***WMC 1974 - 1999***

**VOLUME FIVE**

***PART B. THE TROUBLES***

## ***THE TROUBLES***

### **CONTENTS**

	<b>Page</b>
<b>Overview</b>	<b>509</b>
<b>The Seabright Saga</b>	<b>511</b>
Court Cases About Seabright Resources Inc in Nova Scotia	
<b>Ernest Henry</b>	<b>527</b>
Court Case With Savage Exploration Pty Ltd	
<b>Lady Not So Bountiful</b>	<b>541</b>
Court Case Between Consolidated Exploration and Ord Minnett	

# ***THE TROUBLES***

## **OVERVIEW**

From 1988 to 1994 WMC went through several unusual situations which may be described as "rough spots". Some of these were very serious and all were time consuming and subject to adverse publicity. Some overlapped and one was not decided until July 2003.

The main events under this heading are

### **1. The Seabright Issue**

WMC purchased four operating mining properties in USA and Canada in 1987-88. In August 1988 WMC sued one of the vendors, Seabright Resources Inc, in Ontario courts for fraud. Seabright, in return, commenced later in August actions in Nova Scotia against WMC. The Nova Scotia actions were heard first and the court decision in March 1993 went against WMC, as did the appeal decision in January 1994. (There was a subsequent related court case in Nova Scotia from May 1994 onwards which was decided in WMC's favour in July 2003.)

### **2. The Ernest Henry Issue**

WMC was challenged in court in 1992 about alleged trespass prior to exercising an option agreement over an area which included the Ernest Henry copper-gold discovery in Queensland and had to relinquish all rights to the discovery in 1993.

### **3. The Lady Bountiful Issue**

WMC sold its interest in the Lady Bountiful gold mine in June 1987. The purchasers sued their advisers, Ord Minnett in July 1992 and Ord Minnett joined WMC in the suit. The matter was settled out of court, with WMC contributing \$10 million to the settlement.

The Irish would characterise the period from 1988 to 1994 as the time of WMC's 'troubles'. This chapter describes the three events.

An earlier unusual situation for the Company was to be caught in the anti-uranium campaigns from 1977 onwards. The history of the uranium issue in Australia is described in Part A, *THE GLOW OF URANIUM*.





## ***THE SEABRIGHT SAGA***

### **Background**

Between December 1987 and February 1988 WMC acquired the operating mines of Northgate Mines Inc in Quebec, Grandview Resources Inc in California, Western Goldfields Inc in Nevada and Seabright Resources Inc in Nova Scotia. It also acquired the exploration companies Norbeau Mines Inc and Seabright Explorations Inc.

Northgate Mines Inc was renamed Chibougamau Mines Inc.

None of the acquisitions lived up to expectations. (See Part A, *THE GOLDEN THREAD, North American Fiasco*). By 1993 Chibougamau had been sold and the other three had been shut down. The Grandview Resources property at Carson Hill and the Western Goldfields property at Hog Ranch were rehabilitated and the land returned to the Governments. A lead-zinc deposit of Seabright Resources at Gays River was opened up and produced from 1989 to 1991. The property, including the adjacent mill, was subsequently sold.

While all were embarrassments to the Company, Seabright proved to be particularly so and created a real crisis. It was, as far as I am aware, the second time in the history of WMC that the Company commenced litigation, some of which was still continuing when I retired in 1999. (The first occasion was in 1984 when WMC successfully sued the Australian Broadcasting Commission for defamation with respect to one of their programmes dealing with the Olympic Dam copper-uranium development).

### **The Acquisition**

The proposed acquisitions in North America were presented at a WMC Board meeting on 18 November 1987 and approved in principle.

On 15 December H M (Hugh) Morgan, accompanied by Richard Hallisey of WMC Canadian advisers, First Marathon, visited Seabright's office in Halifax, Nova Scotia, told the President and Chief Executive Officer of Seabright Resources, Terence D Coughlan, that WMC was going to launch a takeover bid, and invited Coughlan and two other directors to enter into lock-up agreements with WMC with respect to their Seabright shareholdings.

On 16 December Coughlan and two Seabright directors, F Hansen and W S McCartney, entered into lock-up agreements with WMC which reserved the WMC right to withdraw in the event of a material change in the affairs of Seabright.

On 17 December the WMC bid was publicly announced by Seabright.

The bid, formally made on 23 December 1987, also reserved WMC the right to withdraw if there was a material change in the affairs of Seabright.

On 29 December the Seabright directors circulated and filed the Directors' Circular required by Canadian law. The Circular had been approved on 22 December, a day before WMC made its formal bid.

The bid closed on 27 January 1988 and on 28 January WMC announced that it had acquired 96% of Seabright. The outstanding shares were subsequently acquired compulsorily.

All aspects of the acquisitions had previously been confirmed by external advisers and consultants to the Company as conforming to sound commercial practices. This included external legal advice that a bidder in WMC's position was fully entitled to base its bid on the public record as filed by Seabright on its home stock exchange. This accorded with the position that was familiar to WMC in Australia.

### **The Awakening**

In early January 1988 I was visiting USA to attend a Board meeting of Alcoa in Pittsburgh, and decided to use the opportunity to visit the WMC office in Toronto and Chibougamau and Seabright.

The vendors of Chibougamau welcomed the visit and arranged for two senior representatives to accompany me to the Quebec site. I had an informative visit, gaining a good understanding of the operation.

Coughlan, on behalf of Seabright, on 29 December wrote declining to allow me to visit Seabright operations, giving legal advice as the reason. Instead, he came to Toronto and J H (Jim) Lalor and I had lunch with him. He was a charming guest and the discussion was pleasant but without substance.

A large part of the justification for the purchase of Seabright was the expectation that the Beaver Dam property, having an announced mineable proven and probable ore reserve of 1.1 million tons averaging 0.31 ounces per ton and 1.6 million tons of additional probable and possible reserves below the depth of 1100 feet, would yield an annual production of some 50,000 ounces of gold per annum in accordance with a feasibility study also announced. As the WMC policy adopted for all the acquisitions, including Seabright, was to limit enquiries to publicly filed information, the first time Jim Lalor received a briefing by Seabright staff was on 5 February 1988.

It became immediately apparent that Beaver Dam was not an economic mine. The vital information was that the ore reserves which had been announced in February 1987 and repeated several times during 1987 in Seabright's filings with the Toronto Stock Exchange (TSE) could not be substantiated. This had never been announced by Seabright to TSE or advised to WMC. On the contrary, the Directors' Circular to Seabright shareholders executed at the end of 1987 on behalf of all Seabright directors concluded:

The foregoing contains no untrue statement of a material fact and does not omit to state a material fact that is required to be stated or that is necessary to make a statement not misleading in the light of the circumstances in which it was made nor does it contain any misrepresentation likely to affect the value of the securities subject to the Offer'.

Further investigations during February - July 1988 disclosed that by July 1987 Seabright had implemented a major reduction in underground operations at Beaver Dam and decided to conduct a thorough review of the mine's potential because underground exploration had been unable to confirm the ore reserves. Consultants Robertson & Associates had orally confirmed to Coughlan during the week of 14 December 1987 that the economic viability of Beaver Dam was in serious doubt. Robertson & Associates were specifically directed not to deliver their written report until a later date. It was faxed to Seabright on 28 January 1988, the day after the WMC offer closed.

On 13 May 1988 WMC announced the downgrading of the Beaver Dam ore reserves by saying, in part:

A review of the companies acquired is being undertaken to verify the information. Work to date suggests that the operations and properties meet WMC's expectations, with the exception of Seabright Resources Inc where the present indications are that the published ore reserves will be down-graded, in particular at the Beaver Dam mine. This will result in a substantial

reduction in gold production previously projected by Seabright Resources Inc.'

The headline in the *West Australian* next morning read 'WMC buy in Canada a big let-down'. The share market was not adversely affected by the news: WMC shares closed at \$4.80 on 12 May, \$4.82 on 13 May, \$5.00 on Monday 16 May, and increased further during the remainder of May.

### **WMC Sues Seabright in Ontario**

On 29 June 1988 the WMC Board discussed a memorandum by S J C (Colin) Wise, General Counsel, which recommended commencing a civil action against the former directors of Seabright, and advising the Royal Canadian Mounted Police and the Ontario Securities Commission that in the Company's view, Canadian laws had been breached. Directors were asked to consider the matter thoroughly before coming to a conclusion.

Colin's research was based on detailed written advice from one of Toronto's leading law firms which had been retained to assist WMC in its investigations into the Seabright acquisition and had spent four months on the task.

On 5 July Hugh Morgan sent a memorandum to all directors, saying that he and I had again reviewed the available information and believed that there was a strong case for proceeding. He subsequently contacted all directors by telephone, and all agreed to proceed.

On 13 July 1988 WMC representatives briefed the Ontario Securities Commission (OSC) on the Seabright issue. The Commission undertook to consider whether it should take action against Coughlan and/or his fellow directors.

The commencement of the WMC court action was delayed to the last moment before the 180 days' time limit for bringing the action expired, in the hope that the Ontario Securities Commission would commence proceedings and thus obviate the need for WMC to act. The Commission had not made a decision by 29 July, and WMC commenced legal action in Ontario, claiming:

- C\$60 million damages for fraud, deceit, conspiracy and negligent misrepresentation
- C\$10 million punitive and exemplary damages
- costs.

The Statement of Claim was served on Coughlan on 2 August, after the courier service lost the copy despatched from Toronto on 29 July to reach him on 30 July. This was located in Halifax on August 1, but could not be served on Coughlan on that day as it was a public holiday in Nova Scotia. It was served at first available opportunity the next day and WMC announced the commencement of the action to the Australian Stock Exchanges on 3 August, which was still 2 August in Canada. The decision to make this announcement was based on its materiality - it was a unique action for the Company to take, and needed to be advised to shareholders.

### **Seabright Sues WMC in Nova Scotia**

On 25 August 1988 Coughlan and his fellow director Jack A Garnett (Seabright's Senior Vice President - Administration) commenced in Nova Scotia two actions against the two WMC Canadian subsidiaries and its directors. Subsequently, the parent company WMC Holdings, its Directors and General Counsel were added as defendants. The claims were:

- that WMC, now in control of Seabright, improperly refused to indemnify Coughlan and Garnett against the consequences of their actions as directors and had maliciously conspired to damage them, and
- that WMC had deliberately served its Claim on Coughlan and Garnett a day after their insurance had expired at midnight on 1 August, 1988.

The plaintiffs sought special damages, general damages, punitive and/or exemplary damages, solicitor and client costs, and prejudgment interest.

The other former directors of Seabright commenced a similar insurance action on 7 September and a similar indemnity action on 14 October.

### **The Ontario Securities Commission Hearing and Settlement**

The Ontario Securities Commission issued a notice of hearing for Terence Coughlan to appear before the Commission on 22 January 1989. The notice referred to allegations that Coughlan, as President of Seabright Resources, made misrepresentations and omissions in documents filed with the Commission during 1986-1987. The notice alleged Coughlan had not advised the Commission of doubts about Beaver Dam which had been 'determined with certainty' by mid-June 1987, and that Coughlan had repeated encouraging reserve estimates for Beaver Dam, knowing them to be in doubt, when seeking to raise \$2 million in November 1987.

A hearing by the Commission was held in Toronto on 21 March 1990. At the hearing a Settlement Agreement between OSC and Coughlan was approved.

At the time, Colin Wise summarised the settlement as:

1. Coughlan admitted that the public record on which Westminer Canada based its bid was in fact the public record of Seabright Resources.
2. He specifically denied the allegations by the OSC that he had engineered Seabright's failure to disclose material changes in the affairs of the Company as required by law.
3. His trading rights to deal in shares in Ontario were suspended for 12 months except with prior OSC approval, and for the same period he was not allowed to engage in the business activities of any listed company on the Toronto Stock Exchange except in relation to assisting in financing activities to the extent that the Boards of Directors of those companies considered reasonably necessary.
4. He had to keep the OSC informed of his activities on behalf of any listed company for a period of 36 months.
5. Coughlan had to pay costs of C\$40,000 to the Commission.

The reasons why a settlement was reached were not made known. Subsequently, in evidence in the Cavalier action against WMC in Nova Scotia in 2000, it was stated that this was because the Commission was certain WMC would succeed in its Ontario civil claim against Coughlan.

### **Discovery Evidence**

Preparatory to the Nova Scotia trial, in accordance with Canadian practice, lawyers for both sides went

through a 'discovery' of documents period and took 'discovery evidence'. I gave sworn testimony to lawyers representing Seabright in Melbourne on 28 November 1990.

### **Slow Wheels of Justice**

The trial of the Seabright actions in Nova Scotia started on 2 March 1992 and concluded on 30 October 1992. The Nova Scotia actions were heard before WMC's Ontario action because of the availability of time by the respective courts. This turned out to be very adverse to WMC.

The WMC defence to the Nova Scotia actions was largely based on the evidence and legal argument it was planning to lead in the Ontario action. These were used in outline form only in Nova Scotia, leaving a more aggressive pursuit to be adopted at a later time in Ontario. As things turned out this never eventuated.

The Ontario proceedings were discontinued by WMC in early 1994, following the completion of the Seabright actions.

### **The Nova Scotia Judgement**

After the longest civil trial ever held in Nova Scotia, the 300 page judgement by Mr Justice Nunn was handed down on 23 March 1993. He took pains to point out that 83 trial days were consumed in hearing the evidence of witnesses and, after extensive written briefs were filed, there was an additional nine days of oral argument.

In addition to trial days in Nova Scotia, there were two days in Toronto and two days in New York of commission evidence, taken by Justice Nunn who was appointed commissioner in each jurisdiction.

A total of 25 witnesses were called by the plaintiffs, 15 by Coughlan & Garnett and 10 by Amirault et al (name used for the other former director plaintiffs), though their evidence applied to all actions, which were not formally consolidated but dealt with concurrently. The defendants called 19 witnesses and one was called at the Court's direction. Transcripts of the trial constituted 92 volumes.

In all 1659 exhibits were filed consisting of 31 large volumes and additional boxes of exhibits as well as plans, charts, and diagrams.

Prior to trial, the parties held 169 days in Discovery involving approximately 50 000 questions and answers and well over 100 000 documents were exchanged.

The Judge held that:

The plaintiffs at all times acted honestly and in good faith with a view to the best interests of the company and were therefore entitled to the protection of the indemnity provisions of the by-laws. Since fraud involves an intent to deceive and since the plaintiffs reasonably believed at all material times that the company's prospects were as bright as represented, there was no evidentiary support for the allegation that the operation of the company was fraudulent. Before a fact can become material for the purpose of disclosure under the Securities Act, that fact must be established. Here, although there were some signs that some of the company's properties may not be as profitable as estimated, no such fact had become established at the time of the takeover. If every suspicion that could affect the market price were to be published, the result would be a chaotic stock market.'

This was the fundamental issue. Mr Justice Nunn's conclusion was in contradiction to the requirement

of continuous disclosure of material facts. Seabright's files disclosed as early as on 4 June 1987 an internal memorandum concluding that the Beaver Dam ore reserve estimates were 'virtually useless' and 'meaningless' for mine planning purposes. In spite of this, the 1986 Annual Report highlighted the estimates and the feasibility study depending on these. A letter to shareholders in September and an Offering Circular in November gave no indication that the estimates could not be substantiated. The Directors' Circular on 29 December 1987 flatly stated that there was no material change in circumstances. Incredibly, Mr Justice Nunn concluded that the company was not obligated to say anything! He based his decision partly on a similar decision recently handed down in British Columbia in the case of *Pezim*.

The Judge found that there was a conspiracy between the three corporate defendants (the WMC parent company and its subsidiaries Westminer Canada Holdings and Westminer Canada) to damage the former directors of Seabright. To quote from the judgement:

'Counsel for the plaintiffs has urged upon me that there is no other conclusion to be reached than that this multibillion-dollar Australian company set out deliberately and intentionally, with the two Canadian companies under its control, to crush the plaintiffs, causing them great injury, and with that as its predominant intent. Counsel contended there was no hope of ever recovering the damages claimed, which appears to be the reality, that the defendant plaintiffs in the Ontario action were dishonest as to the alleged "reliance on the public record", and all the Australian witnesses were untruthful in key areas of their testimony. He also alleges the key witnesses were fully aware of the nature and effect of an allegation of fraud and were callous and uncaring of the rights of the plaintiffs. The purpose of the Ontario action, he alleges, was two-fold, to crush the plaintiffs here and to prolong and delay Morgan having to account to his Board of his Canadian acquisitions. Also referred to was the tremendous time, effort and costs involved which, he argues, was calculated to bring the plaintiffs to their knees and render them unable to defend whereby Morgan would have his vindication and be saved before his own Board by virtue of a default judgement.

.....

I can only conclude on the facts that the plaintiffs position is accurate. The whole of the three corporate defendants conduct was not that which rings pure and clean as an honest attempt to use the courts to establish their rights and obtain an award of damages. They had no concern for the plaintiffs insurance rights; they intended not to provide indemnity; they based their action on the premise that they relied on the public record which was clearly shown to be false by their own witnesses in their direct testimony; they pursued the outside directors without evidence and, as I have found, predominantly to injure them; and, along the way, have been liable of the various torts which I have already found. It is surprising that, though Coughlan and Garnett remained with Seabright after the take-over, they were never asked about or confronted with any of the information which was offered in evidence. As well, certain key witnesses of the defendants, during their testimony at the trial were deceptive and untruthful as to the events and information on which they claimed to rely. Taking into account that the allegation here were of fraud and that everyone involved here understood the nature of proof required, on the one hand, and the effect of the allegations on those against whom it is made, on the other hand, with all the circumstances here, I am satisfied that the predominating intent was, indeed, to injure the plaintiffs and the injury, as expected, did occur.'

Mr Justice Nunn found that the conspiracy involved the commencement of the Ontario action without any evidence, the complaint to the Ontario Securities Commission (referred to by Justice Nunn as 'the manoeuvre') to deprive the former Directors of the benefit of their Directors and Officers Insurance Coverage and finally the refusal to indemnify the former Seabright directors pursuant to the Seabright

by-laws which became the by-laws of WMC Canada.

There was no finding of conspiracy against the individual WMC defendants. The allegations against Directors of the WMC parent company were discontinued at the close of the Plaintiff's arguments, during the proceedings.

The Judge awarded general damages of \$200,000 to each of the external directors, \$1,000,000 to Coughlan and \$50,000 to Garnett. He also awarded costs against WMC in the Nova Scotia actions as well as in the Ontario action.

The Judge declined to award aggravated or punitive damages or damages for losses related to Cavalier Corporation and dismissed the claim on the grounds that it was too uncertain. As it transpired, this 'Cavalier Claim' was to be the subject of a further court case in 1994.

The reaction by some media was disbelief. Trevor Sykes in a radio interview on 29 March said:

'(This) looks like a real home town decision ..... All I can say is it's lucky the Canadians don't play cricket 'cause I'd hate to see what their umpires are like'.

Others thought WMC being dealt with in this way made exciting news.

Some subeditors could not resist the temptation to devise colourful headlines. Malcolm Maiden's balanced and well written account over two successive issues of *The Age* was entitled 'How WMC bought a tarnished golden dream' and 'Hit hard, hit fast: how WMC knocked itself out' respectively. The Australian Financial Review was more restrained: 'A shopping trip best forgotten'.

WMC received the decision with utter disbelief. Its Canadian legal advisers advised that the Judge had erred in ruling that Seabright directors did not have to make a public statement or tell WMC about the inability to confirm the published Beaver Dam ore reserve. The decision was appealed. The other parties cross-appealed on a number of issues, including their failed Cavalier claim.

### **Coopers and Lybrand and Prudential Bache**

In November 1992 Colin Wise raised with the WMC Board the possibility that a conflict of interests had existed in 1987-88 when the accounting and tax people in the Toronto Office of WMC's auditors, Coopers and Lybrand, had been advising the WMC takeover team while their technical consulting arm, Robertson & Associates, was advising Seabright that the published Beaver Dam ore reserves could not be substantiated. There appeared to be indications that the Chinese Wall between the two groups had not been impermeable.

Colin had raised the matter with Coopers Toronto in June 1988, who were 'defensive' but assured him that the audit branch had not been aware of the problem with the reserves until after the takeover had been completed. On the basis of Coopers' assurances, Colin agreed to execute a release in exchange for Coopers agreeing that the Robertson personnel would speak to WMC's counsel and, later, give discovery evidence.

At a meeting on 5 October 1993 the Board of WMC was briefed further on the Coopers and Lybrand matter by Peter Roy and Bob Harrison of our Canadian lawyers, Fasken Campbell Godfrey. They presented arguments both for and against reviving the issue and how the situation would be affected if the possible claim was about negligence and not fraud. The Board was understandably reluctant to consider suing WMC's long standing auditors unless there was a very strong case.



At the same meeting the Board was also briefed by the Canadian lawyers regarding the advisability of WMC commencing court action in New York and Toronto against Seabright's financial advisers, Prudential Bache (PB). This had been considered for some time, on the basis that when they recommended that Seabright should accept the WMC takeover offer, PB had been aware that Seabright's public statements regarding Beaver Dam did not represent the true situation.

On 11 January 1994 written advice was received from Fasken Campbell Godfrey that WMC had a strong prima facie case in fraud against Prudential Bache. There was a time problem in both the Coopers and PB case because the Appeal Court decision in the Seabright case had not yet been handed down, while the six years' limitation period for a possible WMC action was about to run out. Colin Wise recommended that a Statement of Claim be issued in Ontario on 2 February 1994 but not be served on PB unless and until a favourable Appeal Court decision had been received.

In the event, the very unfavourable Appeal Court decision on 18 January 1994 meant that neither the possible action against Coopers nor that against PB could be pursued.

### **The Appeal**

The appeal was heard in the Nova Scotia Court of Appeal from 29 November to 7 December 1993. The 73 page judgement, handed down on 18 January 1994, was very critical of WMC.

HELD: Appeal dismissed. The trial judge did not err in findings of fact, nor was there an error in law respecting the finding of civil conspiracy by the appellants. All grounds of appeal were dismissed. Trial judge's awards of damages and solicitor client costs were upheld. On the respondent's cross-appeal, the costs should have been included in the indemnity award and subject to pre-judgement interest. Also, pre-judgement interest continued to accrue until the amounts of the awards were determined after trial. All other grounds of the cross-appeals and notices of contention were dismissed. Costs of the appeal were allowed on a solicitor and client basis, subject to a set-off of one-half party and party costs on cross appeal.'

The judgement included the following paragraph:

The present appeal is distinguished by the unequivocal findings of the trial judge making it obvious that the conduct of the appellants toward the respondents was tortious. They rushed to acquire Seabright with blind optimism after a selective perusal of the public record and a positive report by their own expert who received the same information as the Seabright directors, ignoring the critical bulk sample test they knew was in progress. Then they sought to cast the entire blame for their rash purchase on the Seabright directors when they discovered there was no ore at Seabright. Whether from embarrassment, an effort to postpone the day when Mr Morgan had to account to his own board of directors for the folly, or from motives of sheer revenge, the wrath of the mighty Western Mining Company was directed at the individuals who had comprised Seabright with unrelenting tenacity and devastating financial consequences. As the trial judge remarked, it was a most unusual case. Despite, or perhaps partially because of, attempts by the Westminer appellants to cloak their vengeful conduct in the garb of legal proceedings, their behaviour was clearly tortious. It is obvious from the evidence that this manifested itself in an overriding intention, predominating every other consideration, to avenge themselves on the Seabright directors, to cause them harm. It is similarly obvious that the Westminer companies, their officers and directors, worked together in close association, in concert; that is, they conspired together. It may be fairly said that the Westminer appellants had worked themselves into a kind of ongoing state of conspiracy animated by a preponderating desire to cause harm to the Seabright directors that required only specific acts causing damage to crystallise into torts; these acts, lawful and unlawful, were performed as occasions for them

presented themselves. The first opportunity of which they availed themselves was to report Coughlan and Garnett to the Ontario Securities Commission. Against the background found by the trial judge this may well have been enough to ground a finding of civil conspiracy in itself, although he appears to have considered it merely as a supporting fact in finding conspiracy based on the Ontario action.'

## The Media Reaction

The media reaction to this paragraph was predictable.

Following the very adverse publicity arising from the Ernest Henry case in July and August 1993, and the Lady Bountiful issue, the extremely negative comments of the Nova Scotia Appeal Court threw petrol on the simmering coals. The headlines over the next few days read: 'WMC appeal brings blast' (*The Age*), 'WMC blasted' (*Herald-Sun*), 'Canadian court case adds to WMC woes' (*West Australian*), 'Court attacks WMC's folly' (*Financial Review*), 'Canada appeal court finds WMC chiefs guilty of conspiracy' (*Adelaide Advertiser*). Hugh Morgan came under strong pressure from commentators such as Alan Jones on radio 2UE and Terry McCrann in the *Herald-Sun* ('Time for Hugh to bid us adieu').

An extract from Terry's article summarises the general reaction well:

Disaster number one in Canada saw WMC plunge 500 million into what became virtually worthless gold plays.

Then in the subsequent litigation - which was initiated by WMC - far from WMC recouping any of that, it has been hit with an \$11 million-plus judgement plus substantial costs.

So it got burned on the ground and then insult was added in court.

Disaster number two was the "taking" of the rich Ernest Henry mineral deposit, leading to WMC having to hand it back, plus pay \$17.5 million to 'its' joint venture partner, plus again substantial court costs.

Disaster number three was the sale by WMC of a half-stake in the Lady Bountiful Mine for \$200 million in cash and shares to Consolidated Exploration. When it became clear it was Lady less-than-Bountiful and Consex sued Ord Minnett for endorsing the valuation in a report, WMC got dragged in.'

By contrast, the media reaction in Nova Scotia was almost ho-hum. The headline in the business section of *The Chronicle Herald* on 19 January read: 'Seabright comes out on top in Appeal Court battle'.

The strongest reaction in Australian media was, however, yet to come. The editorial in *The Financial Review* on 21 January (attached) said: 'Hugh Morgan should resign and so, arguably, should the Western Mining board.'

I was later told that this extraordinary Editorial was, in the absence of the normal editorial writers during the holiday month of January, written by a journalist who had been previously investigated by police because of suspected illegal possession of some Alcoa documents. He was hardly an objective commentator and has since then been anti-WMC wherever possible, although on the face of it what he said was arguable. Interestingly, the share market reacted by WMC shares going up!

## WMC Action

I was told of the very unfavourable outcome of the Nova Scotia appeal by Colin Wise over the phone while having dinner at the Heathman Hotel in Portland, Oregon. Travelling to New Orleans on 20 January, Barbara had by next morning faxed me the Financial Review editorial.

It was important that directors, who would be naturally very concerned about the outcome of the appeal and the dreadful publicity, should have an early opportunity to meet and discuss the issues. Also, there was the question of whether it would be appropriate and useful for WMC to respond in some way.

Cancelling the rest of my United States itinerary, I returned to Melbourne immediately. Arriving back in Melbourne on 24 January, I went from the airport to the WMC office arriving about 1.30 pm, just in time for a special Board meeting at 3 pm. Colin Wise had prepared a possible statement and S E K Hulme QC, who was retained as an outside Counsel for the WMC Board, felt that we should tell our side of the story, but on reviewing the pros and cons the Board decided that any statement by us would serve mainly to prolong the public controversy. Wisely, it was decided not to respond.

One reason for adopting a low profile was that there was the possibility that WMC, or Hugh Morgan, or both, may be sued in connection with the *Lady Bountiful* matter (see *Lady Not So Bountiful*). While the Consex case against Ord Minnett had been settled, some of the individual investors could have seen an opportunity to recoup some of their losses. There had been rumblings on the fringes. Until the danger had passed, another damaging public upheaval could not be ruled out.

## Appeal to Supreme Court?

There remained the possibility of an appeal to the Supreme Court of Canada.

Legal opinion was that the Nova Scotia courts had erred and that the Supreme Court may well reverse the decisions. As a non-legal person, it certainly seemed to me that justice had not been done. The central issue in my view was that the Seabright directors, knowing that the published ore reserves and production plans at Beaver Dam could not be confirmed, had entered into a lock-up agreement and had issued a Directors' Circular which said that there had been no material change in circumstances likely to affect the value of the shares. While there could have been differing views about when a statement about the Beaver Dam situation would have to be made to shareholders, there was no question that something should have been said when WMC approached Seabright with a takeover proposal. Coughlan's statement that he told Robertson & Associates not to submit their report because he wanted to save WMC money is ridiculous; by then the money had already been spent and it only remained to submit in writing what Robertson & Associates had told Coughlan orally.

In my view the extraordinary thing about both the Nova Scotia court case and the appeal was that the key issue was dealt with in an almost casual manner, and that most of the argument and the judgment concerned matters about which much evidence was of an anecdotal nature and where the judges drew conclusions on the basis of opinions and inferences. The Seabright lawyers did an excellent job of confusing the issues.

The judgements of both courts appeared to be strongly influenced by the spectre of a 'mighty multibillion-dollar company' against local battlers which had nothing to do with the matter at issue. The disparaging way in which the trial judge kept referring to 'The Australians' left no doubt that parochialism was involved and that the judgements had an overwhelming 'home town' content.

We were advised that senior independent Canadian legal counsel retained by WMC were equally

flabbergasted and believed that an appeal to the Supreme Court would remove the parochial and home town aspects.

During the Board discussion on this several directors spoke strongly against continuing with the court case, on the grounds that while justice may be on our side it was commercially unsound to prolong the agony and inevitable publicity which would accompany future action. They pointed out that we had been confident in the merits being on our side in both actions so far, had lost out badly, and suffered greatly as a corporation. No director had strong feelings to the contrary, and it was decided not to appeal further.

There was some legal skirmishing by Cavalier directors who were unhappy with Mr Justice Nunn having dismissed their claim, to which WMC made a countermove, but the Supreme Court declined to hear the issue.

### **The Pezim Case**

As it happened, the Supreme Court of Canada a few months later, on 23 June 1994, released its judgement in the case of *Murray Pezim vs. The Superintendent of Brokers*.

By the unanimous decision of seven judges, the Supreme Court reversed the majority decision of the British Columbia Court of Appeal on which Mr Justice Nunn had relied at coming to his judgement regarding the duty to release information. The judgement delivered by Mr Justice Iacobucci on behalf of the Supreme Court included the paragraph:

'In the mining industry, mineral properties are constantly being assessed to determine whether there is a change in the characterisation of the property. Thus, from the point of view of investors, new information relating to mining property (which is an asset) bears significantly on the question of that property's value. Accordingly, I agree with the approach taken by the Commission, namely that a change in assay and drilling results can amount to a material change depending on the circumstances'.

The Supreme Court confirmed that the on-going investigation and disclosure obligations of directors were as WMC had argued in the Nova Scotia litigation.

With hindsight, therefore, it seems that WMC should have appealed to the Supreme Court.

### **The Cavalier Action**

In the Seabright actions several of the former Seabright directors, who in 1988 had invested in a company called Cavalier Energy Limited, sought to recover their losses arising out of that investment (The Cavalier Claim) on the basis that those losses had been caused by allegations and actions of WMC in relation to the Ontario action. The essence of these claims was that the Ontario action alleging fraud against Coughlan and the complaint to the OSC made it impossible for Cavalier to access the public markets. Justice Nunn and the Nova Scotia Court of appeal dismissed the Cavalier Claim on the grounds that it was too uncertain.

In April 1994 one of the former Seabright directors (Hansen) applied to the Supreme Court of Canada for leave to appeal the dismissal of his Cavalier Claim, on the basis that his claim was different to the claims of the other former Seabright directors. This application was refused in November 1994.

Notwithstanding the dismissal of the Cavalier Claim in the Seabright actions, in July 1994 four other investors in Cavalier Energy who were not parties in that trial, on behalf of a class of about thirty

investors, commenced a new action in Nova Scotia against WMC and a number of its officers claiming in excess of C\$12.5 million plus interest and costs - alleged to be their loss arising out of their Cavalier investment. They mirrored the basis of the Cavalier damages complaint in the Seabright case, saying that money they had lent to Cavalier in anticipation of a successful public offering had been lost, and they were entitled to damages.

The WMC parties defended this claim, regarding it as even more remote and uncertain than the Cavalier damages claim which had earlier been rejected in the Seabright actions.

Offers to settle in 1994 and 1996 were declined by WMC. This is where the matter stood when I retired in April 1999.

### **Subsequent Events**

The Cavalier trial began in Nova Scotia at the end of April 2000.

The causes of action included negligence/recklessness, the use of unlawful means with the object of causing loss or damage to the plaintiffs, and conspiracy to injure the investors in Cavalier Energy. The claim sought damages from the WMC corporate and individual defendants for economic loss resulting from the allegations made against the former Seabright directors in the Ontario action.

WMC denied any conspiracy against these plaintiffs and indeed, any knowledge that they were about to embark upon a public issue. WMC pleaded that the conspiracy alleged by the plaintiffs was different to the conspiracy found against the former Seabright directors and that therefore all elements of the conspiracy must be proven afresh, and that the Seabright decision was no longer valid because of the decision of the Supreme Court of Canada in the *Murray Pezim v. The Superintendent of Brokers*.

I agreed to appear as a witness for the defence. This was initially to take place early in June 2000, but was deferred to October 2000.

I testified on 19 October 2000.

In November 2001 Justice Moir dismissed the Cavalier plaintiffs' claims against the WMC parties in conspiracy, intentional interference with economic relations, and negligence and found all of the WMC parties not liable. This was an emphatic win for the WMC parties.

While Justice Moir did not accept a number of WMC's arguments, he found there was no actionable civil conspiracy by WMC against the Cavalier plaintiffs - that is, the conduct of the WMC companies toward the former Seabright directors as found by Justice Nunn (and Justice Moir) was not directed toward these Cavalier plaintiffs.

Because of the lack of proof of an actual intention by the WMC parties to harm the Cavalier plaintiffs, the Judge also dismissed the plaintiffs' assertion that there was liability under the tort of 'interference with economic relations'.

At trial, the plaintiffs also claimed that the WMC parties were negligent. Justice Moir dismissed the plaintiff's claim. They had argued that the intentional wrong against Coughlan, as found by Justice Nunn against the WMC corporate defendants, could be transposed to the current action and current Cavalier plaintiffs. Justice Moir did not accept this argument. As well, he held that the damages claimed were of the nature of 'pure economic loss', and, as such, were not recoverable.

Colin Wise, in a letter to me on 19 November 2001, made the following comments regarding Justice

Moir's decision:

Unfortunately, the Judge has taken the liberty to effectively pick up where Justice Nunn and the Appeal Court in Seabright left off in their strident criticism of the conduct of WMC and its personnel in how Seabright Resources was acquired and the subsequent Ontario proceedings were commenced. Justice Moir goes much further, and has delivered a stinging and powerful rebuke of such conduct and the animus that he has found existed within WMC towards Coughlan in particular.

He has found that WMC was reckless in its management of the Seabright takeover and the subsequent conduct of the investigation into the facts surrounding Beaver Dam and the takeover. In passing, I note that both were conducted with the complete assistance and advice of Counsel and other external advisers to WMC, an issue which the Judge seems to have chosen to ignore. Furthermore, many of his "findings" are not based on actual evidence given in this case.

Justice Moir expressly relies on Justice Nunn's findings against the WMC corporate defendants but goes further to effectively find that when commencing the Ontario action WMC and its officers did not have a genuinely held belief that there was a serious case in fraud for Coughlan and Garnett (in particular) to answer. He suggests that WMC should have taken stronger and more positive steps to, in effect, "prove" its case against Coughlan before commencing the action.

Taking such a "requirement" to its logical conclusion would render much of the function of a court somewhat redundant. We believe that Justice Moir has gone too far in the standards he is seeking to establish here for would-be plaintiffs contemplating an action in fraud. After all, this is why aggrieved parties in a democracy have access to the Courts. This is their function. His logic here is difficult to comprehend.

I find it even more difficult to comprehend the intellectual basis for Justice Moir's stinging rebuke against WMC in the light of his parallel finding that the Ontario Securities Commission had reached its own independent conclusion that Coughlan had breached the disclosure provisions of the Ontario Securities Act such as to warrant the commencement of proceedings under the Act in respect of such breach.

I note this was a conclusion independently reached by the OSC based on information that had been provided to its investigatory team by WMC and its counsel, together with information independently derived by the OSC in the course of its own investigations. This very same information so provided by WMC comprised the factual underpinning for the legal advice provided by Faskens to WMC prior to WMC's deciding to commence the Ontario action.

I cannot reconcile how, on the one hand, Justice Moir can find that Coughlan was truthful in his beliefs about the true state of affairs at Beaver Dam and express with such apparent passion that WMC could not have genuinely believed Coughlan had breached serious statutory disclosure obligations, while on the other, finding that the OSC had properly prosecuted an action against Coughlan which resulted in a settlement agreement involving acceptance of certain restrictions and payment of costs by Coughlan (albeit with a denial of liability).

It is also not without some irony here, that the civil conspiracy allegations in this case against the WMC defendants which were so conclusively dismissed by Justice Moir had a significantly lesser level of factual underpinning than was the case from WMC's perspective in the commencement of the Ontario proceedings.

It is too speculative to contemplate just why Justice Moir has so readily and heavily criticised the WMC parties. In my opinion, it was certainly not necessary to do so in order to establish any factual underpinning for his legal analysis of the relevant case law on which he relied to find in favour of the WMC parties at trial.'

The unsuccessful Cavalier plaintiffs appealed Justice Moir's decision and the appeal hearing before the Nova Scotia Court of Appeal was held on June 16-18, 2003.

On 22 July 2003 the Nova Scotia Appeal Court unanimously rejected the appeal.

The claim for 'Cavalier damages' has therefore been rejected by the Nova Scotia courts on four occasions.

### **With Hindsight**

Colin Wise, in a letter of 11 August 2003, summed it up as follows:

The key issue arising from all this to which I wish to direct your attention is the patent inconsistency between Moir (and Nunn) finding that the WMC parties had acted improperly in commencing the Ontario action, despite having strongly supportive external legal advice, and even more significantly, despite Moir having found as a fact that the OSC had conducted an independent investigation, that he accepted the evidence of the OSC Director of Investigations (Groia) as to the conduct of the OSC investigation, and that the OSC facts recited in its Notice against Coughlan were essentially the same facts as those reported by WMC to OSC and which underpinned the commencement of the Ontario action.'

After having spent a great deal of time during the year 2000 going through the records in preparation for my appearance as a witness in the Cavalier action, and having read the testimony of Mr Groia on behalf of the Ontario Securities Commission, Colin Wise, and Hugh Morgan, I remain firm in our view that both Mr Justice Nunn's judgement and the judgement of the Appeal Court were mistaken. The Supreme Court's decision in the *Pezim* case strongly supports this view.

One can only speculate on why the two Nova Scotia courts made these judgements.

There seems no doubt that the 'home town' aspect had a large influence. I have already mentioned the language used by Mr Justice Nunn. It is tempting to speculate that what was seen as a very large and wealthy foreign company losing money to the locals - most of the Seabright shareholders were either from Nova Scotia, or from the maritime provinces - was seen in a kind of Robin Hood light. Terence Coughlan could well have been locally regarded as a hero rather than a crook. In this respect, having the Nova Scotia action take place before the Ontario action was probably the deciding event in this sorry saga.

It is also possible that Mr Justice Nunn genuinely believed that Seabright did not have to make any statements until all the work had been concluded. There apparently was another case in British Columbia where the judge made a similar decision which was later overturned by the Supreme Court (the *Pezim* case), and Justice Nunn probably felt assured by this. Neither of the learned judges apparently saw any inconsistency between the requirement for continuous disclosure and their judgements.

On the WMC side, there is some evidence of sloppy staff work and certainly a series of amazing mishaps:

- some fumbling with viewing the Seabright public record
- inability to deliver the Ontario claim to Coughlan on 30 July
- overlooking the expiry of the insurance policy on 1 August (apparently by the management in Toronto)
- the inability to have the Ontario claim listed for hearing before the Nova Scotia claim and the apparent lack of understanding by the WMC side (including myself) of the critical importance of this. The only person I recall commenting on the 'home town' issue was the then director Don Laidlaw. Colin Wise remembers that the legal team believed our case had sufficiently strong legal merit to overcome such local influence.
- a subsequent incident during the Cavalier trial where WMC was unable to obtain the transcript of Coughlan's evidence at the OSC hearing immediately after the issue of the transcript had been approved by the Court and before a judge issued an injunction against it.

There are explanations for all these, but one wonders whether the mishaps could have been avoided if all concerned had made a determined effort to ensure nothing could go wrong instead of assuming that all would go according to plan.

Colin Wise reflects that the Canadian counsel wanted to commence the Ontario action much earlier. Hugh Morgan and he decided to be cautious and delay it as long as possible in the hope that the Ontario Securities Commission would take action. Had the writ been issued earlier, the outcome may well have been different. Being overcautious backfired!

Nobody in WMC came out of the Seabright saga well, but none of the shortcomings and mishaps change the fundamental fact that WMC was not told of concerns about the ore reserves at Beaver Dam when they advised Seabright of its intention to make a bid for the company. Incredible as it is, the opposition lawyers were able to weave a web of contentions, imputations, and inferences which, in the mind of Mr Justice Nunn and the Appeal Court, completely overshadowed this vital and indisputable fact. It is hard to avoid the conclusion that their legal people were more street-smart than ours, at least in the context of a court action in Nova Scotia.





## ***ERNEST HENRY***

### **Background**

The background to the Ernest Henry Project up to the point where it became the subject of legal litigation is given in *THE BURNISH OF COPPER, Being Ernest In Queensland*.

### **The Court Case**

Savage Exploration Pty Ltd commenced legal proceedings on 26 October 1992 against WMC (Western Mining Corporation Limited) and Hunter Resources Ltd with respect to the Mt Fort Constantine Option Agreement over a number of mining leases covering an area near Cloncurry in Queensland. Savage sought, among other things, a rescission of the Option Agreement on grounds of alleged misrepresentation and trespass. The Statement of Claim was subsequently amended to include allegation of fraud.

The initial media comment was reasonably moderate, headlines ranging from 'WMC hits legal snag with Ernest Henry Project' to the more enterprising 'WMC launches Savage attack'.

WMC's defence was that one of the mining leases, Mineral Lease 2671, the subject of the dispute, was invalid, and that Savage failed to mark out the base in the prescribed manner and/or failed to accurately describe the land that was the subject of the application.

To further this defence, on 4 March 1993 WMC commenced proceedings in the Supreme Court of Queensland, alleging that Savage failed to mark out ML 2671 in the prescribed manner and/or failed to accurately describe the land in the lease application, and had not complied with the work reporting, and maintenance of lease pegs obligations for many years. WMC also sought to enforce the Option Agreement and/or have Savage's mining lease cancelled.

On 2 April 1993 the Court in Queensland declined to hear the WMC case as the subject matter partly duplicated the proceedings already initiated by Savage against WMC in NSW. It is an interesting question whether, had the hearing been held in Queensland, the outcome might have been different from the result in NSW.

During the proceedings there was some reference to WMC staff having removed pegs from ML 2671. The WMC Committee of Enquiry concluded that these were not lease pegs, but steel survey grid pegs placed by WMC field staff in July 1990.

The survey crew had been unable to locate the lease corner pegs. The description of the lease as submitted by Savage and recorded in the Queensland Department of Mines relied on a distance and bearing from a bore some two miles west and marked on government survey maps. When this matter was later investigated, it was found that the bearing had been incorrectly stated. Furthermore, the stated orientation of the rectangular one mile by half a mile lease as defined by reference to a blazed tree was also in error. The net result was that the true position of the lease as originally pegged turned out to be some 850 metres north and rotated several degrees anticlockwise from the position as plotted on the maps. The lease pegs had not been maintained and were lying flat on the ground in their approximate original position when eventually found.

The true position of the lease pegs was finally established by Savage in 1992 by running ground magnetic traverses over the approximate position of the magnetic feature originally pegged in 1974 and comparing the pattern of the resulting magnetic contours with those earlier established in 1992.

The subsequent Committee of Enquiry concluded that at no time did WMC staff consciously remove lease pegs. They were unable until after the option negotiations were finalised to get a fix on the true lease position, because of the misleading description in the official records and the lack of maintenance of the corner pegs. A letter by Colin Wise appended to this section expands on this. However, the Committee also concluded that WMC field staff should have gone to Savage for information.

### **Settlement Negotiations and Trial**

On 19 March 1993 Savage had offered to accept a 35% working interest (valued at \$45 million) plus retention of the 1.25% royalty. As an alternative to the working interest, Hugh Morgan offered to increase the royalty to 2% gross. The parties agreed that there might be some room to move and that Austin (for Savage) would discuss the matter further with his people.

On 22 March 1993 Counsel retained by Allens to represent WMC in the litigation advised in writing that the prospects of WMC succeeding on defence (which it had pleaded) that ML 2671 was invalid were not better than 50/50. Counsel further advised that if the defence did not succeed, the probabilities that the Court would uphold the validity of Savage's action in rescinding the option agreement were of the order of 70%.

The view was expressed by Mr Lind (who had the carriage of the matter for WMC lawyers Allen Allen & Hemsley) that it was desirable to attempt to negotiate a settlement.

In a letter dated 30 March 1993 written by Mr Lind to the Company advising on the question of settlement he expressed the opinion that the range of reasonable settlements was between a 20% and a 40% working interest.

On 7 April 1993 Mr Lind attended a WMC Board meeting at Melbourne. He expressed the opinion that there was a real risk that there would be a finding of fraud against the Company. Mr Morgan informed the Board that steps were under way to negotiate a settlement and the Board agreed that the negotiations should be pursued.

On 17 June 1993 Mr Lind was asked to advise as to the timing of settlement negotiations. He expressed the view that settlement negotiations should not be delayed because they would be more difficult after argument had taken place on the lease validity point.

The Trial commenced on 5 July 1993.

On 12 July 1993 Mr Campbell QC (WMC's Senior Counsel) advised Hugh Morgan that the Company was likely to lose the case and there was a real risk of a finding against it of fraud. Mr Campbell expressed the view that the indications were that the judge would find the validity issue against WMC and pointed out that there was a risk that Hunter would proceed against WMC to recover its loss if WMC's defence to the proceedings proved unsuccessful.

Settlement discussions had not brought the matter to any conclusion by 21 July 1993 when Chris Middleton was cross-examined on a letter he had written to Savage on 3 September 1991. He had maintained that the letter was not intended to mislead Savage into the belief that field based exploration activity had not taken place before that date.

In the evidence he gave on the first two days when he was cross-examined he maintained this stance. However, on the third day (21 July), towards the end of his evidence, he said, *inter alia*:

*'I had made a decision not to disclose, that is correct.'*

and in answer to a question that it had been dishonest of him to have the communications he did with Savage he replied:

*'I think that is correct, yes.'*

### **The Settlement**

On 26 July 1993 WMCH issued a statement regarding settlement of the Ernest Henry dispute. The announcement read in part:

'Settlement of the court proceedings followed an assessment by the Directors of WMCH of the evidence given which led them to conclude that Savage had been misled during negotiations for an Option Agreement over the mining lease. The evidence was not anticipated by WMC.

The settlement confirms that the Option Agreement has been rescinded and WMC and Hunter have relinquished all claims to Mining Lease 2671, ownership of which remains with Savage  
.....

The Board of WMCH considers it a very serious matter that such a situation could have arisen. The procedures within the Company which allowed it to happen will be subjected to an immediate investigation with participation of appropriate people from outside the Company, and corrected. The Corporation's policy is, and remains, to act in accordance with the highest legal, moral, and ethical standards.'

The details of the settlement were given in a separate joint announcement by WMCH, Savage, and Hunter. The essential terms were that, in addition to relinquishing all claims to Mining Lease 2671, WMC agreed to pay Hunter \$17.5 million, to pay the legal costs of Savage and the State of Queensland, and to provide Savage with technical information relating to ML 2671.

### **The Morning After**

I had earlier in 1993 conveyed to Ian Burgess the WMCH Board's invitation to join it. Ian had agreed to do so at the Board meeting scheduled for 4 August.

Immediately the settlement announcement had been made I faxed a copy to Ian Burgess and said that 'if you wish to delay the acceptance of our invitation to join the Board, this would be fully understood. I hope not, because your fresh outside view would be very valuable in dealing with the matter, but you may understandably prefer to leave things until some time later.'

Ian rang me virtually immediately to say that he was quite happy to join as agreed. In the circumstances it was very good of him to do so.

On 27 July a subeditor of *The Australian* had the opportunity to exercise his sense of humour in the headline: 'WMC savaged over Ernest Henry claim'. The *Financial Review* headlined its story: 'Savage engagement leaves WMC mauled'.

Stephen Bartholomeusz of *The Age*, commented under the headline 'Case for executive blood after the savaging of WMC':

There will be undoubtedly be those who advocate that someone senior at Western Mining

Corporation should go, and go quickly..... The shedding of executive blood may, indeed, be appropriate but that has yet to be established'.

Quite coincidentally Hugh Morgan on 27 July, in meeting a previous commitment, gave an address at Bond University which was very critical of the High Court Mabo decision. The timing was unfortunate in that this added to the atmosphere of controversy about WMC.

At WMC, we were starting to repair the damage. I sent a memorandum to all directors which said, in part:

This very serious setback requires full consideration by the Board at earliest. My recommendation is that we devote the morning of the Board meeting on 4th August to this. A key proposal is that a group of three people be appointed to enquire into the circumstances leading to this situation, and report confidentially to the Board, including recommendations on remedies to be applied.'

After discussing who might be available and what the terms of reference might be, I concluded:

'If you agree with this, we will proceed with setting up the Committee of Investigation without waiting for the Board meeting on 4th August, subject to the people nominated being willing to serve.'

All directors agreed after being canvassed over the telephone.

On 28 July the morning's press contained an article by Terry McCrann, headed 'Captain Morgan may have to walk the plank'. The Ernest Henry issue was, not unreasonably, seen as compounding the earlier fiasco of the North American acquisitions and the Seabright court case, as well as Ord Minnett in April having joined WMC in a long running court case over the sale of the Lady Bountiful gold mine to Consolidated Exploration.

I advised all directors by memorandum that it was proposed to appoint Ian Burgess to head up the enquiry and that it was desirable to bring forward his appointment. Ian had agreed to early appointment and to acting as Chairman of the Committee. Again, all directors agreed, and Ian's appointment to both positions was announced on the same day.

The media next morning reported these appointments factually and generally favourably. Among other things, Ian was said to be 'a courteous man, but someone who called a spade a spade', and 'a tough corporate player'.

In my memorandum of 28 July I also advised directors of a preliminary meeting of the Committee, the other two members of which were yet to be finalised, in Melbourne office at 8 am on Monday 2 August and invited any directors able to do so to attend. The invitation was repeated in a progress report to directors on 29 July.

### **The Committee of Enquiry**

Following discussion at the Board meeting on 4 August and subsequent considerations, the Committee was confirmed on 10 August as follows:

Chairman:	I G R Burgess AO
Members:	B P Webb AM
	Hon Trevor Morling QC

Bruce Webb was the Director of Australian Mineral Foundation in Adelaide who, after practising as a geologist in private industry for many years, had subsequently retired from an appointment as Director of the Department of Minerals and Energy in South Australia. Trevor Morling was a recently retired Judge of the Federal Court in New South Wales.

The Terms of Reference for the Committee were:

1. Why did WMC in the first instance get into the situation in which it now finds itself? including:
  - (i) Do the circumstances which gave rise to the litigation indicate any failure in WMC's procedures or obvious defects in its organisation?
  - (ii) Was WMC adequately advised of its prospects in the litigation?
  - (iii) Were settlement negotiations properly handled?
  - (iv) Was WMC taken by surprise by CNM's (Chris Middleton's) evidence and if so why?
2. What changes need to be made to make sure a similar situation does not arise again?

The overriding instruction to the Committee was that it should not feel in any way restrained in its enquiries into relevant aspects of the matter.

There were no financial or other constraints; the Committee was to decide how it wished to operate, where it wished to visit, and who it wished to interview. Administrative and secretarial assistance would be provided by WMC and Allen Allen & Hemsley in Sydney. It was hoped that the report would be available in time for the Board meeting during the week commencing 23 August.

Directors were kept advised of the activities of the Committee as the enquiry progressed.

The report was submitted to the Board at a meeting in the morning of 27 August. After lunch non-executive directors met to discuss what consequences, if any, arose out of the report with respect to any executive directors.

The Board met again in the afternoon of 30 August to finalise its decisions and to review a draft letter from me to shareholders, to be released together with Preliminary Final results on 2 September.

### **Exploration Division Concerns**

While the Committee was interviewing people and deliberating, I was on 12 August visited by Hamish Patterson, a geologist acting as Guild Manager for WMC Minerals Geoscientists, on behalf of a number of senior Exploration Division staff. I agreed to submit to the Board a letter from them.

The letter tabled at the Board meeting on 27 August was as initially drafted by the exploration personnel, with just one amendment: in the last sentence the expression '...enact the decisions of the Board' had initially read '...enact the recommendations of the Board'.

The letter was as follows:

'Dear Arvi

EXPLORATION DIVISION AND THE ERNEST HENRY CASE

As a group of Managers and Team Leaders not directly involved with the Ernest Henry case we would like the opportunity to put a submission to the Western Mining Board outlining some current concerns of both geoscientific and support staff within Exploration Division.

We believe that one of WMC's acknowledged strengths is the expertise, enthusiasm and professionalism of its exploration people. It is in the company's interest to maintain a strong exploration team if it is to fulfil its publicly stated strategy to grow primarily through success in exploration and acquisition of resources, and we are conscious of the Board's past support.

While the Division's reputation was earned largely from success through the 1960's and 1970's, there has been some disenchantment with its more recent performance. The Ernest Henry discovery therefore represented a welcome counter to these perceptions and provided a significant boost to Divisional morale. The subsequent loss of the deposit, the publicity and the inference that our other business dealings are suspect has had a devastating effect on the spirit of the entire exploration team. There is, however, a feeling of considerable humility over the result, and a strong commitment to see the Division emerge from the situation with the determination and ability to rebuild its former strength and reputation. We believe that this strengthening and learning from past mistakes will be greatly facilitated by a full disclosure of the relevant events.

The pride and confidence of the Division has sometimes led to arrogance in dealings with other parts of the Corporation or with external parties. We do not believe that deliberately fraudulent or dishonest practices are commonplace within the Division, but maintain that business negotiations are generally conducted in an ethical and professional manner and with due fiduciary responsibility.

Exploration Division recognises that it is accountable for the actions of its members, and will respect and embrace the findings and recommendations of the Burgess Committee. We will neither support nor condone the behaviour of any individual who is shown to have wilfully acted in a fraudulent or illegal manner, or directly contrary to Corporate policy or instruction. Nevertheless, we are deeply concerned that individuals who have acted in good faith may be held responsible for the actions leading to the loss of the Ernest Henry deposit. We believe that this would compound the existing damage to our esteem and be a body blow from which the Division could take years to recover.

We therefore ask, without anticipating the findings of the Committee or subsequent groups, that the Division as a whole be held collectively responsible for its legitimate actions. We will accept and enact the decisions of the Board and welcome the opportunity to revise our procedures where necessary to ensure total compliance with Corporate business standards.

Yours sincerely  
For and on behalf of Exploration Division - Minerals

H.L. Paterson  
Guild Manager - Minerals Geoscientists

This submission has been jointly prepared after consultation and discussion with the following, all of whom sought wider input from the members of their respective teams.' (A list of 16 names follows)

### **The Committee's Report**

The report described in some detail what happened and responded at length to the questions posed by the Terms of Reference. Because Middleton's evidence turned out to be of such crucial importance to the outcome of the court case, I will quote the Committee's views on this.

'At all times prior to entering the witness box Middleton had disclaimed any intention to mislead Savage. He was carefully questioned by the Company's legal advisers as to his account of his dealings with Savage and repeatedly maintained his position that although some of his actions, looked at retrospectively, might be thought to have been misleading, they were not intentionally so. In particular, he maintained that his letter of 3 September 1991 was not intended to mislead Savage into the belief that field based exploration activity had not taken place before that date.

In the evidence he gave on the first two days when was cross-examined he maintained this stance. However, on the third day and towards the end of his evidence he said, inter alia:

"I had made a decision not to disclose, that is correct".

and in answer to a question that it had been dishonest of him to have the communications he did with Savage he replied:

"I think that is correct, yes."

These answers seriously undermined his credibility as a witness.

We should say at once that Middleton is regarded by all who know him as a truthful and honest person. Every person to whom we spoke said that his admissions to the Court were quite inconsistent with everything known about him. He himself has difficulty in explaining why he gave the answers he did. There is some reason to believe that he may have been overborne by his cross-examination and that he failed to make clear in his answers what he intended to convey to the Court. When we asked him what he meant by his answers, he said, in effect, that what he meant to say was that his conduct may have appeared to be dishonest but was, in fact, not dishonest.

Middleton's admissions remain an enigma. However, we feel we should say we have reached the conclusion that he is honest and did not consciously deal dishonestly with Savage.'

The discussion part of the Committee's report concluded:

'We are keenly aware of the publicity which attended the court proceedings and, in particular, Middleton's evidence. We are also aware that, taken at its face value, there was evidence before the court from which an inference could have been drawn that WMC dealt dishonestly with Savage. We were specifically instructed by the Chairman to bring to the Board's attention all relevant matters whether or not they might prove an embarrassment to the Company. We would not have shrunk from drawing attention to any evidence, however unpalatable, of dishonest practices engaged in by Company staff. Whilst it is apparent that there is some laxity in the present case in complying with the requirements of the mining legislation and in failing to inform Savage of the work done on its land, there is no reason to conclude, other than in this instance, that the activities of the Exploration Division are conducted otherwise than in an ethical and satisfactory manner.'

The Committee summarised its findings as follows:

1. The Chairman and the Board were properly informed by management about the Savage affair. They were also properly informed by the Company's external solicitors about the litigation and its possible outcome.



2. There was no conscious dishonesty on the part of WMC staff.
3. Assignment of blame for loss of the opportunity provided by the Ernest Henry discovery is complex. The initial failure was that of the Exploration Division in not obtaining blanket clearance for any pre-existing tenements and in that event not accurately determining the location of the Savage mining lease in question prior to entering into systematic work.

This failure was compounded by the subsequent failure to appreciate the significance of the trespass on the lease area and in not properly informing the Legal Department.

Finally, the failure to advise Savage of the nature of the work carried out on ML 2671 before the option agreement was executed was a serious mistake.

4. Middleton was the senior officer directly involved in the matter. He was misguided in taking decisions without advice but we do not think he intended to act dishonestly. It is clear that his workload at the time was heavy.
5. The negotiations to settle failed in circumstances where it was of crucial importance that they succeed.

Settlement negotiations should have been undertaken immediately the concerns of Savage were known to the Company. As time passed, the matter became significantly more complex and more difficult to settle.

6. There may be some shortcomings in the WMC organisation and internal procedures that need attention.

For example:

- The Exploration Division lacks sufficient commercial and legal expertise
- There is no WMC code of conduct governing the Exploration Division's dealings with third parties
- The organisation seems to lack cohesion in some respects. This and other matters such as teamwork and management style are in need of further continuing work.

7. There are strong negative perceptions of the Company in the investment community. These negative perceptions have been heightened by the loss of the Ernest Henry deposit.

The report was not released to the public because those interviewed had been advised that it would be a confidential document submitted to the Board, but relevant parts of it were quoted in a letter to shareholders.

## **Letter to Shareholders**

The Burgess Report was formally presented by all three members of the enquiry at a Board meeting on 27 August. I had already formulated in my own mind how the Board should react and largely drafted a

letter to shareholders for discussion at this meeting following the presentation of the report. This was done deliberately, to prevent a possible drawn-out argument about what should and should not be said.

A special meeting of the Board for the express purpose to finalise the letter was held on 30 August. As background to this, I wrote a memorandum to the Board which I believe is worth reproducing here:

The letter to shareholders we are considering today is a very important document.

If it is well received, we will be able to concentrate from then on normal operations and on improving the Company's performance. Provided we keep our nose clean and are able to report reasonably good news over the next 2 - 3 years, the Savage experience will, hopefully, become a valuable, even if very expensive, lesson for the future.

If it is not well received, and certainly if we have further bad news, we will be under continuing pressure from critics of all kinds - shareholders and others, including some of our own staff.

We have only one shot at this; we must get it right the first time.

The decisions made and actions taken must be and must be seen to be adequate, while fair. There is no room for shirking issues or fudging them. If we are going to err, it has to be on the side of firmness.

Most importantly, there is no room for blaming anyone else. With the exception of the question of the validity of the Savage lease which was in the end not decided, we were in the wrong.

The best we could hope for from the Court was lenient treatment. As it happened, we finished up in a self-made corner and lost everything. I say this not for the purpose of self-flagellation, but to ensure that we are all clear about what happened.

The penalty may appear to have been excessive, but we can't blame anyone else for it.

It is pointless and counterproductive to try to allocate blame internally. We all, including myself, share the blame. The important thing is that we must get it right now, and - most importantly - from now on.

It is absolutely vital that any news about WMC for the next several years will be positive, at the very least it must not be negative.

We must behave impeccably as a Corporation. Those of us who are in the public eye must avoid controversy and help rebuild the image of a sound, solid, and reliable enterprise.

In normal circumstances I have supported and encouraged executives to speak up on public issues, whether controversial or not. In normal circumstances I continue to think that this is what we should do. We, however, are not in normal circumstances at present. Our first responsibility is to the Company. Until we have repaired the damage to our reputation, we must stand back from controversy. In any case, we do not help the issues by being controversial while our credibility is in question. We can continue to work on issues of importance to us in a quiet manner.

To sum up, these are very critical times for us. How we handle ourselves this week, and over the next several years, will determine whether we can rebuild our reputation and regard what happened as a valuable, if traumatic, lesson, or whether, in the extreme case, shareholders may decide that the Corporation should pass into the hands of a different Board and management.

The second option is, I hope, remote, but by no means impossible.

The purpose of this note is to establish clearly the importance of our deliberations today, and the background to these. I am confident that we will make the right decision.'

The Board made several suggestions to improve the draft presented to them and reached unanimity within a short time. The letter sent to shareholders follows at the end of this section.

Ian Burgess, Hugh Morgan, and I met the press at a conference called after the letter to shareholders had been released on 31 August. The media comment on 1 September was perhaps predictable. Headlines varied from 'WMC humbled by report' in *The Age* to 'WMC disciplines Morgan over Ernest Henry fiasco' in *The Australian* and 'WMC cuts back power of managing director' in the *Financial Review*. Hugh was the favourite target of many commentators under headings such as 'Morgan rapped' and 'Morgan's nose rubbed into the Savage dirt'. It was a very difficult time for Hugh, as is the privilege of the Chief Executive! He carried himself well and with dignity.

I sent a copy of the letter under cover of a personal note to both Chris Middleton and Hamish Patterson, expressing the hope that we would now be able to get back to our proper business. A copy was also sent to all employees.

### **Shareholder Reaction**

The reaction of shareholders varied. I received some 30 letters (out of some 70,000 shareholders); some thought the Board had not gone far enough and others thought that it had gone too far. One shareholder wanted to have a motion at the next Annual General Meeting to rescind the Board's actions. I managed to dissuade him.

The Australian Shareholders' Association, undoubtedly not unmindful of the value of publicity, made a demand through the media that the full text of the *Burgess Report* be made available to shareholders, and that the next Annual Report should include a 'full account of the manner in which WMC made disastrous investments in Canada'. They wrote to me afterwards on 13 September and apologised for not approaching me before going to the press, but said that I had been unavailable.

This demand was one of the agenda items of the first Executive Committee meeting on 16 September. It was decided that ASA be invited to discuss the matter and be advised that

- the 'Burgess Report' was commissioned by the Board to assist it in making decisions
- the Board, not the Committee, reports to shareholders
- demands that internal Company reports be made public will discourage future actions of this kind
- conducting discussions with companies through the media is not helpful to the company and therefore to the shareholders
- it is very much in the interests of WMC shareholders that senior management can devote full attention to the company's affairs, instead of being distracted by continuing controversy over past events
- events in Canada had been reported in Annual Reports and at Annual General Meetings since

1988. There was nothing new to add. In any case, the appeal in Nova Scotia precluded any further statements at this time.

In the meeting with ASA, I also pointed out that persons interviewed by the 'Burgess Committee' had been assured that their comments would be treated confidentially and that making the report public would be in breach of this assurance.

We heard no more from ASA on these matters.

A number of shareholders and a number of Western Australian and Federal politicians wrote to me following a newspaper report that Hugh Morgan had been told to vacate the public arena and prohibited from speaking out, protesting against it. I replied that there was no such prohibition. To put it on record, I wrote a note to Hugh, with copies to directors, which said:

You have not been gagged from commenting on anything relevant to the Company's interests. It is, however, essential that the comments should be in moderate language and not designed to create headlines or controversy. It is also important to comment on issues without attacking **individuals**. My own view has always been that I have enough enemies as it is, without going out of my way to make more.'

While it is not possible to know what the 'silent majority' thought, my assessment was that on the whole the reaction to the Board's actions was neutral to positive, not negative. At the end of financial year 1993-94 there were 69,000 shareholders as against 73,000 a year earlier. The share price in 1993-94 varied from a low of \$4.91 to a high of \$8.46, as against \$3.65 to \$5.87 in the previous year.

### **Henry Bosch Reaction**

In November Henry Bosch, the former Head of the National Companies and Securities Commission, commented at length in the Stock Exchange Journal. As his letter reflects the reaction of many in the market place, it is reproduced in full.

'Parbo letter marks new era of disclosure'  
by Henry Bosch - The Regulator November SXJ 1993

Sir Arvi Parbo's letter of August 31 to the shareholders of Western Mining Corporation provides some fascinating insights into the changes that are occurring in the way big companies are run. Western Mining has been forced to settle a court case brought by Savage Resources Ltd. over the Ernest Henry copper deposits in Queensland. The company faced allegations of misrepresentation, trespass and fraud; it has suffered acute embarrassment, its reputation had been compromised; and the payments it had to make, with its legal costs, probably exceeded \$20 million.

In the aftermath of this humiliation, the board set up a committee of inquiry, chaired by a distinguished non-executive director who had recently joined the company, and also included a retired judge and an outside mining expert. The committee was given complete freedom to inquire and was asked to report frankly on "any weakness in the company's procedures and organisation and to recommend changes". Having received the report, the board took a number of courses of action including the punishment of the executive principally concerned with the Ernest Henry affair, and the three senior managers (including the managing director) who had managerial responsibility for the events. The essence of the committee's findings and recommendations and the decisions of the board were conveyed to shareholders, and to the stock exchange, in a four page letter.

The fact that a thorough investigation was made and that its results were fully disclosed is remarkable. Many greater disasters in other companies have been handled in private in the past; and many boards of directors have been fobbed off with plausible explanations by management. Few, if any, have felt a need to fully disclose their troubles to their shareholders.

### **Signs of a new relationship**

The Western Mining letter illustrates a new relationship between boards and shareholders. No public pressure was brought to bear on the company though one may speculate on what went on behind the scenes: did some of the institutions make clear that their continued support depended on full disclosure, or did the board itself decide that times had changed so much that a positive and public response was necessary? Sir Arvi's brimming thanks to the shareholders who had contacted him perhaps provides an indication. In any event, the lesson is not likely to be missed by other companies. The Western Mining saga has demonstrated clearly that there is a new climate of relations between companies and their owners. It will be much more difficult to keep such embarrassing occurrences private in the future. Sir Arvi's letter emphasised that damage had been done to the good name of the company, and the committee of inquiry stated that it was "keenly aware of the publicity which attended the court proceedings".

It is clear that the board placed great importance on the reputation of the company and it could be seen as having over-reacted in order to clear the company's name. The decision to draft a new code of conduct which will be the "centrepiece of its policies", and which will be sent to all shareholders, seems a surprisingly strong reaction; as does the statement by Mr. Morgan, the managing director, describing his punishment as "humiliating, hurtful and difficult, but it is the right conclusion". Sir Arvi's letter also illustrated some important points about the way the company is governed; it demonstrates starkly that the management of Western Mining is fully accountable to the board. The committee of inquiry was chaired by the newest (hence the most independent) non-executive director, and consisted of no management representation. The board received the report, made its decisions and handed out public rebukes and punishments to management.

### **Driving home the point**

The decision to establish an executive committee of non-executive directors to "review unusual developments and discuss progress in any problem areas" with the chief executive between board meetings drives home the point. The fact that general managers, who seem to have had no direct role in the Ernest Henry affair, were held responsible for the actions of their subordinates further demonstrated the strict nature of the accountability regime. The board's decisions to bring in additional senior executives, and to require that, in future executive directors and general managers must obtain board approval for outside activities, demonstrates that closer management control is being demanded.

The letter states that existing policies and procedures are being urgently reviewed to eliminate any weakness which may exist and additional policies will be formulated if required. It says that policies and procedures will be reviewed at least annually in the future. When the code of conduct is in place "All officers will be required to certify annually in writing that they have behaved in accordance with the code. Any deviations must be reported to the board immediately". Clearly the board is going to exercise an even closer control over the company's affairs.

All this would not be possible if the board were not taking its duties very seriously. Sir Arvi

points out that it held 14 full meetings in 1992/93 as well as working through three specialist committees: audit, compensation and superannuation. This workload may be above average for Australian companies, but it illustrated the direction in which practice is moving.

For some time evidence has been collecting about American shareholders flexing their muscles and of the boards of major US companies insisting that management be accountable to them by publicly dismissing their CEOs. The Western Mining letter is perhaps the clearest case in Australia in which these changes to the pattern of corporate governance has been demonstrated.'

Had there not been further negative publicity, the WMC 'Troubles' may well have been over. Regrettably, there was further controversy about the Lady Bountiful matter in November/December and, much more damaging, over the outcome of the Seabright appeal in Nova Scotia in January 1994.

### **Everybody Not Happy**

While the market and shareholders generally accepted the Board's actions as reasonable in the circumstances, there was unhappiness among at least some members of Exploration Division. The loss of Ernest Henry was a particular shock to ExDiv because the Division had not had a significant discovery for a long time and their morale had been lifted greatly when it occurred.

Their view was that while there may have been shortcomings by exploration staff, the real culprits were the Legal Department, and they had got off scot free. Also, the exploration people concerned did not appear to understand or accept that managers were responsible for what happened in their areas, regardless of whether they had personally done anything wrong or not.

There were two occasions when I received complaints.

Firstly the General Manager Exploration, Dave Harley, called on me and expressed his view that it was really the fault of the lawyers and was concerned that no lawyer had been penalised. I pointed out to him that Hugh Morgan had taken the lion's share of the public blame without having had any personal involvement in events which led up to the ultimate situation, other than in the unsuccessful attempts to settle out of court, and that his responsibility area covered the Legal Department. I don't think I convinced David.

Roy Woodall, Director of Exploration, thoroughly surprised me by writing to me in November, saying that he did not think he should have been held responsible because since 1980 he had acted simply as the scientific adviser and 'tutor, guide, and coach' to the Exploration Division. He had delegated managerial responsibility to the General Manager Australasian Exploration, who had dealt directly with the Director of Finance, General Counsel, and Managing Director. Roy had not been consulted about the option agreement or any legal problems until Savage refused to honour the option agreement, and he therefore felt that he had no responsibility in these matters.

While Roy may himself have decided on a change in his responsibilities, such a change had not been discussed with me, or approved. If it had, Roy's appointment and title would not have remained Director of Exploration. As it was, he could delegate authority but not responsibility.

Roy had earlier surprised me at a Board meeting when he was asked whether it could be possible that our people had trespassed by saying: 'How else can you get an advantage over your competitors?' I like to think that it was said unthinkingly in an effort to protect and support his staff and not because he really believed that trespassing was all right.

I think that it was true generally of exploration activity in Australia at that time that people in the field

were not too concerned about the legalities. The tendency was to do things first and sort them out later. The onset of the litigious society in this area was forcefully brought home to WMC and, I think, to just about any other Australian mining company, by the Ernest Henry case.

I told Roy I would reply to his letter, but later decided that there was no point in doing so when we apparently did not agree on the very basic principle of the Director of Exploration having the final responsibility for everything that happens in the Division. In retrospect, I think it was right not to prolong the controversy.

### **With Hindsight**

Looking back years later, three issues stand out.

1. We were generally not aware of the legal pitfalls in exploration. Ernest Henry put an end to this.
2. Middleton's extraordinary statements under cross examination can be seen in two ways. Either what he and his colleagues had maintained throughout pre-trial in-company investigations was not true and there had been deliberate misrepresentation, or his statements were the result of a combination of browbeating by the cross examiner and mental tiredness at the end of several hours' interrogation. I like to think that it was the latter.

To avoid this in any similar future situations, witnesses inexperienced in the way in which they can be trapped or overwhelmed in the witness stand should be put through a training session, with friendly counsel acting as unfriendly cross examiners.

3. The importance of settling the matter out of court was advised to us by Counsel and agreed by the Board. In retrospect, we should have accepted the initial settlement offer by Savage. Failing that, we did not pursue settlement early enough and energetically and single-mindedly enough after having been warned that there was a serious danger of being found guilty of fraud. This is the issue over which Hugh Morgan can be criticised; it was clearly his responsibility.

It has been suggested that, after MIM Holdings in April 1993 entered into the arrangement to purchase a 51% interest in Ernest Henry, the opportunity to settle no longer existed because under the agreement with MIM Savage was required to pursue legal action to nullify the option agreement with WMC. Colin Wise questions this, pointing out that an agreement signed by WMC on 1 April 1993, consenting to Hunter's sale to MIM, makes it clear that WMC had complete freedom to make decisions concerning the Savage litigation. Colin believes WMC could have settled at any time.

While a non-executive Chairman is not supposed to interfere with management, in retrospect I allocate some blame to myself for not disregarding the proprieties and enquiring more closely into what was happening and why progress was not being made.

4. Companies such as WMC should be very reluctant to get involved in litigation. While it is galling to see an obvious wrong done, the amount of executive time and the attendant publicity can be very costly. Looking at it commercially from the shareholders' point of view, it may be better to keep out of it.

## ***LADY NOT SO BOUNTIFUL***

### **Background**

The Lady Bountiful project is described in Book Two, *THE GOLDEN THREAD, Rewards On The Eastern Goldfields*.

Briefly, in 1984 WMC signed a Joint Venture Agreement with Consolidated Exploration (ConsEx) to acquire a 50% interest in the Lady Bountiful project by paying \$1 million and meeting the following obligations:

- strip the overburden from the opencut to a depth of 15 metres
- establish all the power, air and water services, roads, fences, and on-site buildings necessary for the operation of the opencut and the underground mine
- establish a winder and headframe and sink a shaft to a depth of 250 metres
- provide the shaft with plats, loading pockets, spillage handling facilities and ore passes
- drive access cross-cuts on two levels from the shaft to the projected location of the orebody.

Between 1984 and 1986 exploration defined an economic opencut resource and an underground potential.

Opencut stripping commenced in the first quarter of 1986 and a 100,000 tonnes per annum plant was commissioned in June.

In September 1986 ConsEx Quarterly Report predicted opencut production of 50,000 ounces per annum, rising to 100,000 ounces per annum from 1988 with underground production. In his address to shareholders at the Annual General Meeting in November 1986 the Chairman of ConsEx predicted production of 120,000 ounces per annum and a mine life of 10 - 15 years. This was repeated in the Quarterly Report in December.

WMC in its Gold Booklet forecast production of 25,000 ounces per annum for 1986-87 and noted 'significant underground potential, which is being assessed'.

Late 1986 and in 1987 there were very bullish statements published by brokers, reflecting ConsEx projections.

In December 1986 WMC commissioned Potter Partners and Baillieus to find a purchaser for its interest in Lady Bountiful, subject to a minimum price of \$100 million.

On 1 April 1987 the Board authorised the sale of the Lady Bountiful interest 'if the prices discussed could be obtained'.

In April 1987 a new 350,000 tonnes per annum treatment plant was commissioned. Production continued solely from the opencut.

In May 1987 discussions between Hugh Morgan and Gary Weiss (on behalf of ConsEx) led to the sale of WMC's 50% interest in Lady Bountiful to ConsEx for \$201 million (\$100 million cash and \$101



million in 27 million ConsEx shares) and its 100% interest in Davyhurst for \$35 million, half payable on completion of sale and half 18 months later, subject to ConsEx shareholder approval. WMC would have a 23% interest in ConsEx and would continue to manage Lady Bountiful and also manage the Davyhurst project. Hugh Morgan would join the ConsEx Board. An announcement was made on 26 May.

In June 1987 ConsEx commissioned Ord Minnett to prepare an independent expert's report to determine whether the transaction was fair and reasonable; a copy of the report was sent to WMC. A General Meeting of ConsEx shareholders approved the transaction.

After June WMC had a 23% shareholding in ConsEx. Hugh Morgan became a director of ConsEx. WMC continued as Manager of Lady Bountiful.

In August concerns emerged regarding production grades and there was a collapse of the open pit wall. In October the stock market collapsed.

Decline driving commenced in November.

By mid-1988 underground development had not given results according to expectations.

There was a second failure of the opencut wall in September 1988.

WMC ceased as manager on 31 October 1988.

It is an interesting commentary on the then situation that in December 1988 G R Phillips, Managing Director of ConsEx, wrote to Hugh Morgan alleging unsatisfactory performance of WMC as manager at both Lady Bountiful and Davyhurst and seeking damages. Hugh replied, indignantly rejecting the allegations in detail. Phillips wrote back conceding that his accusations were unjustified, withdrawing the statements, apologising, and hoping to re-establish a good relationship.

At the Annual General Meeting of ConsEx in November 1990 the Chairman, Geoffrey Banks, the Managing Director, Duncan Purcell, and Hugh Morgan resigned as directors of ConsEx. They were replaced by five new directors, including representatives of Austmin led by Guido Staltari which had been negotiating for management control for some time.

In June 1992 the Lady Bountiful and Davyhurst operations were closed and the Lady Bountiful treatment plant was sold.

### **The Court Case**

In July 1992 ConsEx issued a writ against Ord Minnett, who had advised them at the time of the sale, for \$175 million, the estimated difference between the purchase price and the fair value of the asset.

Ord Minnett in turn issued in April 1993 third party notices against three WMC companies and former ConsEx directors Banks, Purcell, and Weiss in relation to alleged representations made by WMC and allegedly used in Ord Minnett's report.

In May 1993 Weiss issued fourth party notice against three WMC companies.

An article by Tim Treadgold in Business Review Weekly on 1 October 1993 was headed 'Lady Bountiful turns nasty'. Part of the story reads:

'Western Mining Corporation could have been excused in June 1987 for believing it had pulled off one of the deals of the decade. It had just sold for \$201 million a half-share in WA's Lady Bountiful gold mine that three years earlier (had) been worth about \$1 million. The sale was part of a \$530-million strategic exit from surplus gold assets at a time of strong gold prices and high-speed deal making in the hectic months leading to the sharemarket crash of October 1987.'

In the same issue, the editor commented:

'In broking circles, it has been said that WMC is carrying two "dead skunks": the failure of its foray into Canadian gold mining and the loss of its interest in the Ernest Henry copper deposit to Savage River. WMC would not want Lady Bountiful to become a third.'

WMC was not a party to the initial case, but a number of past and present WMC staff including Hugh Morgan, were likely to be called as witnesses.

On 26 October 1993 Ian Maher of WMC Legal Department submitted a comprehensive 'Strictly Privileged and Confidential' memorandum to me, reviewing the situation and the options available to WMC.

The memorandum suggested that, in a court hearing, a general picture could emerge including the following:

'On-site management (Bartlett) and Perth management (Tastula) were insufficiently active in halting the flow of or correcting information they knew to be misleading, and which they knew ConsEx to be disseminating. Bartlett may have made statements to ConsEx which supported the public statements it was making. When input/verification was sought from them by Ords in the course of preparing its report, they both supported forecasts which they now concede did not reflect their own views and were not within the range of reasonableness and were false. ....

We consider it highly likely that Mr Morgan will be found to have known in January 1987 (or possibly earlier) that ConsEx was misinforming the market and nevertheless sought to sell WMC's interest on the basis of market capitalisation when he knew or ought to have known that the market was misinformed even though he may not have made that connection in his own mind.'

Maher advised that the memorandum may be distributed to directors except to Hugh Morgan, and that he should not participate in the Board's deliberations on the matter as he would be a key WMC witness and may find himself in a conflict between his duty as a director and as a witness.

The recommendation was that settlement be explored to a maximum contribution by WMC of \$20 million. Outside Counsel concurred. The Board agreed that a settlement should be sought.

## **The Court Case**

The matter went to trial in the Victorian Supreme Court on 5 November 1993. A number of witnesses were heard, including some WMC staff.

## **The Settlement**

After protracted negotiations while the court case proceeded, in which S J C (Colin) Wise took the lead

for WMC, a joint announcement by ConsEx, Ord Minnett and WMC on 15 December 1993 advised that the matter had been settled out of Court.

Ord Minnett and WMC agreed to pay Consolidated Exploration \$20 million, borne equally. Neither Ord Minnett nor WMC admitted any liability and all parties paid their own costs. WMC also agreed to cancel for no consideration 56.2 million shares it held in Consolidated Exploration. It was agreed that all aspects of the settlement would be confidential.

The share market reacted favourably, WMC shares increasing 6 cents after the announcement.

### **The Weiss Threat**

Colin Wise recalls that two days after the settlement was announced there were suggestions that Dr Gary Weiss may commence litigation claiming restitution of his losses as a ConsEx shareholder. Colin says much time was spent in 1994 with external counsel in Melbourne and Sydney, preparing correspondence with the lawyers acting for Weiss. In the event the litigation did not proceed. We have not searched the archives to determine when and on what basis the matter was closed - my recollection is that it was just quietly dropped.

### **In Retrospect**

Had the ConsEx court case proceeded further it could have led to the resignation of Hugh Morgan and, possibly, the Board. This would have been particularly likely after the very damaging Appeal Court decision in the Seabright case in January 1994.

While I am confident that no member of WMC staff deliberately gave misleading information to anyone, the executives concerned clearly did not understand the dangers to which they were exposed.

There was also the question of how to react to ConsEx making statements with which WMC did not agree. In retrospect, WMC should have informed ConsEx in writing of the differences of views.

Colin Wise and his legal colleagues take credit for having rescued WMC from a potentially very serious situation.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART C. CORPORATE ACTIVITIES***

**VOLUME SIX**

# ***CORPORATE ACTIVITIES***

## **VOLUME SIX**

### **CONTENTS**

	<b>Page</b>
<b>Corporate Governance</b>	<b>545</b>
<b>Corporate Environment</b>	<b>563</b>
<b>Corporate Philosophy</b>	<b>577</b>
<b>Corporate Alliances</b>	<b>585</b>
<b>Global Issues</b>	<b>595</b>
<b>Management</b>	<b>605</b>
<b>Risk Management</b>	<b>641</b>
<b>Employee Relations</b>	<b>647</b>

# **CORPORATE GOVERNANCE**

## **The Broad Principles**

### **Background**

On 23 June 1999 I gave an address on Corporate Governance to a Corporate Secretaries Conference in Melbourne. A slightly edited version of the address is reproduced here as an introduction to this topic.

#### **The Joint Stock Company**

The joint stock company, which is the main form of industrial and business organisation today, is one of the results of the Industrial Revolution which began in the 18th century. Before that time the owners of businesses were also the managers; those who would invest in someone else's business were few in numbers and usually either relatives, or friends who knew the owner-managers well personally.

The greatly increased capital requirements arising from industrialisation resulted in the need to sell 'shares' in businesses to investors who had no links to the management, other than through a Board of Directors which became the final authority in the corporation and accepted the final responsibility to the shareholders. The British Parliament passed the Joint Stock Companies Act in 1844.

Initially the shareholders were a relatively few wealthy individuals, but today the ownership of enterprises is widespread. Most members of the community today are shareholders in corporations, either directly in their own right or indirectly through pension or superannuation funds, or investment trusts.

#### **The Issue**

For more than a decade now, corporate governance - the way in which corporations are directed and controlled and the relationships between Boards, management, and shareholders - has been a major topic for discussion and debate. This debate received a substantial boost by the collapse of a number of large corporations, in Australia and elsewhere, when the worldwide economic boom and period of high inflation in the 1980s ended. The interest has been maintained and amplified since then by a number of influences.

There has been the increasing pressure for all institutions - governments, public bodies, and commercial organisations - to become more transparent and accountable in their activities.

There has been the realisation that the way corporations are governed should not only protect the interests of shareholders but can and should contribute to better performance by the corporations, and that the effectiveness and performance of Boards of Directors should be subject to similar critical assessment as the effectiveness and performance of management.

Investors, particularly large institutional investors, who now have the responsibility for very large amounts of capital, have become active in critically reviewing the performance of corporations, including their governance. Global capital flows have led investors to becoming interested in different methods of corporate governance in different countries and have encouraged a review and comparison of these methods.

Finally, once organisations, consultants, academics, advisers, and the well known management experts - financial journalists - become involved in an issue, the activity tends to become fashionable and gain a momentum of its own. It is common human experience, and easy to understand, that people will want to be involved in and to continue studying and debating popular issues. The process becomes more important than the outcome. There is, of course, no reason for those who are making a good living out of it to discourage this.

There is certainly an element of this in the corporate governance debate, but probably no more than in dealing with many other contemporary issues.

### **Aspects of Corporate Governance**

Corporate governance issues can be divided into two broad categories; those designed to protect the interests and assets of the shareholders, which may be called the regulatory issues, and those designed to improve the performance of the corporation, the performance issues. There are, of course, some areas where the two categories overlap.

The regulatory aspect, quite naturally, receives the most attention from governments and from consultants and advisers with a legalistic bent.

The performance aspect deals with the effectiveness of the Board in encouraging, inspiring, and causing the corporation to adopt successful business strategies and to perform at its best.

Important as the regulatory aspect is, there is today increasing agreement that the performance aspect is the main corporate governance issue.

### **National vs. Global Considerations**

Initially corporate governance issues were dealt with mainly on a national level. Much of the effort in the Anglo-American countries, where the corporate governance debate began and where it is still most advanced, has been to analyse the practices in their own countries for the purpose of formulating the best practices. Numerous business organisations in USA, Great Britain, and Australia have conducted studies and published recommended corporate governance guidelines.

Nevertheless, the international aspect has been there also. In the United States, for example, there was not long ago much interest in studying the reasons why the German and Japanese companies at that time appeared to have a competitive advantage over American companies. Differences in corporate governance and management practices were thought to be a part of the answer. Today the situation is reversed; many American corporations are performing better than those in other countries and the soul searching is in the opposite direction.

Subsequently the interest in practices in other countries became broader, encouraged by the involvement of global investors in corporate governance issues. A number of institutional investors have published their own recommended guidelines. There is now increasing interest in whether it is possible to develop global standards for corporate governance and accounting.

### **Recent Developments**

The Asian financial crisis which began in Thailand in mid-1997 and spread to some other parts of the world beyond Asia, intensified the activity related to corporate governance and the global

approach. Since then a number of intergovernmental organisations have undertaken studies and have published, or are working on, reports.

The OECD Business Sector Advisory Group issued a report on Corporate Governance in April, 1998. The G-7 Meeting in May 1998 requested the OECD, in cooperation with the World Bank and other intergovernmental bodies, to draft principles of sound corporate governance and structure by May 1999. They also called on the International Accounting Standards Committee to finalise a proposal for internationally agreed accounting standards.

The OECD responded by forming an Ad-Hoc Task Force with officials from its 29 member nations, as well as representatives from the private sector, labour unions, and the international financial institutions to develop a non-binding statement of core principles. Their report was submitted, and endorsed by the OECD Ministers last month (May 1999). The next step is to encourage implementation by nations and by the private sector.

The OECD and the World Bank have agreed to work together, and are creating a Global Corporate Governance Forum for the sharing of experiences and ideas. They will encourage private sector involvement through an advisory group. The OECD is also working closely with APEC, and the Asia Development Bank. The IMF is using its lending as an opportunity to strengthen corporate governance practices.

In the private sector, Egon Zehnder International established in 1998 a Global Corporate Governance Advisory Board, consisting of 20 senior business people, representing 16 countries. The Board, which is as far as I know unique in the private sector, is conducting a comprehensive survey of worldwide corporate governance practices and has commenced a dialogue with institutional investors.

### **Broad Findings**

While the process of assessing and evaluating corporate governance practices is continuing, some generally agreed broad findings have emerged.

Current corporate governance practices vary throughout the world. There are some fundamental differences, such as for example the unitary Board system in Anglo-American practice and the two-tier Board system in many European countries. There are also some unresolved inconsistencies in some of these systems. In Germany, for example, German employees have a legal right to equal representation with shareholders' representatives on the Supervisory Board, but the non-German employees of these companies, which are rapidly growing in numbers because of the globalisation of the companies, have no such right.

There is no one country or existing system which can serve as the model for the rest of the world. Methods of corporate governance must be relevant to a particular country and its business organisations, and must evolve over time in the light of a particular country's culture and experience, in accordance with the needs and values of that particular community.

It is, however, highly relevant that for corporations in a particular country to be able to attract capital from international sources they must increasingly meet certain basic governance requirements which are considered essential by large institutional investors. As global capital flows become more and more important to business everywhere, there will be increasing pressure for corporate governance systems in various countries to converge.



## **Implications For Australia**

Australia has been amongst the front runners in getting its corporate governance house in order. Our system combines the better features of both the British and the American practices. We have nothing to fear from the debate and the activity now taking place around the world; on the contrary, we are well ahead of many other countries.

Perhaps the main problem we have is that some of the discussion which is taking place is not well informed. One of the reasons for this is that some of the commentators appear to have no practical experience in managing or governance and are looking for 'rights' and 'wrongs' in a situation where there are no such clear-cut answers. There is no one perfect model for corporate governance which, once it has been discovered and installed, will ensure perfection.

As an example, the general Australian practice today is for companies to have a non-executive Chairman of the Board in addition to a Chief Executive. In the United States, in what is arguably the most successful business community in the world, the practice is overwhelmingly for the Chief Executive also to be the Chairman. Clearly, both practices work well in their respective environments. It cannot be said that one is right and the other is wrong.

There is much attention devoted to directors being independent from the management. While the principle is sound, some of the definitions being advanced, particularly by legally minded people, tend in the direction where the only directors qualifying as independent would be those who do not know anything about the business.

There is also confusion about the respective roles of the Board and the management. The Board can not and should not manage the corporation; directors are there to direct and the managers are there to manage. The Board's role is to set the tone of the organisation, to review, modify if necessary, and approve the company's broad strategy from time to time, to approve the business plan and monitor the company's performance against it, to monitor the performance of the management and, most importantly, the Chief Executive, and to supervise management's actions generally. If the Board is dissatisfied with the management, the remedy is not for the Board to start managing the corporation, but to replace the management.

However, while the Board ultimately sits in judgement over the management, this does not mean that the Board and the management are or should be in conflict. This may appear strange in view of our system of governance generally where it is the perceived duty for the Opposition in Parliament to oppose the Government, and of our legal system where the two parties before a court are antagonists; one 'wins' and the other 'loses'. Commentators with legal and political backgrounds therefore sometimes find it difficult to visualise that corporate governance could be different. The best corporate performance, however, can only be achieved by the Board and the management working together towards common goals.

## **Conclusion**

It bears repeating that, while the regulatory aspects of corporate governance are important, the key issue is improving the performance of the corporation through good governance. One should not be distracted from this ultimate objective by various technical and minor matters. It also bears repeating that there is no single model for good governance. In this area, as in all human activity, perceptions keep changing, sometimes for no more reason than fashion changes. There is no merit whatsoever in just following what may be fashionable at the moment; every corporation must decide what is best for it in its particular circumstances.

Whatever the reasons for the interest in corporate governance, the reality is that governance is an issue which no corporation today can ignore. Every corporation must satisfy itself and its various publics that it is governed in an appropriate manner.

## **Subsequent Trends**

In June 2000 Stan Wallis, Chairman of Coles Myer, Amcor, and AMP and a company director of long experience, arrived at much the same conclusions in an address at the Centre for Corporate Public Affairs. He pointed out, among other things, that the model generally preferred by corporate governance activists of an independent Chairman, a majority of non-executive directors, and 8-10 Board meetings a year has not produced superior results to the American practice of a very powerful CEO/Chairman and 4-6 meetings a year. As he put it, 'there is little evidence that best practice corporate governance delivers "best practice" outcomes for shareholders'.

Wallis was also concerned that Boards may focus on process, to the detriment of content. 'Business progress has always been about taking risk and you can never make big moves forward and eliminate risk by excessive reliance on governance and due process.' He also agreed with my point that, instead of regarding Boards and management as being in conflict, Boards need to 'work with management and help guide management so that the right decisions are made'. He and others have questioned the legalistic mindset of concentrating on the 'independence' of the Board and suggested that executive directors assist the Board to contribute to company strategy, as against a largely monitoring role.

## **WMC Corporate Governance**

### **Composition Of The Board**

(See also Book Three, *Appendix II*, GHI-WMC-10 *Directors of the Company*, and GHI-WMC-11 *Alternate Directors*)

Corporate governance was not given conscious thought in WMC until the late 1980s.

From the inception of the Corporation in 1933 Sir Lindesay Clark had a strong influence in WMC. The founder of the Company, W S (William Sydney) Robinson, was the Managing Director from 1933 to 1937, while Sir Lindesay was the Technical Managing Director. 'WS' as he was called did not hold a formal office in WMC after 1937 and there was no Managing Director (complementary to Technical Managing Director) until Sir Lindesay was appointed Chairman and Managing Director in 1952.

Sir Lindesay retired as Managing Director in 1962 when William M (Bill) Morgan was appointed to that position. It was, however, never very clear what the respective duties of the Chairman and the Managing Director were and Sir Lindesay continued to exert a dominating influence on the Board and the Company until after my appointment as Managing Director in 1971. He then gradually withdrew from active participation in the Company's affairs until he retired as Chairman in 1974.

The non-executive directors of WMC had been Sir Lindesay's colleagues on other Boards, members of the Collins House group. This was normal practice in those days. Executive directors or management were rarely questioned by the outside directors.

When I became the Chairman in October 1974 and continued as the Managing Director, there were six directors, three non-executives and three executives: myself, L C (Brodie) Brodie-Hall as Executive Director - WA, and H O (Hugh) Clark as Director of Administration. Sir Lindesay remained a director until 1978, but was very careful not to interfere with my Chairmanship in his last four years on the Board. The other non-executive directors were Sir Wilfred Brookes and Sir James Forrest. The Articles

of Association limited the number of directors to ten. S K (Kevin) Larsen was Company Secretary.

The Board met once a month, except in January, for half a day. There were no Board committees. The remuneration of the Chairman and the executive directors was set by the non-executive directors meeting informally once a year. By agreement with the Aluminum Company of America, a WMC nominee was the Chairman of Alcoa of Australia. Initially this had been Sir Lindesay; in 1974 it was Sir James Forrest.

The first appointment of a director outside this circle was Sir Kenneth Townsing in September 1975. It was felt that Western Australia was of such importance to WMC that there should be a prominent non-executive Western Australian director. Sir Kenneth had been the head of the Western Australian Treasury (Under-Treasurer) and was well known to Brodie-Hall. He was a tough-minded, but fair public servant who had been a close adviser to a number of State Premiers. Brodie had not always been successful in his dealings with him, but respected him and recommended him for the Board. Ken was probably the first outside director who at times would be critical of the management and ask searching questions.

I had always felt that the most senior executives of the company should also be directors and in 1976 both K F (Keith) Parry, who had succeeded Brodie as the senior executive in Western Australia, and H M (Hugh) Morgan, who had joined us from North Broken Hill Ltd, were appointed, in July and August respectively. These two appointments meant that executive directors were now in the majority on the Board - the nine directors now included five executive directors - but this was not an issue at the time, or for a long time afterwards.

In all my time on the various Boards in Australia, USA, and Germany I never encountered a situation where a vote was taken at the Board table. While I agree with the current view that non-executive directors should be in a majority, this is not because of voting power but to ensure that outside views are adequately represented and that the Board meeting does not become in effect a management meeting. Some people hold the view that the only executive member of the Board should be the Chief Executive, but I do not agree with this. It means that the non-executive directors are virtually denied close contact with the other most senior executives, and being a member of the Board is helpful to the executives in their dealings with people outside the company.

The balance moved further in favour of executives in June 1978 when Roy Woodall joined the Board. I succeeded Sir James, who retired, as Chairman of Alcoa of Australia. There were now only three non-executives - Sir Lindesay Clark and Sir Wilfred Brookes, who had both been directors for a long time, and Sir Kenneth Townsing. It must be true that there were inadequate outside views at the Board table at that time.

The retirement in September 1978 of Sir Lindesay and appointment of J L (John) Greig (recommended by Sir Wilfred Brookes) in November 1978 did not change the numerical balance but John, with a background in the insurance industry, did bring a different experience to the Board table.

The balance improved in December 1979 when Sir Geoffrey Badger was appointed. I had got to know Sir Geoffrey through my membership of the Australian Science and Technology Council, of which he was the Chairman. Apart from his eminent scientific background in organic chemistry, Sir Geoffrey was a highly respected citizen of South Australia and the Olympic Dam project in South Australia was of increasing importance to the Company. There were now three directors from Western Australia and two from South Australia (Sir Geoffrey and Roy Woodall).

In 1980-81 there was no change in Board membership.

With the retirement of Hugh Clark in November 1981 and Sir Wilfred in April 1982 the executives remained in the majority (5 to 3).

Sir Harold Knight joined the Board in September 1982, just before Sir Laurence Brodie-Hall retired. In March 1983 D M (Don) Morley joined the Board. Executives to non-executives were 5:4. Sir Harold had been the Governor of the Reserve Bank and he certainly added strength and diversity to the Board. Don Morley's appointment as Director of Finance concluded a good representation of executives on the Board - apart from myself, Keith Parry (operations and head man in WA), Hugh Morgan (called Executive Director, but in effect in charge of non-operating matters outside Western Australia), Roy Woodall (exploration) and Don Morley (finance). Kevin Larsen retired, and G S (Grahme) Dixon became Company Secretary in March 1983,

There were no further changes until September 1984 when Dame Leonie Kramer joined the Board.

Dame Leonie was the first woman to become a director of WMC. Professor of Australian Literature at Sydney University and subsequently Chancellor, she certainly brought a completely fresh, even if a somewhat diffident view to the Board. Dame Leonie was also very active in various organisations outside the University, including the Chairmanship of the Australian Broadcasting Commission for a time.

Keith Parry died suddenly in May 1986 and soon after that I relinquished the Managing Directorship and became Executive Chairman. Hugh Morgan was appointed Managing Director and the composition of the Board had now changed to five non-executive and four executive directors.

In August 1987 D J (David) Brydon joined the Board, bringing the number of directors to 10 and the non-executives up to 6 directors. David had spent much of his working life with the 3M Company in USA and in Brazil and brought manufacturing and international experience to the Board. His appointment was the beginning of a conscious effort to attract non-executive directors of diverse backgrounds relevant to the Company.

In October 1987 Sir Kenneth Townsing and John Greig retired and were replaced by two appointments from Western Australia - J C (John) Anderson and D H (Don) Aitken. John Anderson, a lawyer by training, had been a stockbroker and Don Aitken, a civil engineer, had been Commissioner of Main Roads in WA.

In November 1988 Sir Geoffrey Badger retired and was replaced by another South Australian resident, D H (Don) Laidlaw. Don was the Chairman of a number of companies, including Adelaide Brighton Cement, on the Board of the Australian Stock Exchange, and a past member of the Legislative Council of South Australia. The numbers remained at six non-executives and four executives. In August 1988 for the first time Audit and Compensation Committees were formed, chaired by Sir Harold Knight and David Brydon respectively. Two non-executive directors, John Anderson and Don Laidlaw, joined the Superannuation Committee and John Anderson became Chairman.

Grahme Dixon left WMC in December 1989 and F S (Fred) Grimwade succeeded him as Secretary.

There was no change in Board membership or the Committees until December 1990 when I retired as Executive Chairman. I was asked by the Board to continue as non-executive Chairman.

After K R (Keith) Hulley was appointed Director of Operations in February 1991 and Sir Harold Knight retired in November 1991 there were six non-executives and four executives. John Anderson became the Chairman of the Audit Committee.

The maximum number of directors was increased from 10 to 12 at the Annual General Meeting in 1992.

I G R (Ian) Burgess joined the Board in July 1993, making 11 directors (seven non-executive and four executive). Ian was a retired Chief Executive of CSR Ltd and Chairman of the AMP Society, as well as a number of other companies. He had been invited to join the Board and accepted before the Ernest Henry matter attracted much adverse publicity on 21 July 1993. To his credit, he agreed to join the Board even in the middle of this and, coming from the outside, agreed to chair the committee appointed by the Board to enquire into the matter.

A Committee of Enquiry comprising three people, headed by Ian Burgess and including B P (Bruce) Webb and Hon Trevor Morling QC, was set up on 28 July 1993 to investigate the Ernest Henry matter and to report to the Board. It reported on 27 August. (Refer Part B, *The Troubles*.)

Following consideration by the Board, as Chairman I sent a detailed letter to all shareholders on 31 August 1993, explaining what happened and outlining measures taken by the Board. Among these was the establishment of an Executive Committee of three outside directors, chaired by the Chairman, (later renamed Chairman's Committee) to advise the Managing Director between Board meetings.

Also in August 1993 the Superannuation Committee ceased to exist and two non-executive directors joined the Board of Westminer Superannuation Fund Pty Ltd, the Trustee of the Westminer Superannuation Fund.

In November 1995 Don Laidlaw retired and in July 1996 Professor A E (Adrienne) Clarke and M J (John) Phillips joined the Board, increasing the number to 12 (nine non-executives and three executives). Adrienne was Professor of Botany at Melbourne University and Chairman of CSIRO as well as a director of a number of companies. She was later also appointed Lieutenant Governor of Victoria. John had retired as the Deputy Governor of the Reserve Bank and was the Chairman and director of a number of companies. Both had been members of the Alcoa of Australia Board before it was restructured following the formation of Alcoa World Alumina and Chemicals. I was impressed with them and proposed that they be invited to join the WMC Board.

Roy Woodall retired as Director of Exploration in November 1995 but remained on the Board as a non-executive director.

A R (Alan) Knights became Company Secretary on the resignation of Fred Grimwade on 1 January 1996.

In keeping with the trend to give more information to shareholders, the Corporate Governance section in the 1995-96 Annual Report was expanded to include details of remuneration of directors and their attendance at meetings.

Keith Hulley resigned in September 1996 to return to the USA and Dame Leonie Kramer retired in November; I E (Ian) Webber and P J (Peter) Knight were appointed in mid-1997, leaving the numbers at 12 (ten non-executive and two executive). Ian Webber was a South Australian, thus replacing Don Laidlaw in that sense. He had been the Managing Director of Chrysler in Australia and was the Chairman and director of a number of companies. Peter Knight was about to retire as Managing Director of Clough Limited, a very successful Western Australian based engineering and construction company with activities in Australia and South-East Asia.

In November 1997 Don Aitken retired and in February 1999 R A G (Roger) Vines was appointed to the Board, leaving the total number and the ratio of non-executives to executives unchanged. Roger was about to retire as Chairman and Managing Director of Alcoa of Australia Limited after a long and

distinguished career with Alcoa. He brought unique experience to the Board.

At the Annual General Meeting in April 1999 John Anderson and I retired, reducing the number of directors to 10 (eight non-executive, two executive). Ian Burgess was appointed Chairman.

Looking back, the non-executive directors have been in the majority since 1986 which is about the time this became accepted in Australia as desirable in corporate governance. This was also the time when WMC acquired its first woman director. The Company thus moved with the times.

Since 1974 there had been a deliberate policy to have at least two Western Australian residents as directors and, since Olympic Dam became a major project, similarly two South Australians. The remaining non-executive directors were appointed without regard to place of residence, because of their personal reputation and in an effort to have directors of diverse expertise and backgrounds. It so happened that they were all from either Melbourne or Sydney because these are the two main centres of business and industry in Australia.

### **The Functioning of the Board**

In Group Historical Information Collection (GHI) there are detailed analyses by Gilbert Ralph of WMC Board meetings (WMC - 14), directors and their attendance (WMC - 13), Company Secretaries and the Minutes (WMC - 75). The following offers more general comments.

#### **General Procedure**

I believe that during the period under review WMC always had a good Board. The relationships between Board and management were excellent and constructive. Whenever non-executive directors had concerns, these were expressed and resolved, frequently outside the meeting but at times also at meetings. As far as I am aware, no director felt that they did not get sufficient information or that their views or questions were not given due attention.

The Board was always kept fully informed of all developments, particularly adverse developments. It is absolutely essential for a good working relationship between the Board and management that directors know that nothing is held back from them. I observed this meticulously during my time as Managing Director, and Hugh Morgan did not need any encouragement to do so when he succeeded me.

Some judgement has to be exercised as to how soon the Board should be told of possible new developments or ventures which may be under consideration or discussion, but which may not proceed. If addressed too early, it may confuse rather than inform outside directors. The golden rule is: if in doubt, tell them.

I encouraged directors to bring up matters outside the meetings, either with me or with Hugh Morgan, because there was rarely time to discuss unscheduled matters at length during meetings. It was in my view much better to give management adequate notice so that issues could be looked into and an in-depth reply given. Should the matter be of general interest to the Board, the outcome could then be reported to the next meeting.

As a matter of policy established in Sir Lindesay's time and continued thereafter, Board Minutes recorded the topics discussed and the decisions, but not the arguments which may have been canvassed nor the views of individual directors. In later years copies of any reports or slide presentations to the Board were attached to the minutes.

In all the time I was a member of the WMC Board, a vote was never taken. There were never any

factions of the Board which I understand occurs elsewhere. Issues were discussed until a general consensus was reached. Some directors may have been more in favour of a given decision than others, but none would be strongly against a decision reached. If it was clear that a consensus could not be reached, the matter would be held over for further consideration. Any contentious matters would be discussed with individual directors informally by the Managing Director or myself before the meeting and efforts made to meet any concerns. At the Board table, as in management, the golden rule is: never spring surprises on your colleagues. The whole Board always stood behind any decisions made.

As a matter of interest, a similar procedure was followed by all the Boards of which I was a member over some 30 years, in Australia, USA, and Germany. I do not ever recall a formal vote where some directors would have voted in favour and others against, with the majority view prevailing.

In October 1997 there was an incident which caused me to write to all directors.

Roy Woodall had been to Kambalda and, in discussion with exploration people, had been critical of some of the activities. The question was: what should directors do when asked by staff to comment on management's plans.

My response was as follows:

If the director agrees with what is being done or is proposed to do, there is no problem in saying so.

If the director disagrees, it would be acceptable to ask searching questions about the aspects which are of concern. It would be, however, out of order to tell the staff that the director disagrees with what is being done. The correct procedure would be to take the matter up with the Managing Director, who would then consider it and cause appropriate action to be taken. If pressed by staff to express a view, the answer should be just that: that it would be inappropriate to do so because it would amount to interference with management, and that the director would discuss his or her views with the Managing Director.

The guiding principle is that non-executive directors must never interfere with line management. The appropriate person to raise any concerns or doubts with is the Managing Director. If the Board disagrees with the Managing Director, the remedy is not to start managing the company but to replace him (or her).'

### **Reporting to the Board**

The timely availability of information for Board meetings was an issue in March 1971, and again in June 1974 when I wrote to 'All Concerned', insisting that information which served as background to decision-making had to be in directors' hands at least three clear working days before the Board meeting and should therefore reach Melbourne Office several days earlier.

In January 1973 I noted that 'The Board is given a comprehensive and excellent financial report but information regarding operational and general matters is presented verbally in a somewhat haphazard manner', and asked Doug Stewart, then General Manager (WA), to consider how a brief monthly operations and general summary could be prepared without spending a lot of senior people's time on it.

The outcome was that my technical assistant (then Peter Webster) started to compile a summary. This was later combined with the financial report into a Report to Directors.

In May 1976 it was noted that additional information was sent out in a non-systematic manner and the

Report to Directors was organised into three sections:

- (a) for information
- (b) for discussion
- (c) for decision.

The 'Matters for Decision' section from 1983 onwards stipulated the person responsible for implementing the decision.

The Report was to be in the hands of directors no later than on the Wednesday before the meeting on the following Monday. A Supplementary Report, containing matters which had arisen since the despatch of the main Report, organised into the same categories and to be kept to the minimum, could be issued on the Friday before the meeting. Matters not in either report would not be dealt with, except in an emergency.

Any matters for confirmation or ratification would be listed on the agenda.

For any major matters requiring decision I as Managing Director had, since assuming office, submitted a comprehensive analysis and made a recommendation. Other executive directors present reported orally on matters in their responsibility areas. Later, senior executives were invited to make presentations to the Board on specific issues and I usually invited them to stay for the rest of the meeting. This eventually (about 1985) developed into the practice of all General Managers and some other senior executives being invited to attend Board meetings, whether or not they made presentations. It helped with keeping senior executives informed, but made the meetings crowded and perhaps unnecessarily distracted the executives from their duties. Starting in January 1987 the meetings were divided into two parts - a 'special' section, usually at the beginning of the meeting, when only directors would attend to discuss particularly confidential matters and the 'general' section with executives present.

In 1994 this practice was discontinued. Executives would make presentations and then leave the meeting.

In 1991 a written Managing Directors' Report was introduced, which included reports by Director of Finance and Administration, Director of Operations, Director of Exploration, and selected General Managers. I reported orally on Alcoa of Australia. From 1992 an annual Environmental Budget and Occupational Health and Safety Budget were submitted, and an Environmental Report was presented quarterly.

### **Visits to Operations**

All directors had a standing invitation to visit Operations whenever convenient. This invitation was taken up reasonably frequently by some directors and not at all by others. Starting in 1991 the whole Board visited Operations twice a year and regularly held Board meetings away from Melbourne. (There had been irregular meetings in Perth prior to this - a meeting was held in Belmont Office as early as 1979.)

Directors had free access to senior management and, to my knowledge, never abused this privilege. Beginning in the early 1990s, in addition to the Managing Director's report which was a standard agenda item, two or three aspects of the Company's activities would be reviewed in depth at every Board meeting by the senior executive in charge of that activity. Copies of all reports and presentations to the Board were filed with other Board papers.



The executive directors, senior executives making presentations, and meetings with executives during Board visits helped to give non-executive directors a good feel for the Company's management.

### **Meetings Overseas**

On two occasions the whole Board travelled overseas - in August 1987 to Chile when the purchase of El Indio Mine was being considered, followed by a Board meeting in San Francisco, and in June 1992 to Poland when a part purchase of the Polish copper concern KGHM was contemplated, with an informal Board meeting in Warsaw. Individual directors or small groups of directors visited during 1990 the Greenhill Petroleum Corporation's activities in USA, the Operations in Canada, Fiji and Brazil, and Phelps Dodge operations in Arizona and New Mexico (see also *Corporate Alliances*).

### **Meetings of Non-Executive Directors**

In the 1980s the practice of non-executive directors meeting on occasions without executive directors present was initiated. In the 1990s this became a permanent feature, with two such meetings per year. In 1998 the non-executive directors thought that it would be useful to have the Managing Director present for at least a part of the meeting, and this practice was introduced just before I retired.

During the very difficult period 1988-1994 when the Seabright Resources, Ernest Henry, and Lady Bountiful issues exposed the Company to severe criticism, the outside directors were naturally very concerned and subject to the inevitable snide comments. The meetings of non-executive directors enabled them to discuss the issues freely and defused any potential problems.

Some directors were more sensitive to public criticism than others and I know that some would have liked to resign if this could have been done without fanning the fires, but in the end all were supportive. This greatly contributed to keeping things under control until the adverse publicity faded away. Ian Burgess joined the Board just when the Ernest Henry issue blew up, with full knowledge of this. In spite of the adverse media comment, we did not subsequently have any difficulty in recruiting additional non-executive directors.

### **Duration and Frequency of Meetings**

The Board meetings were initially of a scant half a day's duration but soon filled the full half day and then the whole day. Later, meetings for a day and a half became necessary on occasions.

Special meetings were called as necessary between the regular monthly meetings. During the Ernest Henry crisis 20 Board meetings were held in 1993-94 instead of the regular 11 meetings.

### **Corporate Reviews**

From time to time the Board would hold a broad review of the Company's activities. The agenda of such a meeting on 6 June 1985 was typical:

- A. Summary Of Earlier Discussions
  - 1. Recent Company Performance
  - 2. Industry Outlook
  - 3. Possible Options for the Future

- B. Present WMC Position
  - 1. Skills
  - 2. Existing Assets
  - 3. Projects Under Development
  - 4. Exploration
  - 5. Financial Situation
- C. Policy for the Future
  - 1. Basic Philosophy
  - 2. Existing Business
  - 3. New Developments
  - 4. Exploration
  - 5. Financial Objectives

In the 1990s Hugh Morgan began to make annual 'strategy presentations', with generally half a day set aside for such discussions.

In September 1995 Morgan Stanley presented to management a Strategic Review of WMC.

In 1998 the Strategic Review by the Board included the following headings:

- 1. State of the Nation
- 2. Outlook For The Minerals Industry
- 3. Outlook for WMC
- 4. Present Strategic Plan
- 5. Mechanism For Reviewing Strategy In The Future

These discussions were useful in ensuring all directors were fully informed of the management's thinking and able to question various assumptions or strategies. At times the management would be asked to prepare a more detailed report on particular issues. However, I do not recall any major changes made by the Board.

### **Review of the Board**

In June 1993 the Board began to review annually its own functioning and procedures. Directors were encouraged to attend seminars or conferences dealing with corporate governance. A checklist of issues was developed where the responses were:

- a. Already applies
- b. Discussed but not adopted
- c. Remains for further discussion and decision.

A typical list considered in February 1997, with my subsequent handwritten comments, is appended to this section.

### **Chairman and Managing Director vs. Non-Executive Chairman and Separate Managing Director**

The posts of Chairman of the Board and Managing Director were separated from the inception of the Company in 1933 until 1952, although for much of the period Sir Lindesay was called the Technical

Managing Director. In that year Sir Lindesay became Chairman and Managing Director and held both posts until 1962, when he relinquished the Managing Directorship in favour of W M (Bill) Morgan.

In May 1971 Bill became ill and I was appointed Deputy Managing Director. My oral instructions from Bill were to 'act as the Managing Director'.

In November 1971 Bill Morgan retired because of ill health and I was appointed Managing Director while Sir Lindesay continued as Chairman.

Sir Lindesay retired in 1974 and I became Chairman and Managing Director until 1986, when I relinquished the Managing Directorship in favour of Hugh Morgan and continued as Executive Chairman.

In 1990 I retired as an executive and became non-executive Chairman. In April 1999 I retired as Chairman and was succeeded by Ian Burgess.

Throughout the first 66 years of the Company the two posts were therefore held by one person for 22 years and by separate persons for 44 years. The choice was determined by the circumstances at the time and, as far as I am aware, both practices worked well.

The inherited British practice of designating the chief executive officer Managing Director served the Company well until the 1990s. The increasing globalisation of business gradually created a problem because North American practice does not use the term 'Managing Director'. Also, the increasing trend to give people grander and grander sounding titles meant that officers in subordinate positions, particularly in Japan and in the financial industry worldwide, began to be called Managing Directors; a company may have a dozen or more officers with this title. Consequently the title Chief Executive or Chief Executive Officer began to be used increasingly, although there was no formal provision for it.

When the Articles of Association (now called the 'Constitution') of WMC were updated at the Annual General Meeting in 1999, opportunity was taken to stipulate that the Board may appoint a Managing Director or a number of Managing Directors, one of whom would be the Chief Executive Officer.

## **Board Committees**

It had been a long standing WMC practice to appoint Committees of two or more directors to make formal decisions on specific matters which had been previously discussed by the whole Board, but where for some reason the formal final decision could not be made at that time.

Board Standing Committees to consider and monitor various aspects of the Company's activities were first introduced in WMC in August 1988 and have continued since then.

While many companies have a large number of committees, WMC during the period under review only felt the need for three: the Audit Committee, the Compensation Committee, and the Superannuation Committee. In 1993-94 the latter became Westminer Superannuation Pty Ltd, the trustee of the Superannuation Fund. The Audit and Compensation Committee Terms of Reference in 1993-94 are appended to this section.

For a short time in 1993-94 there was also an Executive Committee (later renamed Chairman's Committee), initiated as a part of the measures responding to the Earnest Henry crisis. This Committee was discontinued when the need passed.

No need was felt for a Nominations Committee, Environment Committee, a Board Affairs Committee,

or other similar Committees because all these matters were dealt with by the Board as a whole.

### **Directors' Questionnaire**

As the close knit personal relationships and trust which characterised the Company until well into the 1980s gradually changed into more formal relationships between people less well known to each other and with few or no personal ties. The business world in Australia became more legalistic and litigious and, as business practices changed generally, the Board started to require formal statements from senior executives before approving and signing Annual Accounts. A Directors' Questionnaire in which management answered a large number of questions about the conduct of the business was introduced in the early 1990s.

### **Share Trading**

Until the 1970s there was no legal or moral limitation in Australia on directors and senior executives trading in the company's shares.

New South Wales brought in legislation prohibiting insider trading and attempts were made to introduce Federal legislation in 1974. It was not, however, until the *Securities Industry Act 1980* that such legislation was enacted federally.

'Insider' trading became an offence. Companies, including WMC, developed rules as to when directors and executives could buy or sell the Company's shares. These were reviewed in 1993.

The general rule was that employees or entities they control should not engage in short term trading of the Company's shares and should not buy or sell shares when they had information which was not generally available and which, if disclosed, was likely to materially affect the market price of the shares.

Directors, executive staff and senior officers were generally free to buy or sell during 30 days following the release of the Company's half yearly and annual results and the Annual General Meeting, but should consult the Chairman or the Managing Director in advance of such transactions. The exceptions were Staff and Executive share issues, purchase of director's qualification shares, and sales by an employee leaving the Company. At all other times directors and executive staff needed to seek Board approval prior to a transaction. Other senior staff were to exercise caution and, when in doubt, consult their immediate superior.

The rules were reviewed and amended as time went on, but the principle remained.

### **Litigation**

Lawsuits against directors related to the discharge of their duties, which had long been a part of corporate life in USA but virtually unheard of in Australia, gradually started to occur in the 1980s. The best known of these was the AWA court case in the early 1990s.

Class actions, common in USA, were not acceptable in the Australian legal system until 1976 when they became available under Part IV A of the Federal Court of Australia Act 1976 and in Victoria under Part 4 A of the *Supreme Court Act 1986*.

Allens Arthur Robinsons said in 2002 that:

'Class actions have become an established part of the Australian legal system. Indeed, Australia is now the most likely jurisdiction outside North America in which a corporation will face a

class action. While class actions have traditionally been commenced in respect of product liability matters, experienced plaintiff law firms are now using this procedure in many different areas. We have already seen claims commenced against major public utilities, financial institutions and government agencies.

Class actions have been brought in relation to products as diverse as weight loss drugs, aircraft fuel, heart pacemakers and oysters. More recently, we have seen class action-based shareholder litigation - something previously unheard of in Australia.'

The first successful class action was by Slater and Gordon in the contaminated peanut butter case in June 1997.

The attendant adverse publicity and the cost and executive time and energy spent on defence put strong pressure on the defendants to settle out of court, even if faultless and eventually likely to be vindicated in court.

This added to the pressure on directors and executives to continuously make sure that their back was covered. If challenged, it became vital to be able to show that all possible advice had been obtained and care had been taken. The result was great growth in the use of consultants, advisers, paperwork and bureaucracy.

### **Directors' Remuneration**

Executive directors did not receive separate remuneration for being directors; their total remuneration was assumed to include this. Any executive directors who were also directors of outside companies turned their directors' fees from these sources over to WMC, a practice which was followed without exception until Hugh Morgan succeeded me as a director of Alcoa in Pittsburgh in 1998. Because Paul O'Neill wanted Alcoa to encourage Alcoa directors to own shares in Alcoa, the Remuneration Committee decided that Hugh was allowed to retain his Alcoa fees and invest these in Alcoa shares. (When I joined the Alcoa board in 1978, I purchased some Alcoa shares at that time).

Non-executive directors' fees were adjusted at infrequent intervals (approximately every three years) in accordance with what was considered appropriate against industry standards and within the overall total approved by shareholders at Annual General Meetings.

On 4 April 1975 non-executive directors' fees were increased to \$7000 per annum and an additional fee of \$10,000 per annum was approved for Sir Lindesay Clark while he was the Chairman of the Company.

At the Annual General Meeting in 1980 the total fees for directors were increased from \$50,000 to \$100,000 per annum. Further increases took place in 1987 to \$250,000, in 1989 to \$500,000, in 1995 to \$700,000 and in 1999 to \$950,000.

In addition to the basic fee for non-executive directors, additional amounts were paid for membership on Board committees. The fee for the Chairman of WMC was between 2 and 3 times the non-executive director's fee, and the Chairmen of committees were paid twice the committee members' fees. The total paid, however, had to be within the total amount approved by shareholders.

There was always criticism when shareholders were asked to approve an increase in the total amount authorised for directors' fees. On occasion the critics were incensed because they thought that it was proposed to pay every director the total amount for which authority was sought! No amount of explanation seemed to satisfy those opposed, and in the end the Board had to grin and bear it. On all occasions the increase sought was approved.

## Reporting to Shareholders

Reporting to shareholders consisted of quarterly, half-yearly, and annual reports, copies of which were sent to all shareholders during most of the period. Any developments of sufficient interest were reported to the Stock Exchanges between the regular reports as they occurred.

The Chairman's speeches at annual meetings of all Group companies - Western Mining, Central Norseman, Gold Mines of Kalgoorlie, Great Western and Kalgoorlie Southern - were published as a booklet from 1958 until 1970. From 1961 onwards the booklet included attractive illustrations by Frank Norton on the cover and inside. Together with the Annual Reports, these were the only two shareholder information documents issued by the Company.

In keeping with changing corporate practice, in 1986 the Annual Report was divided into two parts, the first consisting of the descriptive report and a summary of the financial results, the second part containing the detailed accounts. The first was sent to all shareholders, the second was available on request. In October 1998 shareholders were given the opportunity to elect to receive a detailed financial supplement in addition to the Concise Report. From October 1999 shareholders were given the option to receive reports and notices by email.

The responsibility for issuing the reports rested with the Company Secretary, who would do so on behalf of the Board. The first draft of the parts dealing with operations would be supplied by the appropriate operating managers to Melbourne Office, where a nominated person would amalgamate these into a draft for inclusion in the Report. While I was the General Manager and then Managing Director, I took a personal interest in reporting to shareholders and participated in the preparation and approval of the final text. My Technical Assistants also were very much involved.

From 1980 until 1993 Gilbert Ralph, initially Assistant Manager Corporate Affairs and subsequently Manager Corporate Publications had the single-handed responsibility for the drafting, design, and printing of the Annual Report. He has recorded his experiences (and mistakes) in candid detail in *Annual Reports, Chairman's Addresses and Other Publications* GHI-WMC-107.

Gilbert's operational background in Western Australia fitted him well for the compilation of the operational details and his interest in history and publications was very appropriate. During that period the Annual Report was prepared in a most economical and unbureaucratic manner. In every year during the 13 years he was in charge the WMC report won Australia-wide Annual Report Awards, successively bronze, silver, and gold, as well as the inaugural 'Report of the Year' award in 1992 (see GHI-WMC-88).

Since that time the compilation and publication of the Annual Report has involved a committee of many people, a reflection of the different culture introduced into WMC in the 1990s. As people changed, the previous dependence on individuals was replaced by systems and the sharing of responsibility. This had advantages, but also made the processes and decision-making much slower and introduced bureaucracy. My own involvement after that was limited to reading and commenting on the final draft and on drafting my own Chairman's Statement. In 1996 Hugh Morgan and I decided that the Chairman's and Managing Director's statements were better combined into a joint statement, which was then adopted.

In keeping with changing times the Annual Report, which until then had been a factual descriptive document, increasingly included what I would describe advertising content, designed to 'sell' the Company. Inevitably, simple and direct language was replaced partly by jargon and the layout and lavish use of colour reflected current fashions. These must have been appropriate changes because the Report continued to attract awards.

In 1994-95 the Annual Report included for the first time a section on Corporate Governance. The way the Board functioned and its duties were explained as follows:

The WMC Board sets the framework for the Company's long term success, considering its strategic plan annually, approving its performance targets, assessing business risks, establishing policy for hedging price risk, monitoring compliance with this policy, and providing overall policy guidance. The Board monitors environmental and safety performance on a continuing basis and has systems in place to review company controls and to ensure compliance with laws and ethical behaviour. It also reviews the performance of the Chief Executive and other senior executives. All employees and contractors are required to act in accordance with WMC's Code of Conduct, a copy of which is available upon request from the Company Secretary.

The WMC Board has, at present, eleven directors comprising a non-executive Chairman, six non-executive directors and four executive directors. Full day Board meetings are held monthly except in January, with most meetings being held in Melbourne. Two Board meetings a year are held in conjunction with visits by directors to the Company's operations. In 1994-95 the Board met in Perth and K algoorlie.

Each year the Board as a whole reviews its composition, the geographic spread of directors, Board committee membership, the performance of directors, and the appointment of new directors. Directors can seek independent legal advice at the Company's expense in the furtherance of their duties. Non-executive directors are not appointed for a fixed term but are subject to re-election by rotation and retire by agreement at the age of 72.'

Directors' shareholdings and attendance at meetings began to be reported at the same time.

The remuneration of executive directors and the fees of non-executive directors began to be reported in 1996, ahead of the formal requirement for doing so in Australia. The disclosure of this information was helpful in showing that the WMC remuneration of directors was moderate, compared with some other companies. On the other hand, reporting of executive remuneration created pressures to 'keep up with the Joneses'.

### **The View in 1996**

In December 1996 I gave a talk to WMC staff in Melbourne Office, summarising my views on corporate governance. A copy of the speaking notes is appended to this section.

### **Subsequent Events**

In 2001 and 2002 a number of spectacular corporate crashes in USA and Australia showed that all the activity and improvements regarding corporate governance in the 1990s had not been able to avoid these. In some cases the reason appeared to be the practice of issuing large numbers of share options to senior executives, who resorted to questionable and perhaps fraudulent practices to uphold and increase the share price. There also appeared to be an element of gullibility and lack of realism in decision-making.

These regrettable events underlined that no technical, legal, or organisational devices could guarantee good governance. The deciding factors in the end are the values, integrity, ability, and realism of the Board and the senior executives.

## **CORPORATE ENVIRONMENT**

### **From 1933 to the 1960s**

#### **The 'Australian Settlement'**

After Federation in 1901 there occurred a bipartisan national consensus which Paul Kelly in *The End of Certainty* calls the Australian Settlement. Kelly summarises this as faith in government authority, belief in egalitarianism, judicial centralised wage fixation, protection of industry and jobs, dependence on a great power (first Britain, then America) for security and finance, and White Australia. 'Its bedrock ideology was protection; its solution Fortress Australia, guaranteed as part of an impregnable Empire spanning the globe.'

These basic concepts were adopted by Labor, Liberal and Country, (later National) Parties for nearly 80 years.

#### **The Minerals Industry**

Minerals developments had been vital to Australia since the 1840s when copper finds saved South Australia from bankruptcy and made it, by the middle of that century, the most prosperous of the Australian colonies. The discoveries of gold successively in New South Wales, Victoria, Queensland, Northern Territory and Western Australia, silver-lead in Broken Hill, and tin in Tasmania provided the impetus for economic and population growth until the early 1900s.

There followed a relatively quiet period until the discovery of Mt Isa in 1923, which did not become a financial success until some 25 years later. During the Great Depression in the 1930s, the resurgence of gold mining, particularly in Western Australia, provided much needed employment and income for many.

Until the early 1960s Australia had balance of payments problems, which limited the availability of foreign exchange and the rate of improvement in living standards. There was a persistent drive for increasing income from exports. The minerals produced were mostly sold overseas and new minerals projects were therefore strongly encouraged. There was also strong support for developments in remote areas, where minerals projects mostly occurred.

The public understood and appreciated the benefits from minerals developments, which in turn led to the establishment of manufacturing and service industries. There was wholehearted government and community support and encouragement for the industry and for economic development generally. The Department of National Development in Canberra was one of the key departments.

#### **The Minerals Boom**

Major new minerals discoveries in the late 1950s and early 1960s coincided with a period of strong post-war economic growth in Europe, USA, and Japan. In particular, the rapid growth of Japanese industry and the resulting demand for minerals enabled the large new discoveries in Australia to be brought into production.

Within a few years large new world scale industries were established: iron ore, coking coal, alumina and aluminium, nickel, mineral sands, oil and gas, and so on. With the exception of oil, the output of these was almost entirely for export and Australia became firmly established as a major supplier of



minerals, energy and refined metals to the world, ranking as the largest or second largest exporter of many of these. Minerals and energy have since then accounted for around 40% of Australia's export income and continue to do so.

The great minerals developments attracted large investments, created large additional export income, and for the first time removed the balance of payments constraints from Australia. There was overfull employment, substantial current account surpluses, and an appreciation of the Australian dollar. Australia was lifted to a new level of prosperity.

This prosperity created its own problems.

### **The Problems of Prosperity**

In December 1972 there was the first change of Federal Government in Canberra in 23 years. Gough Whitlam, who became the Labor Prime Minister, had little interest in or understanding of economics. In the words of Paul Kelly in *The End of Certainty*, 'he assumed that economic growth was a given ..... Whitlam embodied the 1960s grandest delusion - that continuous prosperity was Australia's destiny and that politics was about the distribution of wealth, not its creation'. I had an example of this in May 1973.

At that time it was the practice for the Government to invite representatives of major economic organisations to meet with the Prime Minister and various economic ministers for pre-budget consultations. As the Chairman of the Trade Development Council (the name of which had been changed from Export Development Council) I led a small group of Council members to the consultations in May 1973. Whitlam came in, grabbed a chair, turned it around with the back towards us, straddled it, and announced: 'Say what you have to say - not that it will make any difference!'

With Jim Cairns, a left wing ideologist as Treasurer, there was no one influential enough to modify this attitude. Cairns was followed by the honest but ineffectual Frank Crean and then the rationalist Bill Hayden, but the latter came into the picture too late to make a difference.

At the time the Whitlam Government was elected, there was concern that the very strong current account following the large minerals developments in the 1960s coming into production was driving the Australian exchange rate too high for the rest of the economy to be competitive - the *Gregory Thesis* expressed by Professor Gregory at the Australian National University. The exchange rate reached its all time high of A\$1.49 to US\$1 in 1974. I remember provoking my American friends by asking whether they meant American dollars or real money.

In this new atmosphere the long standing government and community support for the minerals industry and economic development generally changed to virtual hostility. This is described in the chapter on *Government Relations*.

Whitlam was very successful in overcoming the problem of too strong an economy. Assisted by the quadrupling of the oil price in the early 1970s and a massive wages explosion in 1974, by the time he was dismissed by the Governor-General in November 1975 the economy was back to its familiar concern about the balance of payments and the current account. The exchange rate had dropped to A\$1.26 to US\$1.

(Remarkably, in a television programme in October 2002 to mark 50 years since he entered parliament, Whitlam claimed that he was a better economic manager than his successors Bob Hawke and Paul Keating. He pointed out that unemployment, interest rates and the budget deficit were all lower in his time. He forgot to mention that inflation was much higher, unemployment doubled, interest rates shot up, and the budget went from surplus to deficit at the end of his Prime Ministership. There was the

wages explosion and a sudden 15% spending jump in 1974-75 as the Government tried to spend its way out of recession.)

### **Image of the Industry**

In April 1974 extracts from a report *The Contribution of the Minerals Industry to Australian Welfare* by Sydney financial journalist Tom Fitzgerald, commissioned by the Minister of Minerals and Energy R F X Connor and designed to show the industry in as bad a light as possible, were publicised in the media. Concentrating on taxation, Fitzgerald managed to convey the impression that the industry was guilty of some sort of a racket while all the industry had done was to make full use of the benefits available to it, many introduced by Labor governments. A skilful exercise in character assassination, it had a disastrous effect on the industry's image with the public.

The industry, already under attack by the extreme environmentalists, was completely unprepared to counter this. The full report, said to have taken seven months to prepare, was not made available, probably deliberately so that the arguments could not be countered in detail and considered in context. It did not help that the industry organisation, the Australian Mining Industry Council (AMIC), was dominated by at least partly foreign owned companies at a time when foreign ownership, also, was attacked by the Government.

L C (Brodie) Brodie-Hall and I were concerned and gave a lot of thought to this. WMC generally had good press, although there was some criticism from analysts as the nickel boom subsided in early 1971 and our results did not meet their earlier very optimistic predictions. Our Australianness was an advantage, although the poor image of the industry did, naturally, also to some extent rub off on us.

Conscious that the important issue was to have sympathetic press, we retained a Perth journalist, John McIlwraith, to advise us on the presentation of the Annual Report and on presenting our case to the public generally. We also asked him to tell us in confidence what, as a journalist, he saw as the deficiencies of AMIC. His response was:

'I think it may be summed up by saying that little is ever heard from it and what is said is available far too slowly.'

We passed his comments and our own suggestions on to the Council.

During the subsequent thirty years or so the industry has become better at putting its case, but has never regained the unanimous public support it enjoyed before Tom Fitzgerald and R F X Connor.

### **Economic Rationalism**

#### **The Golden Age**

The broad features of the world economic order after World War II were agreed at Bretton Woods, New Hampshire, in 1944 (see *Global Issues*). These set the general framework for the high economic growth and secure employment - the 'Golden Age' - in the developed market economies for the next thirty years. In broad terms the aim was full employment and government action was seen as necessary to supplement the functioning of the markets to achieve this - 'social liberalism'.

#### **An Alternative View**

An alternative philosophy, initially associated with Friedrich von Hayek of the London School of Economics who was later joined by Milton Friedman of the University of Chicago, held that

governments should not intervene in markets; they always fail to act in the public interest. Individuals naturally and rationally act in their self-interest; political choices by governments should be replaced by market choices by individuals. In business organisations individuals within firms are in a similar relationship to each other as buyers and sellers in a market.

### **The Changing Order**

In 1971 President Nixon abandoned US support for fixed currency exchange rates, one of the fundamental elements of the international order established at Bretton Woods. This led to removal of exchange controls and to national economies being increasingly influenced by the global financial market.

The emergence of what may be called 'global capitalism' was initiated by the OPEC oil price increases in the 1970s. The large financial surpluses of the oil producing countries - 'petrodollars' - were recycled by the Western commercial banks to finance the large deficits of the oil importing countries. 'Eurodollars' were invented and global capital movements became established.

The world recession in 1974-75 was characterised by 'stagflation' - unprecedented simultaneous high rates of inflation and unemployment.

Further development of international financial markets was given a boost by Margaret Thatcher and Ronald Reagan reducing the involvement of governments in the economy and replacing it by the market mechanism - 'economic rationalism' - in the 1980s. After a recession in the early 1980s the global economy enjoyed practically uninterrupted expansion until the late 1990s and international capital markets became truly global.

The break-up of the Soviet Union in the second half of the 1980s discredited communism and socialism as alternatives to capitalism and the market mechanism became virtually universally accepted. The market mechanism, however, cannot be applied to all facets of human society and there remained a gap in guiding philosophy which some observers (not just distant intellectuals but also market operators such as George Soros) felt was leading to a 'crisis of capitalism'.

### **In Australia**

The first instance of the application of economic rationalism in Australia was by the Whitlam Labor Government, one of the first actions of which was to reduce tariff protection to industry by 25%. The rationalist aspect of this may be described as an unintended consequence because it was driven by ideology. The 1975 Hayden budget has been said to have displayed the influence of Friedman's 'monetarism'. None of this could be, however, attributed to the Prime Minister, Gough Whitlam who, whatever his merits in other areas, was an economic illiterate.

Von Hayek and Friedman both visited Australia in the mid-1970s, hosted by the then Prime Minister Malcolm Fraser. While also a known fan of rationalist writers such as Ayn Rand, Fraser, however, did not apply rationalist measures during his tenure.

Bold in his public statements, Fraser was very timid in taking political risks. I recall discussing a particular issue with him in his office in Parliament House. After listening very carefully, he looked up and said: 'And how many votes would this cost?' Nothing was done. The massive wages blowout in 1981 and 1982 and the consequent recession led to Fraser applying Keynesian measures of budgetary expansion prior to the 1983 election in a vain effort to retain office.

When Bob Hawke won office in 1983, he and Treasurer Paul Keating recognised that their tenure in

government depended on the prosperity of the economy. Both were believers in economic competition and market forces, tempered by reform sanctioned by the consensus process and collaboration with the trade unions through ACTU. They introduced economic rationalism to Australia. It was a major change in Australian policy tradition and in effect in the Australian way of life. This was partly a trend of the time. A similar change occurred in other countries governed by left of centre parties: in New Zealand, France, Italy, Spain, even Sweden.

An early piece of political theatre by the Hawke Government was the Economic Summit in April 1983, in which I participated as one of 18 individually invited businessmen. While it did not have any tangible outcome, it was unique in creating the impression of a consensus between government, unions, and business.

Also in 1983 the Hawke Labor Government floated the Australian dollar. Following the collapse of the Bretton Woods system of fixed exchange rates in 1971 the Australian currency had been tied to the pound sterling, then to the US dollar, then to a basket of currencies. From late 1970s Australia's exchange rate was set by four senior officials from the Reserve Bank, the Treasury, Department of Finance, and the Prime Minister's Department. This 'managed' system became unmanageable during 1983 as the funds flow increased substantially. Finally the forward rate was floated on 28 October 1983 and a full float was announced on 9 December 1983.

The Business Council of Australia, of which I was then President, had strongly supported it. John Ralph, the Chairman of the Council's Economic Committee, had supported exchange rate reforms in a news statement on 16 November and the full float in a telex sent to the Prime Minister and the Treasurer on the afternoon of 9 December. After the telex arrived Ross Garnaut, economic adviser to the PM, rang the Executive Director of the Council, Geoff Allen, and said both Hawke and Keating had been pleased to receive it. It was subsequently suggested that the float announcement had been planned for just before Christmas but the Council's support had brought it forward.

The Government also removed most controls over financial markets, and placed limits on the Public Service. This was the beginning of what has become known as globalism in Australia.

Interest rate ceilings were removed in 1984 and 1985 and foreign bank entry to Australia was approved in 1985. In 1988 the Hawke Government announced large cuts in tariff protection for industry, at the same time committing itself to cutting costs of services provided by public infrastructure, budget surpluses, restraint of union claims, and understanding of the need for higher profits. In the process the Labor party supporters changed from the traditional working class to what Paul Kelly calls a 'new class' - teachers, social workers, university lecturers, journalists, reformist lawyers, environmentalists, civil servants and union officials - products of liberal education, affluence and the women's movement. This 'new class' was skilled at promoting its own interests in the name of the common interest.

The change in economic thinking was not limited to the Federal Labor Government; in 1988 a Liberal-National Coalition Government in New South Wales headed by Nick Greiner was elected on an explicit economic rationalist platform.

In the second half of the 1980s there occurred in Australia, in spite of high interest rates (business rates 20%, floating home rate 17%), one of the strongest investment, consumption, and share market booms in the country's history. It was partly caused by a strong surge in commodity prices in 1987 to 1989 following the 1985-86 downturn (the 'banana republic' crisis), and continued in spite of the greatest sharemarket crash since the 1930s in 1987. Financial deregulation led to excessive credit expansion. The \$A began to appreciate sharply. The boom led to some spectacular corporate crashes and a recession in the early 1990s.

New policy directions were formulated by special Premiers' Conferences convened by Bob Hawke in Brisbane in 1990 and Sydney in 1991. A permanent central bureaucracy was provided by re-naming the Industries Assistance Commission (established in 1989 as a successor to the Tariff Board) the Industry Commission. (It was subsequently re-named again: the Productivity Commission).

The Brisbane Conference endorsed reform of Government Trading Enterprises (GTE), the concepts of commercialisation and corporatisation of such enterprises, and launched an Industry Commission-led enquiry into the feasibility of establishing performance criteria for GTE's. The Sydney Conference agreed on an interconnected south-eastern Australian electricity grid, the establishment of a genuine Australian common market, the introduction of a national GTE-monitoring regime, and a review of a National Competition Policy.

Following Paul Keating becoming the Prime Minister in December 1991, the Premiers' Conferences were formed into a Council of Australian Governments (COAG) meetings. In Canberra in 1992 COAG agreed to a review of reforming the national water systems and commissioned a review of National Competition Policy by Fred Hilmer, which was adopted in 1995. The Australian Competition and Consumer Commission (ACCC) was established to monitor national competition and a National Competition Council was formed to police the process of corporatising and commercialising GTEs.

By mid-1990s the Australian Settlement had been superseded by three competing trends of thought. What Paul Kelly calls the 'sentimental traditionalists', typified by Malcolm Fraser but also supported by people as diverse as Bob Santamaria, virtually the entire ALP left and sections of the ALP right, sections of the manufacturing industry and powerful trade unions, the literary establishment and the 'new class' of teachers and public servants, wanted mainly a re-shaping of the ideas of the past. The free market purists, represented by Dr John Hewson, aspired to apply market ideas further and faster. The re-fashioned ALP, represented by Paul Keating, sought a synthesis between market orientation and a revived role for the government.

The Coalition Government, elected in 1996 and headed by John Howard, continued with rationalist economic policies and achieved in 1999 the incredible feat of being re-elected on a platform of introducing a Goods and Services Tax (GST), the issue which had led the coalition under John Hewson to lose the 'unlosable' 1993 election to Paul Keating.

On the world scale the move towards economic rationalism led to 'globalisation'. The world economy and financial markets became global; product markets were relatively open in spite of some remaining protection; huge deregulated labor markets operated in America and Asia/Pacific; increasing freedom to travel and information and communications technology were making national borders less important. There was increasingly worldwide competition for goods and services. Not everyone was happy with this, partly because of natural resistance to change and partly for other reasons.

There were at times violent demonstrations against globalisation; many activist groups used the opportunity to join in the protests. A number of these groups had lost support for their own causes and saw this as an opportunity to maintain their rage. There were remarkable allies in this activity - such as labour unions and some industrialists, both of which saw globalisation as attacking their protected positions.

On a less politicised level, many people were genuinely concerned about the demise of their cherished values. The 1980s were dubbed the 'age of greed' and Manning Clark pronounced that the then current generation of Australians was the first to believe in nothing at all. John Cain, Premier of Victoria in the 1980s, put it this way in his memoirs, *John Cain's Years*:

'When I grew up, Australia was envied by many nations for its stability, innate decency, and

concern for the underdog. Despite the rhetoric there was consensus across the political parties about a mixed economy, a welfare state, and a reasonable level of wages for all. We lived within tariff walls protecting local industries that most times provided high, if not full, employment. We wanted governments to intervene and regulate the economy, to promote growth, and smooth some of the peaks and troughs. We looked after the less fortunate with a needs-based social security net. We were proud of many public enterprises that provided infrastructure in our vast continent, driven by social and national considerations, not profit. There were differences about the incidence of tax, the levels of its progression, the places in which the public pound, and later dollar, were spent, but the fundamentals were pretty stable most of this century. We were not a classless society, but nearer to it than most. So, too, wealth distribution was more even than in most societies.'

John Cain also expressed the concern of many about the excesses in the 1980s:

'Some of us still wait for an explanation as to how the "rational market" got so confused between takeover merchants and paper-shufflers driven by greed on the one hand and legitimate pursuit of self-interest in the market-place on the other. Individual rational economic behaviour became collectively irrational.'

### **Corporate Responsibility**

In the late 1990s the concept of corporate ethics and corporate responsibility (or corporate social responsibility) became a topical issue. The phrases corporate citizenship, social responsibility, enlightened self-interest, corporate community activity, stakeholder relations, and the 'triple bottom line' (financial, social and environmental) soon became a part of business jargon. Consultants, academic researchers, discussion and advisory groups and others, sensing a fertile new field of endeavour, quickly proliferated.

The concept was not new; the phrase 'good corporate citizen' had been introduced as early as 1932 by the American commentator E Merrick Dodd. Subsequently, Milton Friedman argued that the social responsibility of business was simply to increase its profits. In the last decades of the century the corporate excesses of the 1980s, the emergence of an increasingly litigious society, the establishment of various Centres and organisations to study and pursue these topics, and the increasingly questioning attitudes of groups in the community made corporate ethics and responsibility a widely discussed subject.

In January 1973 the Confederation of British Industry published the Watkinson Report *A New Look at the Responsibilities of the British Public Company*. It observed that, while the legal responsibility of companies was to act in the best interests of the shareholders, companies 'must recognise that they have functions, duties and moral obligations that go beyond the immediate pursuit of profit and the requirements of the law'. I have no argument with this assessment; ensuring that all those affected by the company's activities believe that the company is behaving responsibly is, in fact, acting in the best interests of shareholders. The argument can only be about how far a company should go in meeting the often conflicting wishes of the various parties.

Any substantial company involvement outside its immediate field of activity has to be transparent, based on well reasoned grounds, adequately monitored and accounted for, disclosed and well explained to shareholders.

The concept of 'licence to operate', introduced into the debate in the late 1990s, was that corporations exist only because the laws under which they operate gave them a *licence*. As the globalisation of business enabled corporations to grow larger and much more powerful than when these laws were first

enacted, their responsibilities also had to increase.

Opinion polls at the end of 1999 showed that in Australia 88% of respondents wanted companies to contribute to broader societal goals in addition to making a profit, paying taxes, employing people, and obeying all laws. The Australian Prime Minister made a speech urging a 'Community Business Partnership'.

The cynical would say that it is not surprising that governments would want to pass some of their responsibilities to someone else and that people, asked whether they want someone else to contribute more to projects which might benefit them would, of course, say 'yes'. This latter view must be qualified by the fact that share ownership in Australia is among the highest in the world and that presumably those holding shares would realise that they can't have it both ways.

Those critical of the concept point out that business is not a citizen in the sense that an individual is. The role of business, they say, is both far more important and far more constrained than that of either the citizen or of the government.

It can be, and is, argued that a public demonstration by the corporations of their support for community projects is in fact a good strategy for ensuring high profitability. A reputation for 'community mindedness' can be argued to attract customers and high-quality staff, maintain consumer confidence, and minimise regulation. Corporations 'do well by doing good'. At the purely pragmatic level, community involvement by corporations can be seen as in effect a device to keep people and non-government organisations critical of business and/or their particular activities off their backs. It can be seen as another cost of doing business in the contemporary world.

However, there is also a view that the ever present extremists are using the concept of corporate social responsibility for political purposes, in effect to re-make capitalism. David Henderson has analysed this in detail in his book *Misguided Virtue: False Notions of Corporate Social Responsibility*.

## **The Sustainability Index**

Inherent in the concept of social responsibility is that companies must take a long-term view of the effect of their activities, as against maximising profits in the short term. This is a very difficult issue because many investment fund and institutions rate their managers and set the managers' remuneration on the basis of short-term, even quarterly, profit performance.

In an effort to reconcile these conflicting requirements, in the US the Dow Jones Sustainability Group Index (DJSI) has been developed to guide investors. It evaluates a company's performance in five areas:

- Innovation: investing in product and service innovation to use financial, natural, and social resources efficiently, effectively, and economically over the long term
- Governance: setting the highest standards of corporate governance, including management quality and responsibility, organisational capability, and corporate culture
- Shareholders: sound financial returns, long-term economic growth, long-term productivity increases, improved global competitiveness, and contributions to intellectual capital.
- Leadership: leading the industry towards sustainability by setting standards for best practice and maintaining superior performance

- Society: Encouraging long lasting social well being in communities where they operate, interacting and responding to the specific and evolving needs of different 'stakeholders' to secure long term 'licence to operate', superior employee and customer loyalty, and ultimately superior financial returns.

In Australia, the Westpac-Monash Eco Index is modelled on the DJSI.

Such efforts to quantify sustainability as an investment criterion suffer from the evaluation of most of the criteria being necessarily subjective, the outcome depending on the personal attitudes of the evaluators. In some cases the evaluators can be clearly seen to have vested interests.

The world minerals industry mounted in 1999 a major effort with respect to sustainability which is described in *Global Issues*.

### **The Corporate Environment In 1991**

At the Corporate Strategic Review discussion by the WMC Board on 18 December 1991 the distinguishing features of the mining and minerals processing industry were seen as:

1. Global in nature
2. In practice negligible product differentiation
3. Increasing lead times to develop new and expanded projects
4. Increased capital intensity
5. Increased single issue attacks – e.g. aboriginal sacred sites, environment (greenhouse effect – carbon tax?)
6. Base metals (in particular) far removed from final consumer markets
7. Continual need to replace resource base with new low cost reserves
8. Not in firm control of destiny (e.g. no brand name products)
9. Rapid and major fluctuations of price for aluminium, nickel, gold, copper etc.
10. For many products long-term real prices have been and are continuing to decline
11. Ongoing need for resource industries to lower and contain production costs in real terms in order to offset real price declines
12. Apart from short-term increases for regulatory requirements, there are no features to stop long-term price declines.
13. Significant political pressures (local, State, Commonwealth and international).

Some of the significant issues in the next ten years were listed as:

1. Collapse of communism in Eastern Europe and Soviet Union. Over next five years possible increase in supply of minerals and metals to western markets, putting increased pressure on prices. A contra view can also be put.
2. Possible increase in demand over long-term trends due to rapid industrialisation of Asia. Australian minerals and metals producers may have major strategic opportunities in Asia.
3. Environment movement and aboriginal land rights movements to continue to inhibit development, e.g. possible carbon tax etc.
4. Underground mining is likely to be increasingly expensive relative to opencut mining.
5. The continuing substitution of industrial minerals into end uses of traditional metals markets.



## Non-Government Organisations (NGOs)

The 1980s and 1990s were a period of rapid growth of non-government organisations (NGOs). According to the United Kingdom's Foreign Policy Centre, in 1909 there were just 176 international NGOs in the world. In 1993 there were 28,900, of which 90% had been created in the last 20 years. In Australia in 2002 over 15,000 NGOs had Deductible Gift Status with the Tax Office. Many also received Government grants.

These organisations, often pursuing single issues, invariably argued that governments and other established organisations did not give ordinary people a voice in decisions that affected them and were dominated by vested interests. They claimed the right for a place at the decision-making table by purporting to represent the otherwise voiceless 'people' and, in effect, claiming a superior mandate to that of parliament. The terms 'civil society' and 'grassroots democracy' were coined.

Besides these noble sentiments there were suspicions of other motives. It has been suggested that, after the triumph of the free market ('capitalist') system over communism and socialism there were many frustrated people who found in NGOs an outlet for their desire to oppose the system they hated, and impose their will on the society by stealth. Similarly, the NGOs have been suggested to be a mechanism for the anti-scientific movement, whose views were summed up by the American anthropologist Matt Cartmill:

'Anybody who claims to have objective knowledge about anything is trying to control and dominate the rest of us ..... There are no objective facts. All supposed "facts" are contaminated with theories, and all theories are infested with moral and political doctrines ..... Therefore, when some guy in a lab coat tells you that such and such is an objective fact .... he must have a political agenda up his starched white sleeve.'

Others no doubt served simply to establish power bases and to gain influence for people for whom this was the main motive. Any cause and any methods would do, as long as it could be popularised.

In 1996 the subtly named Mineral Policy Institute began a campaign of sophisticated denigration of the industry, disguised by moderate language and using allusions rather than crude propaganda.

The following two tabulations show the NGO situation as it affected WMC in 1997.

### NGOs Increasing Complexity

<b>Industry Specific</b>	eg: Mineral Policy Institute, Project Underground
<b>Company Specific</b>	eg: Partisans (only target Rio Tinto)
<b>Innovative Tactics</b>	eg: ACF → ASC Investigation into Rio Tinto
<b>Cross Border</b>	eg: ACFOA → Freeport
<b>Alliances</b>	eg: ACF plus CLC → Cape York Land Agreement
	eg: FOE plus Arabana → OD mound springs
	eg: CAA, Catholic, Uniting, ATSIC → Native Title

## NGOs Traditional Demarcation

<b>Environment</b>	- eg: ACF, WWF, FOE, IUCN, Greenpeace
<b>Human Rights</b>	- eg: Amnesty, Human Rights Watch
<b>Aid</b>	- eg: ACFOA, CAA, Plan, World Vision
<b>Indigenous</b>	- eg: Survival, Land Councils
<b>Community</b>	- eg: GASP
<b>Social Justice</b>	- eg: Uniting Church, Catholic Church

Perhaps the best known NGO is Greenpeace, which by the mid-1980s had been captured by extremists. Through skilful publicity and sensationalism based mostly on half-truths and at times on outright lies, transmitted through stunts and performances skilfully designed to attract media attention, Greenpeace established a large income from membership fees. Because of its proven very considerable nuisance value, it gained considerable influence with governments and business.

In the 1990s the NGOs began to come under closer scrutiny. Their motives, funding, false claims, and the lack of members' voice in their own operations began to be questioned. A Brookings Institute study in 2000 found that the NGOs did not disclose the source of their funds and tended to be controlled by self-elected and unrepresentative elites, rather than being the voice of 'people'. In Australia it was suggested that the public had a right to know and that NGOs claiming access to policy forums should make information available by way of a publicly accessible register.

Some of the people who founded Greenpeace became thoroughly disillusioned with the way these organisations had developed. A co-founder, Patrick Moore, who left Greenpeace in 1986, described his objections to the way Greenpeace had developed on the internet at [www.greenspirit.com](http://www.greenspirit.com).

Greenpeace Canada was stripped by the Government of its charity status and Greenpeace USA experienced difficulties.

There were, however, also developments in the other direction.

An anti-globalisation movement made up of environmentalists, animals' rights supporters, human rights activists, union members, anarchists, and even extreme right wing groups staged in 1999 a number of at times violent demonstrations, beginning at the Seattle meeting of the World Trade Organisation (WTO) which was seen as the focus of the trend to globalisation. The *New Republic* magazine subsequently made an unrefuted claim that Public Citizen, the US NGO which led the organisation of anti-WTO protests, was secretly funded by protectionist interests associated with the US textile industry.

Interestingly, a number of developing countries including India, Uruguay, Malaysia, Pakistan, and Mexico, on whose behalf many NGOs profess to act, opposed plans by WTO to accept 'friends of the court' submissions from NGOs at the WTO Appellate Court.

### Indigenous People

The rights of the indigenous people increasingly became a worldwide issue in the 1980s and 1990s. The special case of Aboriginal people and Torres Strait Islanders in Australia is discussed under *Aboriginal Relations and Native Title*.

Anthropology and anthropologists became increasingly questioned as to the scientific validity of their endeavours. Some observers held that scientific anthropology was not possible because in the course of

their work anthropologists changed from observers to advocates and took sides in the political struggles of the people they were studying. Scientific objectivity became subordinate to political aims.

### **A Potential Takeover Target**

A potential takeover of WMC was a concern from time to time.

Probably the earliest time was before and during the discussions with Alcoa regarding the bauxite in the Darling Range. The discussions in Pittsburgh in April/May 1961 were held against the knowledge that WMC was extremely vulnerable, until WMC shareholders could be properly informed, to a predator who understood the great potential value of the bauxite. The formation of Alcoa of Australia was speeded up, largely to get the matter into the open.

In September 1986 a confidential valuation by E L & C Baillieu and Potter Partners assessed WMC at \$2.948 billion, or \$7.38 per share.

At a General Meeting in May 1987 to increase the authorised capital and approve a 5:8 bonus issue, shareholders also approved a new Article which provided that partial takeover bids had to be approved by shareholders at an Extraordinary General Meeting.

Takeover concerns emerged again in 1988 when WMC shares had fluctuated between the low of \$3.90 and high of \$9.80 over the previous twelve months and there had been a steeply increasing trend of options trading. A valuation as at June 1988 concluded that, against the book value of \$2.23 billion, the market value of the assets was \$5.94 billion (\$7.00 per share) and the probable achievable value on sale of the assets was \$7.33 billion (\$8.70 per share).

In the late 1990s there was again concern that the Company had been under-performing in providing returns to shareholders, which depressed the market value of the shares. At the same time the value of the Australian dollar relative to the US dollar was decreasing and the combination of the two factors, as well as the obviously good fit with companies such as Rio Tinto and BHP, made WMC an attractive target for takeover. There was widespread media and market speculation

To prepare for this possibility, in mid-1998 a concerted effort was made to identify potential advisers, devise internal processes for a response, develop valuation models and identify valuation experts, and identify and monitor potential offerers.

### **Minerals Exploration in Australia**

The lifeblood of the minerals industry is exploration. Without discovery of additional ore the industry must eventually die.

Worldwide the industry's problem so far has been not lack of success in exploration but too much success: the industry has increasingly suffered from inadequate returns on investment because supply has frequently exceeded demand (see section on *Global Issues*). The following refers to the Australian industry's ability to maintain itself and grow from the available ore reserves point of view.

In Australia, one result of the changes in the corporate environment from the 1980s onwards has been to inhibit exploration for new orebodies outside the existing mine leases. Amongst the impediments are limitations on access to prospective ground (national parks, prohibited areas on environmental arguments, the native title process, etc), wearisome environmental approval processes, and lack of finance, particularly for smaller companies.

I pointed out the importance of land access and clear and secure exploration and mining titles, and the danger of the Australian industry running down because of difficulties in this area, in my Chairman's speech at the Annual General Meeting in 1997 (see section on *Native Title*).

Annual expenditure on mineral exploration in Australia fell by 41% between 1996-97 and 1999-2000. The Australian Geological Survey Organisation noted that Australia's mineral reserves were being maintained by small to medium sized discoveries in 'brownfields' areas. The main impediment, access to land, does not apply in such areas. It is also likely that improvements in technology add to reserves by turning previously uneconomic mineralisation into ore.

This means that existing minerals producers have an advantage over companies endeavouring to make new 'greenfields' discoveries. It can be argued that this is desirable from the point of view of limiting oversupply of minerals. Existing producers are more likely to exercise market and financial discipline than new producers trying to force their way into the markets.

In 2001 Australia attracted A\$683 million, or 17.5% of the global exploration expenditure. Of this, A\$369 million was for gold exploration and 62% of the total was spent in Western Australia.

The generally held view (including by myself) is, that while the easily found minerals deposits have mostly been discovered and new finds will be increasingly hidden at some depth below the surface, Australia remains a highly prospective area for new discoveries. A differing view was put by WMC's then Executive General Manager - Exploration, J R (Jack) Parry in a paper to a conference in Perth in August 2001.

Jack's view was, that exploration prospectivity in Australia (and much of the rest of the developed world) has reached the 'mature' stage. The large deposits have been discovered, and the cost of making new discoveries has increased to the level where the finding of the predominantly smaller deposits remaining will be hard to justify financially. The exploration effort is likely to move from mature areas such as Australia to relatively poorly explored areas in the developing world. His conclusion was, that the trend in Australia to lower exploration expenditure and fewer discoveries is probably irreversible.

### **Subsequent Events**

After my retirement the takeover concerns continued and became at times open speculation in the media. The matter came to a head when in October 2001 Alcoa informally approached the WMC Board with an offer of \$10.20 per share, subject to the Board recommending it to shareholders. The Board obtained an independent valuation of the Company at \$11.18 to \$12.91 per share and declined the offer. Regrettably, the matter was handled in way in which it became a public controversy between Alcoa Chairman and Chief Executive Alain Belda and Hugh Morgan.

On 21 November 2001 the Chairman of WMC, Ian Burgess, advised shareholders that it had been decided to recommend to shareholders that WMC be demerged into two companies, one holding the shareholding in AWAC and another, the rest. The reason was: 'We believe the stockmarket will value the two companies more highly than if WMC continued with its current structure'. An Explanatory Memorandum was to be distributed late in the first quarter of 2002, with the meeting of shareholders about one month later.

Subsequently the date of the meeting, also to be the Annual General Meeting, was set at 18 June 2002. Because of delays by the SEC in USA clearing the proposal and impending legislation in Australia which would improve the tax position on demerger, it was later announced that the demerger would be delayed about three months. It eventually took place on 11 December 2002, after 93.15% of shareholders had approved it at a General Meeting on 29 November.



## ***CORPORATE PHILOSOPHY***

### **From 1933 to mid-1980s**

From its establishment in 1933 until the end of the 1980s the fundamental business philosophy of WMC was:

- its mission was to find orebodies and to develop these into profitable production
- the Company's growth and success were closely related to its ability to find orebodies and to operate profitably
- it saw itself as basically a self-contained enterprise
- it did not see itself as a dealer in properties or marketer of skills, although properties and services may be bought or sold as an adjunct to its main activities if it made sense to do so.

The Company operated best on its own. Its mode of operation was different from that of most other companies in that it depended largely on trusting people and prided itself on minimal formality.

There were, however, times when circumstances (mainly, but not exclusively, availability of finance) forced the Company to consider partnerships. With very few exceptions, these were not happy experiences.

### **WMC In Partnerships**

The purchase of a half interest in the talc deposit at Three Springs resulted in a clash of corporate cultures and very difficult relationships at Board level, which did not ease until some years later when the talc project started to make significant profits.

The partnership with Hanna and Homestake in Geraldton Operations Joint Venture had its difficult moments.

The partnership with Alcoa, which was a success (although it did not become financially rewarding until some 27 years from its inception) went through a somewhat difficult 17 years, until I became the Chairman of Alcoa of Australia and convened the shareholders' meeting in April 1978 which resulted in resolving virtually all the differences.

The partnerships with Shell at Windarra and with BP at Olympic Dam were a continual source of friction. The short partnership with Esso in the Y eelirrie Project had its difficulties, but did not last long enough to become a problem.

In retrospect, the main reasons for this incompatibility with partners was WMC's lack of managerial formality, reluctance to engage in extensive paperwork and frequent meetings, and the perceived attempts by the partners to encroach on WMC's territory as the Manager.

Since the mid-1990s these considerations no longer weighed as heavily because WMC itself had become a much more bureaucratic organisation, but there remained a reluctance to share managerial prerogatives. Further partnerships were under consideration almost up to the time of my retirement as Chairman in 1999.

An example of the difficulties of forming lasting relationships even in the later years was the Plüss Staufer (Omya) partnership in talc, which started promisingly but was dissolved in 2001 as described in *THE WHITENESS OF TALC*. In this case it appears a good proportion of the fault was with WMC.

### **Partner in Nickel?**

Right at the beginning of my chairmanship the downturn in the nickel market created a very difficult situation for WMC. This is well recorded in my letter to Keith Parry of 18 February 1975 (attached to this section).

The expectations of a large cash flow from the 100% owned nickel operation had been changed by the revaluations of A\$ in 1972 and 1973 and the nickel market downturn at the end of 1974. Additional financing had been necessary to maintain operations.

The difficult times persisted and in 1978 we began toying with the thought of taking in a partner into our nickel operations. On a visit to London in May 1978 Keith Parry and I spent some hours walking around Green Park, debating the desirability of doing so and the alternatives available to us. A file note written at that time shows that we should attempt to reduce WMC's dependence on nickel (then 90% of our income), reduce corporate debt and acquire diversified income-producing interests.

A rough assessment of the replacement cost of the nickel operations and stocks was \$700 million. If a 25% interest could be sold for \$250 million – a premium over the \$175 million cost – we could repay the corporate debt of \$185 million and have some cash in hand, although perhaps the premium payment may have to be conditional on future profitability.

In the second half of the 1970s all the major oil companies were anxious to expand into minerals and we considered BP and Shell as prospective partners. S G Warburg & Co were commissioned to prepare a document titled *Proposed Nickel Joint Venture* which was completed in July 1978. The intention was to test the interest of one or both of these companies (but mainly BP) in taking up a 25% interest in a joint venture over WMC's integrated nickel interests, including all nickel exploration activities within a specified area in Western Australia. This became known to the select few who knew about it in WMC as the 'Skyline Proposal' because of the internal discussion which had taken place at the Skyline Hotel at Heathrow on one occasion.

In the absence of my contact at BP Frank Rickwood, who was on holidays, I introduced the idea to Dr Jack Birks during a visit to their office in London in July 1978. We had made a joint discovery of copper-zinc at Benambra and were in discussion with BP on a number of other matters, including the Olympic Dam Project and a possible joint interest in coal (Clutha) in Eastern Australia; this was just another topic. I stressed the need for confidentiality at this early stage, and that WMC had to mention the proposal to its Windarra partner, Shell, at the appropriate time.

On 19 October 1978 there was a meeting in WMC's Melbourne office to discuss this with Frank Rickwood and his colleagues from BP. The meeting and the efforts to take a partner into WMC's nickel business concluded quickly when it became apparent that our assessment of the value of the business was very different from BP's assessment. We wanted a substantial premium and they thought they should get a discount! We agreed to disagree and remain friends.

Farming out some of the nickel operations again became a possibility when the fortunes of the nickel industry once again turned down following the breakdown of the Soviet Union and the flood of metals to the western markets in the early 1990s. WMC was, as a result, making losses in nickel.

In 1996 Outokumpu OY (O/K) suggested a merger of the nickel operations of O/K and WMC. It was decided that both companies would make all relevant information available and WMC formed a group to study the matter. The Chairman and CEO of O/K, Jyrki Juusela and his wife came to Melbourne in December 1996 and spent time with the Morgans and the Parbos.

The merger did not proceed because the O/K ideas of the value of their assets did not agree with the WMC assessment.

There was a possible interest by Noranda, who had announced that they would dispose of their forestry and papermaking interests and focus on mining and metals processing. Noranda was a major shareholder in Falconbridge, and there appeared to be a possibility of joining with WMC in nickel some way. Again, nothing eventuated.

After canvassing various further options, it appeared that if Sumitomo Metal Mining may be interested in putting their nickel interests into a joint venture with WMC. Sumitomo's nickel assets included a refinery, chloride leach technology, and a share in PT Inco, laterite interests in New Caledonia and a marketing organisation in Japan and environs. There was again a very frank exchange of information. Calculations indicated that WMC would retain a 60% interest and Sumitomo would pay WMC some \$600 million US dollars. In the end, however, Sumitomo backed out and some two years later the major improvement in the market made WMC's nickel more profitable than it ever had been.

### **Merger with Mt Isa Mines?**

In April 1978 I was approached by Sir James Foots, Chairman of Mt Isa Mines, suggesting a merger of WMC and Mt Isa. We had several discussions over nearly a year and did some homework, but on 14 March 1979 I told Jim that we could not convince ourselves it was the right thing to do from WMC's point of view. By then the nickel market had improved, we were well down the road of doing a deal with BP on Olympic Dam and felt that we had no difficulty in handling what was ahead of WMC.

### **Partner in Olympic Dam**

We took BP as a joint venturer in the Olympic Dam Project in 1979 because the project was too large for WMC on its own, there were considerable technical and marketing risks, and WMC did not have the financial capacity to carry it on its own. Again, the partnership negotiations and its subsequent conduct were not a happy experience for WMC and everybody heaved a sigh of relief when BP decided to sell out. As WMC's situation had changed, the Company regained in 1993 full ownership of the project as described in *THE BURNISH OF COPPER, Olympic Dam*.

### **(Silent?) Partners**

In June 1978 the estimated financial result for the 1978-79 year was for a negative cash flow of \$84 million (equivalent to about \$260 million in 1998), due to the very high accumulated nickel stocks following the decision in the previous year not to sell below a minimum price.

Amongst the actions contemplated to meet the need for cash was a placement of shares. It was thought that some foreign companies would be prepared to pay market price (about \$8) plus a 25% premium (\$2). About 21 million shares would have to be issued to cover the cash deficit.

The disadvantages of this were seen as:

- increasing WMC's foreign ownership by 10 percentage points
- putting 10% of total shares in the hands of a single owner



- increasing the problem of achieving a satisfactory return on equity

The proposal did not proceed.

In the late 1980s, takeovers (particularly of the Bell Group by Alan Bond) were in the news. With a market capitalisation over \$5 billion at the end of June 1988, WMC was the second largest listed company in Australia after BHP. We were concerned about our vulnerability, the shares having fluctuated widely in the previous 12 months (see also *Corporate Environment*). The question of corporate alliances to protect against unwelcome approaches was raised.

In discussions with Robert Champion de Crespigny, Hugh Morgan had found that Robert was interested in arranging (for Normandy Mining and Poseidon Ltd, but perhaps acting on behalf of or in association with Anglo American?) to take up a substantial interest in WMC. The stated intention of the incoming party(ies) was not to become involved in management but to benefit as a long term investor.

The work done included detailed accounting and tax considerations, Counsel's opinion and even drafting of public announcements.

A very complicated scheme - the *Edna Project* - involving a number of corporate structures, Class 'Z' shares, bonds with detachable options, convertible bonds, etc was constructed on paper, shown by the diagram attached at end of this section. 'Cohold' was the code name for WMC, 'Apple' was Normandy, 'Rogers' was Poseidon Ltd and 'French' was Robert Champion de Crespigny. The Board considered this on 29 June 1988. I was glad when it was decided not to proceed with it.

### **The Takeover of BH South**

In late 1979 - early 1980 WMC took over BH South and retained a large part of its assets. While WMC had been involved in the consolidation of several companies on the Golden Mile in the 1950s, this was the first takeover during my period of chairmanship. (The events are described in Book Two Part A, *THE FERTILE ROCK, West(ern) Meets South*.)

### **The North American Fiasco**

After Hugh Morgan became the Managing Director in mid-1986, there was a subtle change in philosophy. Hugh was commercially minded and felt that, while new discoveries resulting from WMC exploration continued to be important, the Company could also benefit from judicious disposals and acquisitions.

This thinking was encouraged by the stock market boom, particularly in gold mining shares, in late 1986 and in 1987. WMC disposed of its interests in Kalgoorlie to Alan Bond and the Lady Bountiful and Davyhurst properties to Consolidated Exploration in 1987 for a total of some \$504 million in cash and shares. It actively investigated (in partnership with Homestake) the purchase of the El Indio gold mine in Chile in 1987, only to be pre-empted by Alan Bond. After raising \$840 million through a rights issue, we then embarked in late 1987/early 1988 on the purchase of two properties in Canada and two in the United States which were all failures and involved the Company in litigation in Canada, accompanied by very unfavourable publicity. A substantial part of the funds raised by the sale of the gold properties and from the share issue were lost in the North American venture.

The venture into North America in the late 1980s was, to put it mildly, not a success. (See Book Two Part A, *THE GOLDEN THREAD, North American Fiasco*.)

## Acquisitions and Sales

The unfortunate experience in North America was followed by a number of acquisitions and sales between 1987 and 1999. These had now become an accepted part of WMC's corporate philosophy.

## Strategic Reviews

Management meetings and Board discussions to reflect on what the Company was doing, and what it should be doing, were held from time to time beginning in 1969. The first, called an Operations Review Conference, was held in Melbourne from 17-20 November 1969. Further reviews followed at least once a year.

Beginning in 1991 these were formalised and called 'Strategic Reviews'. Corporate staff were appointed to assemble and evaluate the information and to prepare presentations.

In WMC the reviews were carried out mostly internally, with modest outside assistance in assembling the information. Their purpose was to assess where the Company was, its strengths and weaknesses, and to develop a broad plan for the future. While called 'strategic reviews', they were really operational updates with a longer forward vision than annual plans. In this they generally followed the view of the legendary Jack Welch in his book *Jack: Straight From the Gut* published in 2002: 'Business success is less a function of grandiose predictions than it is the result of being able to respond rapidly to real changes as they occur'. Ironically, in the late 1980s Jack Welch had been largely responsible for the proliferation of strategic reviews, vision statements, and various devices intended to galvanise management into action. Among the latter were the slogans 'Be Number One or Number Two or get Out', and the 'Boundaryless Company'.

In the business community there were quite a few examples where motives other than improving performance interfered and sometimes dominated.

Some companies felt under pressure to make grand pronouncements on strategy to impress fund managers and thus improve the share price. The increasing practice of large share options becoming a substantial part of senior executive remuneration encouraged this. The setting of high growth and profitability targets (so-called 'stretch targets') may have motivated managers but also had a downside in raising expectations and the inevitable market backlash if these were not achieved.

Engagement of management consultants such as McKinsey and Boston Consulting and merchant banks at a cost of tens of millions of dollars to formulate strategy was at least partially in an endeavour to impress the market, although it sometimes had the opposite effect. Some analyst comments in 2002 were:

'Delegating the strategic direction of the company to outside consultants is almost always fatal.'

'Companies get bogged down in the overuse of management consultants. You can make changes simply for the sake of making changes.'

Another motive may have been for Chief Executives to cover their backs - an increasingly important issue.

The only really strategic change in WMC occurred after I retired - when the demerger of the Company was announced in November 2001.

The Board meeting on 18 December 1991 considered 'WMC Next 10 Years Strategy Review', presented

by Hugh Morgan. The WMC business philosophy was expressed as follows:

1. Maintain high ethical standards in business in order to maintain the confidence of investors, financiers, and regulators in the Company.
2. Excel in management of mining and minerals processing (including petroleum) so as to maintain them as low cost producers (preferably in the bottom quartile of the international cost curve of comparable producers).
3. Excel in exploration for and purchase of long life large scale low cost mineral resources thereby achieving income growth diversity and long-term security of minerals resources of strategic interest to WMC.
4. Minimise recourse to shareholders for new equity by excelling in management of assets and debt (including divestment of all non performing and non strategic assets).
5. Maintain conservative fiscal management so as to balance the high cash flow risks of price volatility against unexpected shocks to production costs, exploration funding and capital expenditure.
6. Maximise the medium to long term return on shareholders real investment in WMC (as measured by real share price growth and dividends) by being in the top quartile of returns of comparable foreign and Australian companies.

The characteristics of the leading companies in the industry were seen as:

1. Resources large, high quality, low cost, long life
2. Earnings potential enhanced by increasing market share or new major projects
3. Key products either bottom quartile of costs, or near it
4. Bottom quartile costs from drive to downstream processing, access to cheaper finance, productivity gains via technological innovation, and funding other companies' exploration to gain access to major discoveries
5. Successful in investing in projects with relatively high barriers to entry, avoiding flat cost curves, with modest risk of substitution
6. Conservative financial structure but willing to use debt if it can be repaid quickly. Recourse to shareholders minimised
7. Focus on a few large projects (say 5 - 10).

WMC's strengths were:

1. Two existing world class products: aluminium and nickel
2. One potential world class product: copper/uranium
3. Significant but 2nd class positions in oil and gas, and gold
4. Strong financial position
5. Experienced exploration team and mining/processing/engineering skills.

WMC's weaknesses were:

1. Operating cash flow should be higher
2. Too much capital raised from shareholders
3. Returns to investors need to increase
4. Need new major world class projects next 10 years
5. No world class discoveries for over 10 years.

In February 1994 the Board was advised that a long term (7 to 15 years) strategic plan would be prepared for the Corporation and for the business units, to be reviewed and updated annually. The Board was asked to approve the following key corporate objectives:

1. To provide a shareholder return (real share price movement plus dividend) equal to that achieved by the best international mining and energy companies over, say, 10 years. From 1978 to 1993 this return had been 15%, while WMC's return had been 8%.
2. To equal or better the return on assets of the top 25% of mining and energy companies. Over the previous 15 years this return had been 8%, while WMC's return was 5.1%. The WMC target would be 10%.
3. Maintain not less than an A credit rating.
4. By the year 2000 add at least two new core businesses to aluminium, nickel, copper, and gold, be developing at least four businesses which could become future core businesses, and have at least 25% of WMC's assets outside Australia.
5. Be the preferred employer of people who can most effectively add value to WMC.
6. Have the best industry safety record, continually improving.

In March 1997 it was suggested that the kind of questions an enquiring director might ask were:

1. What are the key external factors which can 'make' or 'break' WMC?
2. Why should WMC stay in the minerals business at all? Is it declining? Is growth really available in this industry?
3. Does strategy have too much emphasis on new growth and not enough on extracting value from existing businesses?
4. What are we doing to capture the upside and avoid the downside?
5. Are we sufficiently aggressive towards non-performing assets?
6. Why diversify more?
7. Is there money in industrial minerals? Can we achieve critical mass?
8. If we look to the future, the industry will move to the Third World. Can we manage this?
9. Have we the management to pursue growth? Are we aggressive enough in training such management?

The 1997 Strategic Plan included the following Statement of Purpose:

'Our business is to maximise shareholder value by finding, acquiring, developing, and operating mineral resource projects throughout the world. We will maintain a diversified portfolio of commodities and exercise prudent financial management. To achieve our purpose we will develop and retain top quality people, management, skills, and technology.'

The external target was real growth of shareholder value in the top 25% of peer group. This was expected to require 10% - 15% per annum real growth in shareholder value.

In the 1997 Strategic Plan it was also enunciated that WMC was a minerals company determined to be BEST.

- Bottom line performance
- Environmental responsibility
- Safety and well-being of our people
- Teamwork and leadership

The first public mention of this was in the 1994-95 Environmental Report and the 1996 Annual Report.

## **CORPORATE ALLIANCES**

During the 25 years under review, WMC had two important corporate alliances: in alumina/aluminium with the Aluminum Company of America (now Alcoa Inc), and in nickel with Sumitomo Metal Mining Company. There was also a historical alliance with the Homestake Mining Company, a useful alliance with Sherritt Gordon Mines in nickel refining technology and a very friendly relationship with Phelps Dodge, but the Alcoa and Sumitomo relationships stand out. They have not only lasted many years but also survived several changes of senior executives on both sides and many cyclic ups and downs in the market place. Both have been of great benefit to all parties - to WMC, as well as Alcoa and Sumitomo.

Subsequently, in 2001, a sour note was introduced into the Alcoa relationship when an approach by Alcoa to make a bid for WMC deteriorated into a public controversy.

In 1993 WMC formed an alliance with Plüss Staufer AG, a private Swiss corporation specialising in industrial minerals. It was hoped that this would become another valuable corporate alliance but the relationship did not develop well. In 2000 WMC sold its share in the joint talc interests to Plüss Staufer and withdrew from talc after selling the Three Springs Mine to Rio Tinto in 2001.

### **THE ALCOA ALLIANCE**

The development of this alliance before and during the formation of Alcoa of Australia, the subsequent operation of it between 1961 and 1995, and the enlarged Alcoa World Alumina and Chemicals partnership since 1995 has been described in Book One Part A *THE BRIGHTNESS OF ALUMINIUM*.

Also mentioned therein is WMC's one time interest in acquiring up to a 10% shareholding in Alcoa US. The Alcoa Board did not view this favourably and the matter was not pursued. In the light of later events, an acquisition of shares in Alcoa at that time would have been a great investment for WMC.

After my retirement from the Board of Alcoa in Pittsburgh in May 1998, the Board visited Australia in September. At a dinner given by the Chairman, Paul O'Neill, for WMC directors at the Melbourne Club on 10 September 1998 I responded to Paul on behalf of WMC. The comments summarised the Alcoa - WMC alliance over the years, and I can do no better than to reproduce them here.

May I respond on behalf of my WMC colleagues and myself.

The links between Alcoa and WMC go back to 1960. WMC and its two Australian partners had been exploring the bauxite in the Darling Range in Western Australia since 1957. The results appeared promising, and the Australians were looking for an established aluminium producer to join the project and provide the technological and commercial expertise and financial strength which they lacked.

Initial contacts between the then Chairman of WMC, Sir Lindesay Clark, and the Vice President-International of Alcoa, John ('Doc') Mitchell, led to briefings in Pittsburgh and the engagement of a just-retired Alcoa Refining Division executive, Ralph Derr, to undertake in late 1960/early 1961 what today would be called a preliminary feasibility study. The outcome was favourable, and discussions in Pittsburgh in May 1961 resulted in the formation of Alcoa of Australia in June 1961, in which Alcoa took up a 51% interest.

The Aluminum Company of America was invited to join the project and become the manager and the largest shareholder because the Australian participants believed that this company's ethical standards matched its technical excellence and financial strength. This has proved to be

an accurate judgement, which has been vital to the success of the venture.

The newly established Company set out to establish a 200,000 tons per year refinery at Kwinana in Western Australia and a 40,000 tons per year smelter and a fabricating plant at Point Henry in Victoria, which were commissioned in 1963. In terms of capital cost, it was at that time the largest minerals project undertaken in Australia.

Looking back today it seems incredible that it took only four years from the very beginning of exploration work in 1957 to the decision in 1961 to begin construction of the refinery and the smelter. This is particularly surprising because the numbers of professional staff engaged on the project until Alcoa of Australia was formed could be counted on the fingers of two hands and none of them, apart from Ralph Derr, had any previous experience in the aluminium industry. Perhaps this was one of the reasons why decisions could be made quickly! It is also incredible that the construction was completed and the plants were producing within two years of the decision to go ahead. Today, it would probably take longer than that to complete just the environmental impact study.

It is also interesting to note that the cost of the initial feasibility study which led to the formation of Alcoa of Australia was a fee of US\$5000 and the travelling expenses and living expenses while in Australia of Ralph Derr and his wife.

During the thirty five years since production commenced, Alcoa of Australia has become the world's largest alumina producer, with three refineries with a total capacity of 6,700,000 tonnes alumina per year (soon to be 7,140,000 tonnes per year, or nearly 36 times the capacity of the initial refinery at Kwinana) and two smelters with a combined capacity of 525,000 tonnes of aluminium metal per year, of which Alcoa of Australia's share is just over 335,000 tonnes.

Without doubt it was the late Sir Lindesay Clark's vision and persistence which was the main driving force behind the establishment of Alcoa of Australia. Sir Lindesay had the ability to separate the important issues from the rest and to look a long way ahead. His was the inspiration and the will to carry the project forward in the face of doubts, risks, and setbacks. But I doubt whether even Sir Lindesay would have foreseen the way in which Alcoa of Australia has grown from the initial concept in 1961.

The growth has not been without difficulties.

During the virtually continuous expansion from the commencement of production in 1963 to the early 1980s most of the cash flow from operations was ploughed back into expansion, and the Company's debt to equity ratio at one time reached the dizzy heights of 3.37 to 1. Assets were being accumulated at the cost of low immediate returns to shareholders. There were times when very strong faith was needed to believe in the eventual financial success of the venture.

The commencement of the construction of the Portland smelter and of the first stage of the Wagerup refinery in 1979 was followed by a downturn in the world aluminium markets and large power cost increases in Victoria. Wagerup was left in mothballs on completion because of the lack of demand for alumina. The construction at Portland was stopped after some \$300 million had been spent and the ultimate fate of the smelter was uncertain. The then Chairman of the Aluminum Company, Krome George, out on a visit, contemplated the concrete foundations and the sheets of galvanised iron flapping in the wind on the silent construction site and made his famous statement that this could well become the 'Stonehenge of the aluminum industry'.

It took some years before the market turned up, Wagerup was commissioned, the issue of power cost was resolved, and work at Portland resumed. In 1988, twenty seven years after the Company was formed, Alcoa of Australia finally paid its first substantial dividend to shareholders. It is pleasing to record that shareholders' patience has been rewarded by good profitability and dividends since then.

Amongst other things Alcoa of Australia was also largely responsible for bringing about a major change in the world aluminum industry.

There was virtually no world trade in alumina before Alcoa of Australia started selling large quantities of alumina on long term contracts to third parties, including competitors. Before that producers were fully integrated and provided alumina only for their own requirements. Since then it has become possible for substantial aluminum metal producers and fabricators to be established without owning any bauxite or producing any alumina.

The story of Alcoa of Australia has been well told in the book *White Gold* by Professor Geoffrey Blainey, published last year. The book concludes with the formation in 1995 of the world-wide alliance between Alcoa and WMC, known as Alcoa World Alumina and Chemicals, in which the two companies have a 60% and 40% interest respectively and of which Alcoa of Australia is now a part.

People on both the American and the Australian side have changed many times over the years. Most of those who participated in the initial decisions in 1961 are no longer with us.

On the Australian side, besides Sir Lindesay Clark who deserves the greatest credit, there were the then Chief Geologist, J D (Don) Campbell, Sir Wilfred Brookes, F F (Frank) Espie (Snr.), J C (Chester) Guest, and W M (Bill) Morgan. On the Alcoa side in the early discussions and decisions, apart from 'Doc' Mitchell, were the then Chairman Frank Magee, the then President Lawrence Litchfield (Jnr), O V (Ossie) Peterson, W K (Krome) George, and P L (Red) Hartsock.

When Alcoa of Australia had been established, Sir Lindesay became its first Chairman. Alcoa and the Australian shareholders nominated directors. A number of Australians were invited to represent Alcoa on the Australian Board, including J R (Ralph) Burt and J (John) Darling.

Since those very early days many Americans and Australians have made important contributions to its growth and development, as members of the Alcoa of Australia Board, as Managing Directors, and as executives and technical specialists. They are too numerous to name individually in these brief comments, but I would like to particularly mention one of the succession of Managing Directors, J C (Joe) Bates.

Joe deserves the main credit for recognising in the late 1960s that the future of Alcoa of Australia depended on re-establishing the forest which had to be removed in the course of mining the bauxite. The mined areas were an eyesore, and community sentiment was moving rapidly in favour of environmental care. Overcoming considerable internal opposition, and criticism by others in the minerals industry who thought he was setting a dangerous precedent, Joe initiated a rehabilitation programme which has over the years been perfected to satisfy even the most stringent critics. It is now acclaimed world-wide as an outstanding example of how land temporarily used for minerals extraction can be subsequently restored and returned to the community for other uses. With hindsight, it is clear that Alcoa of Australia may not have been allowed to continue in operation, let alone expand, without its demonstrated ability to rehabilitate the forest.



On a personal note, I was fortunate to have a small part in establishing Alcoa of Australia.

When Ralph Derr did his feasibility work in late 1960/early 1961, I was seconded to be his dogsbody, obtaining any information he required and helping with the calculations. We had no computers in those days; the work was done with pencil and paper, the only mechanical aids being slide rules and hand cranked Facit calculators. There were no photocopiers; an experienced typist could produce usually four or five, at the most nine carbon copies. If a mistake was made, all the copies had to be laboriously corrected. This had its positive side; compared with today, we saved a lot of paper in those days simply because it was too hard to make copies!

When Sir Lindesay Clark went to Pittsburgh for the initial discussions in April, 1961, I was sent along to carry his briefcase. My counterpart on the Alcoa side was Charlie Parry, and we were on occasions sent into the back room to do various calculations while the principals continued their discussions. The conclusions must have satisfied our superiors because they went ahead and formed Alcoa of Australia, but I have often wondered how our projections compared with what in due course actually happened. Hopefully the files were discarded long ago!

It was a great experience for a junior engineer to observe these events at close quarters.

Once Alcoa of Australia had been formed and acquired its own staff, I did not participate in its activities again until I was appointed the third Chairman, succeeding Sir James Forrest, in February, 1978. Two years later, in 1980, I was also invited to join the Aluminum Company board in Pittsburgh, and remained a member until retirement in May this year.

The Alcoa connection has been very important to WMC and has been a large part of my working life. It has been in all respects an exciting and satisfying involvement. In all the years with Alcoa of Australia and the Aluminum Company in Pittsburgh I have never had to do anything not in accordance with my own personal and professional beliefs and standards. I was privileged to work in a harmonious environment of complete integrity, with everything open and on the table, and no hidden agendas of any kind. This is a great way to work, in fact the only way I know how to work, and I have very happy memories of my time with Alcoa. Things were not always easy, but even in the darkest moments I never had anything other than constructive co-operation and complete support from everybody in Alcoa. Many of the people I worked with are here tonight, many others are not present, but I say thank you to you all, wherever you may be.

The world has changed a great deal since 1960, the people have changed, the companies have changed, and continue to change. Alcoa today is very different from the Alcoa I first got to know, and so it has to be, to be able to meet today's new challenges and to prepare for the future. Our predecessors faced different challenges, in a different environment, at a different time. Our successors will no doubt work in a different environment again and will be able to improve on what we have done. But what has not changed and what I believe will not change is the very high ethical standards and the integrity which have been the hallmark of Alcoa ever since it was founded more than a hundred years ago. This, more than anything else, is what makes Alcoa a great Company.

Thank you, Paul, for including Saima and me in this Board visit to Australia. It has been a wonderful way for us to take our leave from Alcoa, and from all the people we have come to regard not only as respected and valued colleagues but also as good friends. You have all added much pleasure and happiness to our lives, and we both thank you for this.

As for the future, there is no doubt in my mind that there will be many more exciting developments. Don't ask me to tell you what these will be, because past experience has shown that my ability to accurately predict the future is strictly limited. However, experience has also shown that virtually nothing is impossible, and that we should not restrict our thinking when contemplating the future. The history of Alcoa of Australia is a good example of this.

I wish you all every success and will be observing your progress with great interest.

Thank you all.'

### **Subsequent Events**

This friendly relationship changed towards the end of 2001.

Alcoa had for some time been mindful that someone may make a bid for WMC and that they would not want the 40% interest in AWAC to be acquired by someone else. They had also found during the takeover of Reynolds that the anti-trust people required them to sell the Reynolds alumina interest in Worsley. The message was clear: the WMC 40% interest in AWAC was the only large alumina interest they could still acquire, because the anti-trust issue did not arise.

On 9 October 2001 the Chairman and Chief Executive of Alcoa, Alain Belda visited Melbourne, met the WMC Board, and apparently told them confidentially that Alcoa would be prepared to bid \$10.20 per share for all WMC shares, provided the Board recommended it. The message did not stay confidential for long; by next week there were reports of negotiations and considerable speculation in the media. WMC shares appreciated.

On 17 October WMC announced that it was in discussions with a number of parties, including Alcoa, but that it was uncertain whether these would be concluded and what the outcome would be. This triggered a frenzy of speculation about a \$12 billion break-up of WMC.

On 21 November the Chairman of WMC, Ian Burgess, wrote to shareholders advising them of the confidential Alcoa approach, that independent advice had valued WMC at between \$11.18 and \$12.91 per share, and that the Board could not therefore recommend Alcoa's 'opportunistic' approach. Instead, it had decided to recommend to shareholders that the company be 'demerged' – the AWAC holding be incorporated in a separate company from the rest of the assets.

On 23 November it was announced that Hugh Morgan had resigned from the Alcoa Inc Board. On 28 November Alain Belda made public a letter to Hugh Morgan (copy appended), disputing some of the interpretation of the events leading up to the informal discussions, taking exception to Alcoa being called 'opportunistic', and saying that Alcoa will now turn its attention elsewhere. He concluded that 'We also look forward to working with WMC as we have done successfully over more than four decades'. The excellent relationship between the two companies had, however, at least temporarily, come to an end.

Not having been involved or informed, it is not possible for me to judge the issue. I did, however, comment to Hugh Morgan before the Alain Belda letter had been published that I thought calling Alcoa 'opportunistic' was unnecessary and unproductive. I believe that the matter could have been handled better. There is a nagging suspicion that egos (on both sides) may have intruded on what should have been dealt with strictly as an unemotional business matter.

## THE SUMITOMO ALLIANCE

WMC had established a relationship with Sumitomo Light Metals Ltd and Sumitomo Shoji Kaisha (the trading company) of Japan in alumina in the 1960s. Another member of the Sumitomo Group, Sumitomo Metal Mining Co Ltd (SMM) was a leading Japanese nickel producer.

W M (Bill) Morgan visited SMM in Japan in September/October 1966. Out of this visit developed a long-standing commercial relationship between the two companies.

The first shipment of nickel concentrate from Kambalda left Esperance on *Botany Bay* for Sherritt Gordon Mines' refinery in Fort Saskatchewan, Alberta, Canada in August 1967, the first (and only) long term contract for Kambalda nickel concentrate had, however, been signed in May 1967 for 10 years with SMM.

The first shipment of concentrate to SMM left from Esperance on 6 October 1967. It was 1800 wet tons and was shipped on the *Taigen Maru*.

While there were many amendments over the years to the tonnage to be delivered and while the concentrate contract was replaced with a contract for matte in 1975, the relationship has continued to the present day. A more detailed description of this relationship is given in Part A *THE SHINE OF NICKEL, To Market, To Market*.

The development of the corporate relationship was initially assisted greatly by the good personal relationships between Bill Morgan and the President of Sumitomo, Mr Kawakami and Doug McIntyre and his counterpart in Sumitomo, Mr Kurosu. When Kawakami retired as President in June 1973 and became Chairman of SMM, the excellent relationship continued with his successor Mr Fujisaki and, later, Dr Fujimori. On Doug McIntyre leaving WMC in 1975, Keith Parry and Brian Hurley dealt with Mr Yokose and Mr Enoki of SMM. Dr Fujimori was succeeded by Mr Shinozaki.

The alliance with Sumitomo enabled WMC to gain a significant share of the Japanese nickel market without having to compete directly with the other major nickel producers such as Inco and Falconbridge. With SMM carrying out the refining and marketing, WMC's position in the Japanese nickel market grew steadily. The net returns of sales of concentrates/matte to Sumitomo generally compared more than favourably with returns from other sales options. Sumitomo's agreement to take its feed in the form of matte rather than concentrate was also crucial to WMC's ability to build the Kalgoorlie Nickel Smelter in the early 1970s.

As described in *Corporate Philosophy*, in weak nickel market conditions in the 1990s following the breakdown of the Soviet Union there were discussions regarding WMC and SMM combining their nickel operations in a 60:40 Joint Venture, with SMM paying WMC US\$600 million. The project did not proceed.

## HOMESTAKE MINING COMPANY

(A draft paper by J J (Jeffrey) Gresham, *Geologists, Alliances and Strategies, 2001*, is gratefully acknowledged as a source of information).

When W S Robinson formed Gold Mines of Australia in 1930 and its sister company Western Mining Corporation in 1933, Walter Case was a substantial shareholder through the Case Pomeroy Company. Case was impressed by the excellent geological work a Harvard professor, Donald McLaughlan, had done at the Homestake gold mine in USA and the Hollinger Mine in Canada.

In 1934 Case convinced Robinson to engage the McLaughlan team for WMC in Western Australia. The team included John K Gustafson, his student at Harvard, Hugh McKinstry, later Professor of Geology at Harvard, John Stone, Fred Chace, Stuart Miller, Terence Connolly and Haddon King. Under McLaughlan's leadership but with McKinstry the technical leader the team, in Lindesay Clark's words, 'introduced the study of Precambrian geology on a far more thorough and useful scale than had ever been made in Australia'. It included a first ever aerial survey of the Eastern Goldfields.

Donald McLaughlan became President of Homestake Mining Company in 1944, succeeded by John Gustafson on 1961 and Paul C Henshaw in 1969. There were no formal corporate links between the two companies until 1961, when the Geraldton Operations Joint Venture (GOJV) in iron ore was formed between WMC (50%), the Hanna Mining Company (25%) and the Homestake Mining Company (25%). The formation of the joint venture was greatly facilitated by the personal relationships between Lindesay Clark and John Gustafson going back to 1934. Gustafson had just been recruited from Hanna to become President of Homestake and was very familiar with both companies.

GOJV, exporting in 1966 the first commercial iron ore from Australia to Japan, ceased operations on exhaustion of the deposit in October 1974, although the venture was not wound up until April 1992.

The continuing friendly relationships with Homestake led to the formation of Kalgoorlie Mining Associates in 1975, as described in Book Two Part A, *THE GOLDEN THREAD, On The Golden Mile*, mainly through the efforts of Brodie-Hall and his personal links with the Homestake people. Brodie retired as an executive in 1975 and as Chairman of the gold companies in the Group in 1982. The association with Homestake ended in 1987 when WMC sold its interests on the Golden Mile. People on both sides changed, and after 1987 there was virtually no contact between WMC and Homestake.

## **SHERITT GORDON**

Western Mining became acquainted with the Canadian nickel and fertilizer producer Sherritt Gordon Mines Limited in the late 1960s when considering refining of nickel immediately after the Kambalda discovery. Sherritt had developed in the early 1950s a unique hydrometallurgical process for converting nickel concentrate into refined metal without the intermediate step of smelting.

Sherritt owned and operated the only commercial refinery employing this process at Fort Saskatchewan, Alberta. Following initial contact between Bill Morgan and the Chairman and Chief Executive of Sherritt, Eldon Brown, an agreement was concluded in 1967 for Sherritt to provide the technology and to assist in the design, construction, and commissioning of the Kwinana Nickel Refinery.

Sherritt was also the first customer for WMC nickel, the first shipment of Kambalda concentrate leaving Esperance on the *Botany Bay* for Vancouver on 2 August 1967. From Vancouver the concentrate was railed over the Rocky Mountains to Fort Saskatchewan. Other shipments followed, and subsequently Sherritt became a customer for WMC nickel matte. During nickel shortages WMC used the association with Sherritt to sell some WMC briquettes at a premium to the 'producer' price charged to long term customers.

WMC and Sherritt had a brief joint venture investigating nickel laterites north of Kalgoorlie in the late 1960s-early 1970s. In the first half of the 1970s Doug McIntyre had a close relationship with Sherritt's Corporate Secretary, Gordon McKay. Eldon Brown was succeeded in 1968 by Bill de Roche as Chairman and David Thomas as CEO. The Vice President - Research of Sherritt, Vladimir Mackiw, a Canadian of Ukrainian origin, was for a long time important in the WMC-SG relationship, but eventually also retired. Another contributor was W H (Bill) Young, the Manager of the Sherritt Gordon nickel refinery at Fort Saskatchewan. The very friendly relationship between the Sherritt and WMC people continued throughout the 1980s after most of the people on both sides had changed.

Subsequently (about 1990), after two others for short periods, Ian Delaney became CEO of Sherritt. Under Delaney Sherritt expanded its fertilizer production. It continued to see engineering, processing and marketing of nickel and composite materials as a large part of Sherritt's future, although it did not wish to integrate backwards into mining. After Sherritt's own mine closed in the late 1970s, the Fort Saskatchewan refinery continued to operate on purchased feeds. WMC continuously supplied some nickel matte and/or nickel/cobalt sulphide until the mid 1990s, when Sherritt became manager and part owner of the nickel laterite operation at Moa Bay, Cuba. The output from Moa Bay then provided virtually all the feed required for Fort Saskatchewan.

In 1990 Trellaborg (50% owner of Falconbridge) owned 10% of Sherritt and Delaney also sought a corporate link with WMC. In October a suggestion was put to WMC to acquire 10% to 20% of Sherritt at C\$7.00 per share, and the Board approved that the suggestion be studied. It was subsequently decided not to proceed.

Thereafter the links between Sherritt and WMC weakened as the companies' interests proceeded on different paths. In the mid-1990s Sherritt became involved in providing the technology and consulting for, and owning about 10% of the Western Australian nickel laterite operation of Anaconda Nickel, a competitor of WMC.

## **PHELPS DODGE**

In the 1980s a friendly relationship developed between Hugh Morgan and the Chairman and Chief Executive D C (Doug) Yearly of the Phelps Dodge Corporation, the leading US copper producer headquartered in Phoenix, Arizona. Doug Yearly had succeeded a very forceful Chief Executive, 'Bull' Durham. Both companies felt that they had similar cultures and that, should opportunity offer, they would like to develop closer relationships, either through joint ventures or perhaps even through merger of the companies.

In 1990 Hugh organised visits by WMC directors to Phelps Dodge operations to meet the people and to get to know their activities. The visits were arranged in groups of two or three, as convenient. At the same time senior Phelps Dodge people visited WMC operations. I hosted a dinner for the Chairman, President, and Director of Operations of Phelps Dodge in Melbourne on 7 April 1990.

I visited Phelps Dodge on my own in Phoenix in 1993, and later in Phoenix and New Mexico in the company of Don Laidlaw and David Brydon on 1-3 May 1994.

My visit in 1993 was in the middle of the Ernest Henry crisis and I had to assure Doug Yearly over breakfast in the hotel where I was staying that Hugh had my complete confidence and that in any discussions with him he had the authority of the Company.

One joint project contemplated by the two companies in July 1993 was a joint venture with the large Chilean government owned copper producer, Codelco, in their El Abra Project in the Atacama desert. The proposal did not proceed.

Various other thoughts were tested from time to time; WMC and Phelps Dodge jointly commissioned a study regarding the compatibility of the two companies. This was not pursued because the market rating of WMC at the time was much higher than for Phelps Dodge, and a merger did not make financial sense to the latter.

Quite independently Paul O'Neill of Alcoa about 1995 or 1996 initiated the thought of a three-way

merger between Alcoa, WMC, and Phelps Dodge, to be perhaps initiated by an Alcoa-Phelps Dodge merger to which WMC could be subsequently joined. I believe this was raised by Paul with Doug Y early, meeting with a marked lack of enthusiasm. Again, Phelps Dodge felt that their market rating put them at a disadvantage. I was aware of it through my membership of the Alcoa Board - it was never tested with WMC.

No way was found until the time I retired, or to the time of writing (October 2003), to give tangible expression to the good relationship and the wish in principle to form an alliance of some kind between the two companies.



## **GLOBAL ISSUES**

### **Global Agreements After World War II**

Towards the end of World War II, plans for a new international economic system were worked out by 730 delegates from 44 countries at the White Mountain resort of Bretton Woods in New Hampshire in 1944. The two main designers were John Maynard Keynes representing Britain and Harry White representing the USA.

The new system made the US dollar, instead of gold, the centrepiece of the system, while the dollar was supported by 75% of the world's stock of monetary gold. The US dollar would be the only currency freely convertible into gold at the fixed rate of \$35 per ounce; the right to convert into gold was given to national treasuries and central banks, not to private parties. The other currencies were defined in terms of the dollar, not gold. In certain circumstances these 'legal par values' could be varied.

A new institution, the International Monetary Fund (IMF), was formed to be the lender to governments and central banks needing short term funds not available from normal sources. The resources of the IMF came from contributions of its member countries, 75% in their own currencies and 25% in gold.

Subsequently, in 1947, the General Agreement on Tariffs and Trade (GATT) defined rules for international trade between nations. Australia was one of the eight foundation signatories of GATT, although manufacturing industry associations subsequently strenuously opposed ratification.

### **Subsequent Modifications**

A consequence of the US being the international financier was that the US monetary gold stock decreased to a level where it no longer covered the foreign holdings of dollars. With increasing inflation in USA in the 1960s adding to the tension created by the diminishing gold stock, the fixed price of gold was increased from December 1971 onwards while the world market price was freed and soared. The US dollar was no longer convertible into gold at the fixed price. The fixed parities of other currencies to the US dollar were gradually mostly replaced by floating exchange rates determined by the market.

The GATT was modified a number of times and was replaced on 1 January 1995 by the World Trade Organisation (WTO), based in Geneva. On 30 November 2000 WTO had 140 members.

At the heart of WTO are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified by their parliaments. The WTO administers the agreements, acts as a forum for trade negotiations, handles trade disputes, monitors national trade policies, provides technical assistance and training for developing nations and cooperates with other international organisations.

These global agreements affected WMC mainly through the fixed gold price and the fixed exchange rates, while these applied. The issues are discussed in appropriate chapters of these recollections. As there were generally only minor tariff and non-tariff barriers to trade in mineral products, the effect of GATT and WTO on the Company was indirect.

### **Law of the Sea**

Law of the Sea traditionally included maritime law dealing with ships and shipping. It also defined territorial waters and the rights of States to fish the oceans and control navigation.

Beginning in the 1950s, the United Nations attempted to formulate world-wide rules for the Law of the Sea. The First UN Conference on the Law of the Sea, held in Geneva in 1958, and the Second



Conference in 1960 led to the codification of four treaties. In 1973 the Third Conference began its work on a comprehensive treaty.

In 1972 the Club of Rome published a report *The Limits To Growth*, which purported to prove that the world was within a short time going to run out of resources. This was followed by the oil producers' cartel - OPEC - causing the price of oil to increase from US\$2.80 per barrel in 1973 to US\$37.37 per barrel in 1980, apparently confirming the Club of Rome predictions. It was widely assumed that oil would quickly increase to US\$100 per barrel and that shortages of other minerals would cause similar increases in their value.

Following the predictions of an imminent shortage of minerals the Maltese Ambassador to the UN, Arvid Pardo, coined the phrase 'common heritage of mankind'. It was proposed that the manganese nodules containing metals such as nickel, copper and cobalt, which were known to occur on the ocean floor in various parts of the world, should be exploited exclusively by an international body which became known as the 'Enterprise'. The rules governing the activities of this body would be enshrined in the Law of the Sea, including the use of the net proceeds for the benefit of developing countries.

As might be imagined, I had to spend considerable effort in denying that Arvid Pardo was in any way related to Arvi Parbo.

In 1972 a Japanese group headed by Commander Masuda, in association with the well-known US oceanographer John Mero, fitted out a ship - the *Kyokyo Maru* - for recovering nodules from the ocean floor at a depth of some 5 km for metallurgical testing, using buckets on a 12,200 metres long hemp rope. Nineteen companies, including Western Mining, were invited to send observers (at a cost of US\$50,000 each) and became entitled to a proportion of the nodules recovered.

WMC sent Jim Lalor, then my Technical Assistant in Melbourne. He spent from 28 August to 5 September 1972 on location near Hawaii and we obtained a sample of 263 kg which were sent to Kwinana Refinery for testing. The nodules left over from the WMC work were donated to the Department of Geology at the University of Western Australia.

After being briefed by departmental officers on 26 November 1979, senior people in the Australian mining industry, including myself, expressed concern to the Australian Government that the Law of the Sea proposals under discussion included guaranteeing an escalating share of the world markets to producers from deep sea deposits. As the costs of deep sea production were likely to be higher than the costs of land based producers, such a guarantee could only be effected through government restrictions on the latter. In a letter to the Prime Minister, Malcolm Fraser, on 20 December 1979 I suggested that this amounted to subsidisation of deep sea mining along the lines of Europe's agricultural producers. A group of us called on the Prime Minister in Canberra on 4 March 1980 to further discuss our concerns. The others outfumbled me, so I finished up the spokesman.

The outcome was that the Government invited an industry representative to accompany the Australian delegation to the 3rd Law of the Sea Conference in New York in March 1980, where the sea bed mining issues were to be discussed. John Reynolds of WMC was selected. The negotiations continued in six subsequent conferences in Geneva and New York and one in Montego Bay, Jamaica, in December 1982 where 117 nations signed the UN Convention on the Law of the Sea (UNCLOS).

The Convention was not signed by the United States, the United Kingdom and 28 other nations including Australia, because of objections to provisions for seabed mining which they believed would inhibit commercial development. One commentator characterised the proposals as 'a Byzantine regime .... almost unique in its perversity'. Even Arvid Pardo called the system 'fatally flawed'.

The mining provisions were amended in 1994 and the Clinton administration in the US was enthusiastic about it. A number of countries became additional signatories, including Australia on 5 October 1994 and the United Kingdom on 25 July 1997, but the United States Senate had not ratified the Treaty as of August 2003.

To my knowledge there has been no commercial production of sea bed nodules. The reason is simple: contrary to the Club of Rome predictions there is no shortage of minerals, and it does not make sense to dredge low grade nodules from five kilometres of water if similar material can be picked up at a much lower cost on the surface.

### **Matching Demand and Supply**

The Club of Rome predictions of shortages of all resources, including minerals, inspired large new minerals projects. The expectation was that, provided the production costs were at the lower end of the world cost curve, the rewards would be there in due course.

The Club of Rome thesis was simplistic and unrealistic. As Philip Crowson explains it (*The Infinitely Finite*, The International Council on Metals and the Environment, 1992):

'Over the years, improvements in technology have provided the industry with the ability to mine from deposits with lower grades, while recycling of lead, copper, and other metal commodities has grown substantially ..... Most metals can be recycled indefinitely for most uses ..... They are indeed renewable ..... it is highly improbable that society will run out of minerals over the long term .....

The actual experience is that known reserves of all minerals have continued to increase in spite of increasing consumption, and prices of all metals (and probably other minerals) have continued to decrease by 1 - 2% per annum in real terms.

Instead of shortages there have been frequent and extended periods of oversupply.

To a United States investor, in the 10 years from 1988 to 1998 the S&P 500 return had been 18% while the S&P Mining Index return had been minus 1.5%. The aluminium industry had returned 5% while the returns from chemicals had been 12.5%, banks 21%, and software 23%. On a company basis, the 5 year annualised real return to a US investor had been positive for only seven major minerals companies, ranging from Phelps Dodge (6%) through North Ltd, Asarco, Rio Tinto, Pasminco, and Noranda to BHP (just positive). WMC return was a negative 5%.

The fundamental reason for the poor returns was oversupply. The reasons varied; in the first half of the decade of 1990s it was mainly the flood of Soviet metal to the western markets, but the propensity of companies to bring in large new projects without regard to demand was to blame much of the time.

While companies have spent much effort and capital on successfully reducing their production costs, the oversupply has led to the savings being passed on to consumers. If continued, the unsatisfactory returns would severely limit the capital available to the industry in the future. I had shared these concerns for some time and expressed them in speeches and addresses at Annual General Meetings.

During the nickel market oversupply in 1977-78 WMC endeavoured to lead the main producers back to observing a producer price, as described in *THE SHINE OF NICKEL, To Market, To Market*. While everybody professed to support the initiative, the other producers undercut WMC and the effort failed.

The only successful example of matching supply to demand has been the diamond industry, where for a

long time De Beers in effect controlled the market and bought up and stockpiled surplus production. The attempt by the governments of the tin producing countries to control the world tin market ended, after a period of success, in chaos. The OPEC cartel of oil producing countries has fluctuated between success and near-failure. The first instance I know of the application a different philosophy by private producers was when Paul O'Neill in 1993 convinced the major world aluminium producers to shut down a substantial part of their aluminium smelting capacity to help correct world oversupply following the breakdown of the Soviet Union. It had to be done under the umbrella of the governments of the main aluminium producing countries to avoid legal problems. It helped to overcome the problem, but Alcoa as the largest producer had its capacity still restricted many years later while all the competitors had in various ways crept back. Paul at that time also deferred the commissioning of the expanded alumina capacity at Wagerup, against the inclination of the Alcoa of Australia Board and myself.

In view of the anti-trust legislation, the only action possible is by the companies to recognise individually that past practices will lead the industry into a corner where investment funds will dry up. Instead of expanding as fast as possible and expecting the market to force the high cost producers to shut down to match supply to demand - a practice which clearly has not worked - companies have to place emphasis on profitability. Expansion should be incremental 'brownfields' addition of capacity in the first instance, which can be brought in in smaller increments and at lower capital (and probably operating) cost. There is a strong case for amalgamating existing producers into viable world scale units and improving returns. Large greenfields projects must have regard to demand growth and cannot assume that they can win market share from existing producers without affecting the price.

At April 1999 there were signs that this message had hit home. A number of amalgamations had taken place and there had been very few substantial greenfields projects committed in the last few years. Statements by Chairmen at Annual General Meetings confirmed the abandonment of the philosophy of adding capacity regardless of consequences. Whether they will actually practice what they preach remains to be seen.

## **Globalisation**

What has become known as globalisation is a gradual movement, beginning in the last twenty years or so of the 20<sup>th</sup> Century, from the traditional political and economic thinking based on the nation-state to an economic model with minimal boundaries between countries. This has been most pronounced in communications, capital movements, exchange rate determination, technology transfer and adaptation of best practices, with considerable (but lesser) success in trade. It has generated unprecedented economic growth, but also dislocations and severe challenges to social and cultural patterns.

Globalisation challenges the dominant role of governments and affects some individuals and groups adversely, at least in the short term. Capital moves towards highest returns and speculative capital flows can cause crises. Globalisation has also coincided with a quest for bigness through mergers and takeovers, almost for its own sake. When these take place across national boundaries, nationalistic and ethnic sentiments are aroused.

This generates protectionist pressures and provides diverse activist groups with a welcome focal point for publicity and political influence through protests and demonstrations, such as in Seattle in 1999.

The opposing sides in Australia are 'economic rationalists' who support globalisation and 'economic nationalists' who want to limit foreign ownership and investment, re-introduce protectionist measures, reduce Australia's involvement in multinational agreements to liberalise trade and investment, re-regulate the financial sector, provide selective industry assistance, control and regulate the labour market and reduce immigration to zero. They have an antipathy towards competition and privatisation. Such views are expressed by some members of all political parties, most frequently by the (now defunct)

One Nation Party, but also by the Democrats and the Greens.

Curiously, there is on the other hand increasing pressure by many of the same people in favour of international regulations, institutions and authorities to override national governments. The explanation may be that the anti-globalisation activists are expecting to staff these international bodies.

These issues and conflicts remained to be resolved at the time of writing (October 2003).

### **Global Issues Affecting the Minerals Industry**

In the 1990s the world minerals industry belatedly recognised the need to pool their resources to counter the persistent and escalating attacks by various non-government organisations (NGOs) which had been growing since the early 1980s and were gaining increasing influence over governments and public opinion. The situation is well depicted by the chart (at back of this section) which was presented to the WMC Board in 1997, titled *The minerals industry is losing its ability to influence the legislative environment in which it operates*.

### **The International Council on Metals and the Environment (ICME)**

This Council was established in 1990, comprising of CEO's of 26 companies. Jerry Ellis of BHP was the first Chairman, followed in 1992 by Alex Balogh of Noranda and in 1994 by Hugh Morgan.

The Board of the Council met twice a year and had a number of sub-committees for nominated tasks.

### **The Global Mining Initiative (GMI)**

In 1998 Hugh Morgan took the lead in discussing with a number of major mining companies the worrying outlook for the world industry in two areas:

1. The increasing opposition to the industry from a number of activists and non-government organisations, resulting in more and more restrictions being placed on mineral exploration and production
2. The very unsatisfactory returns on the investments, caused mainly by chronic oversupply of virtually every mineral product, interrupted from time to time by short term supply difficulties and short periods of better prices.

While anti-trust laws prevented the industry from discussing matters which could be construed as reducing competition and rigging markets, Hugh had taken the initiative in convincing a number of companies that the problems which could be discussed should be addressed on a global basis. At a meeting of nine companies - BHP, Anglo American, Noranda, WMC, Phelps Dodge, Placer Dome, Rio Tinto, Newmont and Codelco in London in October 1998 there was agreement that a global industry group should be formed to pursue the industry's concerns on a global basis. Sir Robert Wilson, the Chairman of Rio Tinto, agreed to chair the group.

### **Changing Dynamics**

By the 1990s it was also clear that there was gradually a fundamental change taking place in the world demand and production of minerals.

In the past both the demand and production had been mainly in the developed world. In the first part of the 20<sup>th</sup> Century the United States was both the main producer and main consumer of minerals. The

great economic growth areas after World War II, Japan and Western Europe, were poorly endowed with minerals, providing a major market for producers in areas such as Australia and South America. In the 21<sup>st</sup> century the main demand will be in the developing countries of Asia, where there is also a high potential for new minerals discoveries. China was already clearly the major demand growth area at the end of the 20<sup>th</sup> century and was quickly becoming a major producer and also an exporter of, for example, zinc, magnesium and aluminium. Russia has a mineral endowment greatly in excess of the needs of its own shrinking population. Exploration spending was shifting from developed to the less developed countries (see diagram at back of this section).

The dynamics of the industry in the future will be substantially different from the past.

### **Subsequent Events**

A number of speeches by Chairmen and Chief Executives in 1999 brought the Global Mining Initiative into the public arena. By June 2000 twenty seven companies had joined: in addition to the initial nine, Alcan, Alcoa, Anglovaal, Barrick, Billiton, De Beers, EDM/Somincor, Freeport McMoran, Goldfields, Lonmin, MIM, Mitsubishi Materials/Mitsubishi Corporation, Mitsui Mining and Smelting, Nippon Mining and Metals, Norsk Hydro, Sibirsky Aluminium, and Sumitomo Metal Mining.

The first project undertaken was a major effort to assess the issues the industry faces. The project was named Minerals, Mining and Sustainable Development (MMSD). By design the study was commissioned to be carried out independently of the industry, by the International Institute for Environment and Development (IIED) under the auspices of the World Business Council for Sustainable Development (WBCSD).

WBCSD, based in Geneva, had been formed in 1995. A number of companies in the minerals industry, including WMC, were members. When I was Chairman of BHP I had been invited to represent Australia on the executive group considering the formation of the Council but, because I was already overcommitted, had arranged for Sir Bruce Watson of MIM to become the Australian representative.

With over 160 definitions of sustainable development and no consensus of what it meant in a practical sense, the concept had (and still has) its sceptics. However, in a world where publicity is more important and influential than the actual meaning of an activity, my own view was that it was important for the industry to take the initiative and have some control over future events, rather than wait to be pushed around.

The expectation was that the study would generate:

- Broadly based and authoritative analysis of key issues which arise from people's expectations of sustainable development
- The foundation for new relationships and partnerships which the scale of the challenges demand
- More active engagement between the industry and others in order to understand the issues better, and the identification of the priorities
- Clarification on where the boundaries lie for action by different participants.

The study was global, but managed by smaller groups on a regional basis. The industry put up most of the cash and there was a determination to involve as wide range of the industry's critics as possible. In Australia a group of four people was working on proposals for work to be undertaken here: Dick Wells, Executive Director of the Minerals Council of Australia, Michael Rae who had a global brief on mining

issues with World Wildlife Fund, Trish Caswell, previously Executive Director of the Conservation Foundation and now Executive Director of the aid organisation Plan Australia, and George Littlewood, a consultant with wide experience in the minerals industry. The industry had no control over what aspects were investigated, who was consulted, or how the report was written.

In keeping with contemporary practice where nothing can be done simply or without much palaver, the project involved analysis of 221 global and regional reports on issues related to sustainability. More than 600 people attended 22 international stakeholder workshops in nine nations on four continents. Many more workshops were conducted on the regional level. In all, thousands of people were involved and the cost was US\$9 million.

A draft report was issued by the end of 2001 and discussed in February/March 2002. An international conference in Toronto on 12-15 May 2002 reviewed the final report, called *Facing the Future* (in some commentaries called *Resourcing the Future*). The Australian Minerals Council reported that the topics covered at the conference included:

- modern mining's current performance
- society's need for metals
- biodiversity and protected areas
- community relations
- information access, transparency and reporting
- eco-efficiency
- distribution of wealth
- large volume waste
- promoting human rights and fighting corruption
- options for certification, process and products
- small scale and artisanal mining
- product stewardship, safe use of metals
- contribution to development
- toxics and the environment
- relations with indigenous people and local cultures, and
- roles of governments and intergovernmental organisations

Hugh Morgan's comment was: 'The content ..... varied in quality and independence of views expressed. However, the process, engagement and attention it has gathered from governments and other organisations has been of great importance'.

Reading between the lines of the various reports, the expectations had been built up too high and, as could be expected, activists of various kinds had used the opportunity to pursue their particular interests.

There was (and is) a good number of people in the industry who are concerned about the MMSD report, which has been called 'the flawed outcome of a flawed process'. The critics remain to be convinced that it was not the first step on the way to the opponents of the industry gradually taking control of it.

The Toronto conference concluded the Global Mining Initiative. The next step was to be development and implementation of a global strategy by the International Council on Mining and Metals.

### **International Council on Mining and Metals**

In October 2001 the GMI set up the International Council on Mining and Metals (ICMM) as an international voice for the industry, charged with maintaining dialogue and effecting change. The

ICMM was also to participate in the World Summit on Sustainable Development to be held in South Africa in August 2002 (some 65,000 attending!).

The ICMM absorbed the International Council on Metals and the Environment (ICME). The initial Chairman of ICMM was Doug Yearly, with Sir Robert Wilson of Rio Tinto as Deputy Chairman and Thomas Leysen of Unicom as Treasurer. On the Executive Committee were the CEOs of WMC, Industrias Penoles, Anglo American, BHP Billiton, Phelps Dodge, Outokumpu, Noranda, and AngloGold.

National representative bodies such as the Minerals Council of Australia and international commodity councils would be members of ICMM and up to 6 of the 15-member Executive Committee were to be chosen from nominations by the associations.

The stated immediate aims of ICMM were:

- Developing the industry's case for sustainable development
- Maximising the industry's contribution to sustainable development
- Determining and promoting best practice, and
- Facilitating dialogue between the industry and stakeholders to find common ground on a global scale.

The appointment of Dr Jay D Hair as Secretary General of ICMM raised many eyebrows. Jay Hair had been a leading radical environmentalist, President and Chief Executive Officer of the USA National Wildlife Federation and President of the World Conservation Union. In these capacities he had been a loud critic of the mining industry. However, when he addressed the Melbourne Mining Club in April 2002, those present were pleasantly surprised by his pragmatic and down to earth comments regarding the industry.

His performance in his new responsibilities was not put to the test. Jay Hair died on 15 November 2002, reportedly after a five year battle with bone-marrow cancer. This must have been well advanced when he was appointed.

## **Employment in the Minerals Industry**

In October 2002 the International Labor Organisation estimated that the number of people employed in the world minerals industry had fallen by 5.5 million since 1985, from 25 million to 19.5 million. The main reasons were privatisation of the previously government-owned operations (many of which had been nationalised after World War II), a strong increase in productivity, and the shutting down of many uneconomic small mines, particularly in China.

The most massive decrease had been in China, from 6.7 to 4.3 million people. The movements in some other countries between 1995 and 2000 had been:

Romania	160,000	to	77,000
Poland	350,000	to	217,000
Ukraine	644,000	to	428,000
Germany	92,600	to	52,600
Britain	23,600	to	13,100
South Africa	598,000	to	417,000

**Multilateral Trade Negotiations**

The report in January 2003 (on following page) deals with the politics and the stage reached in multilateral trade negotiations.





## **MANAGEMENT**

While these recollections deal with the period from October 1974 to April 1999, this chapter includes a review of WMC's management practices since the Company's inception, to put the later period in context.

There have been several distinct periods:

- the Gold Mining Period (1933 to mid-1950s)
- the Diversification Period into aluminium, talc and iron ore (mid-1950 to 1966)
- the Nickel Period (1966 to 1975)
- the Olympic Dam Development Period (1975 to 1988)
- the Transition Period (1988 to 1994)
- the New Era (1994 onwards)

### **The Gold Mining Period 1933 to mid-1950s**

This period of some twenty years was characterised by the small size of the Company, the dependence on continual discoveries of additional ore at operating mines and therefore inability to plan far ahead, the economic stringency caused by the Depression and then World War II and its aftermath, and the general level of economic development in Australia. Initially the Company's policy and direction was set by the Founder, W S Robinson. However, he was a man with many interests of which WMC was a minor part. After the Australianisation of the Company in 1949, if not before, Mr (later Sir) Lindesay Clark's personality and way of working soon became dominant.

### **External Conditions**

This was the era when air travel was a novelty and time consuming (a flight from Melbourne to Perth in the 1930s involved at least six intermediate landings), long distance telephone conversations were expensive and unusual and telegrams the main means of business communication besides letters. The slide rule and logarithmic tables were the main tools for engineers; mechanical calculators made an entrance towards the end of the period.

A good typist could make up to nine carbon copies of letters and reports; beyond that either the Gestetner machine had to be used or the text had to be typed several times. The golden rule was to be sure you wanted to say what you wrote down, because it was very difficult to change it later.

### **Organisation**

WMC's management consisted of a very small Head Office in Collins House in Melbourne and a modest size Operations Office in Kalgoorlie, Western Australia. For the first few years there had been a Western Australian Office in Perth and there were plans to build a seven storey office on the corner of Mill Street and Mounts Bay Road to be called 'Corner House' (presumably after a famous building in Johannesburg). However, in 1935 the Operations Office was established in a house bought at 55 Macdonald Street in Kalgoorlie (see *WMC's Kalgoorlie Offices - a Brief History*, by Gilbert M Ralph in Group Historical Information collection (GHI). The staff in Perth had been perhaps 5 people and in the Kalgoorlie Office it was initially probably 10 to 15.

The Head Office was responsible for corporate administration (Board meetings, public announcements, share register, general corporate affairs), corporate accounting, and finance. The operations were conducted by separate public companies in which Western Mining had varying shareholdings,

sometimes less than 50%, and for which WMC was appointed General Managers and Consultants. The corporate administration and accounting for these companies was carried out in the WMC Head Office, while operational supervision and administrative, accounting, and technical advice to the operations in Western Australia was provided by the Kalgoorlie Office. Gold mining operations in Eastern Australia (Mt Coolon, Bendigo, Newstead etc) were under the umbrella of Gold Mines of Australia, a sister company taken over by WMC in 1959. Apart from Lindesay Clark, there was only one other technical person in Head Office (Paddy Maloney), dealing with operational matters in Eastern States.

Sir Lindesay started the practice of having a promising young technical person from operations seconded to him as Technical Assistant who, after some years in Melbourne - learning about the broader aspects of the company and the company having a good look at him - would be transferred back to operations in an appropriate capacity. L C Brodie-Hall was the first to travel this route. W M (Bill) Morgan and I continued this practice when we were Managing Directors. It was discontinued in the late 1970s (see later).

The Kalgoorlie Office was headed by the General Superintendent who was in charge of all operations and represented Western Mining in Western Australia. The Chief Accountant was responsible for all administrative, accounting, and personnel matters and there were a Chief Engineer, Chief Geologist, Chief Metallurgist and a Mining Engineer (not a Chief Mining Engineer, because the heads of the operations were mining engineers). These senior technical people dealt with corporate matters in their areas and acted as supervisors, advisers and consultants to all operations.

The operations had offices in their localities, headed by a Superintendent and with departmental heads on the Kalgoorlie Office pattern who would be members of WMC staff (also known as 'senior staff') on Kalgoorlie office payroll and seconded to the operation. People below departmental head level would be employed by the particular operating company.

Exploration outside the mine leases was directed by the Chief Geologist based in Kalgoorlie Office, with appropriate exploration staff responsible to him.

### **Management Practices**

Public relations and industrial relations in Western Australia were handled by the General Superintendent and the Superintendents of the operations, although in Kalgoorlie Office there was towards the end of the period one person ('Parley' Wickens), called Amenities Officer, who acted as a general troubleshooter and 'fixer'. There was no public relations or legal staff in Melbourne. In the Western Australian Goldfields at that time the only legal involvements were with the Warden's Court which determined leasing matters, the Inspector of Mines who was the regulatory authority, and the Gold Stealing Detectives. Any necessary legal input in Melbourne was by the external lawyers, Arthur Robinson & Co, and in Kalgoorlie by a local lawyer (Bryan Carson), the latter mainly in dealing with the Warden's Court and with the occasional Coroner's Inquest in case of fatal accidents.

Staff salaries would be reviewed annually by Sir Lindesay, together with the General Superintendent in the case of senior staff and the General Superintendent together with the Kalgoorlie Departmental Heads and Superintendents of operations in the case of other staff. Non-staff ('wages') employees would be either on piecework rates (such as underground miners) or on award rates which would be varied from time to time by the Arbitration Commission. Salary determination was never an issue which consumed more than at most a day or two a year.

The operations would deal with Kalgoorlie Office and Kalgoorlie Office with Melbourne Office as appropriate. There was virtually no direct communication between operations and the Head Office. Operations would prepare budgets for approval and report on the actual results against the budget. The

budgets would show production and costs, but would not include amortisation, revenue, or profitability. Capital expenditure would be budgeted separately. Operations would prepare their own cost accounts which would be forwarded to Melbourne Office. Melbourne Office would add revenues, amortisation, and corporate charges to the operations accounts to produce profit and loss accounts and balance sheets of the various group Companies and of Western Mining.

A step towards formalisation and standardisation of procedures in WMC was the introduction on 23 July 1954 of a set of 40 Standing Instructions by F F (Frank) Espie, the General Superintendent and later Deputy Managing Director, dealing mostly with administrative and personnel matters. Assembled in a foolscap size hard-cover screw binding, the number grew to 68 within a few years.

Relations with the Federal Government and State governments in the Eastern States were handled by Sir Lindesay. Relations with the Western Australian Government would be handled by Sir Lindesay, the General Superintendent, and occasionally by the Superintendents of operations if appropriate.

While tightly manned, virtually all matters were handled by the Company's own staff. The only areas where outside services were contracted were in legal matters and occasionally W B (Bill) Blown, the Chief Engineer, used Merz and McLellan as power generation consultants. Sir Lindesay had a close relationship in financial and general business matters with Denny Marris of Lazard Bros in London and visited there once a year for several weeks of discussions and consultations.

Throughout this period career opportunities in Western Mining were in the operations, not in Head Office. There were very few senior posts in Head Office to which people could aspire and the turnover in these was virtually zero.

People in operations were given virtual autonomy to run their operations as they saw fit. There were very few corporate prescriptions; the paperwork was minimal. There were no job descriptions; it was expected that job responsibilities would be settled naturally and informally by one's superior and peers. The job content would, to some extent, depend on the people occupying the positions at a given time.

There were almost no appointments of senior people from the outside; promotion was from within. Staff rarely left the Company; long service employees were the norm. From people who joined the Company in this period Sir Lindesay himself ultimately had 45 years' service. The all time longest serving employee in the Group became Eric Bullen, Underground Foreman at Central Norseman, who eventually retired after 50 years with the Company. Others with long service at retirement who joined the Company in the 1950s and 1960s were R (Roy) Woodall (42 years), D A (Doug) Marshall (42 years), D R (Don) Reid (40 years plus), D (David) Barr (40 years) and G M F (Geoff) Hopkins (37 years).

The main control over the operations was the prerogative of WMC to make senior appointments, control of capital, and the budgets.

No new plant was purchased if second-hand plant could be found. A storage shed on Boulder Road in Kalgoorlie, known as Joint Stock Spares, contained all surplus plant of the Group and could be drawn on as required. When mines shut down, WMC people, sometimes Bill Blown himself, would attend the auctions as far as New Zealand and buy whatever looked like being useful. Headframes, winders, and major items of plant and equipment may have been used on a number of mines. Timber framed and asbestos covered houses were sawn in halves and moved on low loaders from one operation to another as required.

## Outside Perceptions

The other gold mining companies on the Eastern Goldfields were somewhat critical of WMC, for example, for 'wasting' money on outside exploration including an aerial survey; the Company was referred to in the 1930s in Kalgoorlie as the 'Wasting Money Corporation'. Also, while by today's standards the WMC staff numbers were unbelievably small, in the view of the traditional Kalgoorlie companies they were excessive.

The perception by the media and the stock market was that the Company was given to understatement. It paid a steady tax-free dividend, was generally thought to be down-to-earth and enterprising, but saying the very minimum in public. The major source of WMC's income was dividends from its shareholding in Central Norseman (81% interest until 1946).

## The Diversification Period mid-1950s to 1966

There was no immediate change in these management arrangements after the Board decided in 1953 to take an interest in minerals other than gold, although changes occurred gradually.

## External Conditions

Jet aircraft introduced in the late 1950s revolutionised overseas air travel and turbojets were used in Australia. Electric typewriters became increasingly used. Mechanical calculators were now commonplace and electronic calculators, although rare, on the way in. Telex machines replaced telegrams for business communications. Copying machines with heat sensitive paper (duly equipped with a fire extinguisher) were common. Portable tape dictaphones, Xerox copiers and mainframe computers for office use became available.

## Bauxite and Alcoa of Australia

The first success outside gold was in bauxite exploration in the Darling Range beginning in 1957, which was carried out with the minimum of fuss as just another exploration project. When it became apparent that there was a large tonnage of bauxite in the Range, Alcoa was chosen as the partner on the advice of the Company's London financial adviser, Denny Marris of Lazard Bros, who also made the initial contact.

The Chief Geologist (J [Don] Campbell) visited Pittsburgh and presented the exploration results to Alcoa's senior management. With their agreement, what would now be called the *initial feasibility study* (we did not use such big words in those days) was carried out in a few months by one man, a just retired Aluminum Company of America (Alcoa) executive, Ralph Derr. His fee was US\$5000, travel costs for him and his wife, and living expenses while in Australia.

The purchase of the brown coal deposit at Anglesea from Roche Bros and the negotiations with the State Electricity Commission for power for a smelter at Point Henry in Victoria were carried out by Bill Morgan, who had been Engineer for Coal Production with the Commission. Sir Lindesay dealt with the Premier of Victoria, Mr (later Sir) Henry Bolte. Bill Morgan, who had been dealing with people in Japan in an effort to sell bauxite before Alcoa of Australia was formed, secretly negotiated an alumina sales contract from the yet-to-be established Kwinana Refinery with Mitsubishi Chemicals. The secrecy was not to alert competitors and perhaps attract a takeover bid before shareholders could be fully informed.

The initial negotiations in Pittsburgh in 1961 were carried out by Sir Lindesay, with me carrying his briefcase. Denny Marris was present as an adviser and expeditor. By mid-1961 Alcoa had joined the

project, Alcoa of Australia had been formed, and construction of the first refinery and smelter began.

Western Mining's Corporate Secretary, F R (Fred) Morgan, who had been very active in selecting a site for the Point Henry Smelter, obtaining land and making other arrangements, became Secretary of Alcoa of Australia. The project people in Western Australia also became Alcoa of Australia staff. The number of senior people participating in the project until Alcoa of Australia had been formed and assembled its own staff could be counted on the fingers of two hands. None of them, except Ralph Derr, had any experience in the aluminium industry.

### **Talc at Three Springs**

The next diversification was the purchase of a half-interest in the talc deposit at Three Springs in 1960. This was handled almost entirely by Brodie-Hall and did not involve additional permanent management arrangements except on the mine site until R P (Paul) McNerney was appointed Manager of Three Springs Talc in 1961. From then on Paul ran the business single-handedly, as did his successors with very small staff until the management of the talc operations was transferred to Amsterdam in 1988.

### **Koolanooka Iron Ore**

The third diversification before nickel was found at Kambalda was the discovery of the iron ore deposit at Koolanooka Hills in 1961. In 1962 Sir Lindesay approached the Hanna Mining Company, who had already decided to join with the Homestake Mining Company in search for iron ore. In September 1962 Geraldton Operations Joint Venture was formed to operate Koolanooka and pursue iron ore interests in Western Australia, in which Western Mining had 50% and Hanna and Homestake 25% equity each.

The Koolanooka Hills operation was run like another WMC Group Company and did not require any changes in management practices, except that there had to be frequent consultations with the joint venturers and that WMC employed Pat Hannaberry, retired Head of Commonwealth Railways, as a consultant in railway matters. Other consultants were employed for the construction of shiploading facilities at Geraldton. The new aspect brought to WMC by this operation was in the commercial area, where WMC became involved in long term bulk commodity contracts with Japan and bulk shipping arrangements.

These were handled by Bill Morgan and D P (Doug) McIntyre, who joined WMC as Commercial Executive in 1962 and became Commercial Manager following the Kambalda discovery in 1966. While Bill had by now some experience in Japan, neither he nor Doug had previous experience of iron ore contracts or shipping; Doug had been a commercial officer of Trans Australia Airlines before joining WMC. This did not deter them and, with the help of Wesfarmers in shipping matters, they proceeded to conclude very satisfactory arrangements, in spite of the best efforts of Hanna's shipping department who wanted to capture this business for themselves.

This quickly gained experience came in handy a short time later when the Kambalda discovery led to very important business with Japan in nickel.

### **Continuity of Management Practices**

Apart from these few outside appointments, staff remained stable and long serving. New operations under WMC management, such as the talc and iron ore operations, continued the practice of using secondhand equipment and housing as much as possible. Most of the company houses at Morawa, which serviced the Koolanooka Hills iron ore operation, were transferred from Bullfinch where the Great Western Consolidated NL gold mine in the WMC Group had just shut down.

A new practice introduced in this period, mainly at the instigation of Bill Morgan, was 'responsibility

costing'. Managers were held responsible for costs they actually controlled, not for those over which they had no influence. Bill also engaged a professional statistician, Joe Joseph, who introduced statistical analysis into evaluation of sampling results. K E (Ken) Denham, a mining engineer with a mathematical bent at Great Western in Bullfinch, became the in-house expert in statistical methods.

### **Establishment of Perth Office**

One management change, which would eventually have major consequences, took place towards the end of this period. In 1964, nearly two years before the Kambalda discovery, it was decided that the General Superintendent of Western Mining in Western Australia, then L C Brodie-Hall, should move from Kalgoorlie to Perth. (The Chief Geologist, Don Campbell, had already moved to Perth in 1962.)

Initially the rationale was that Brodie-Hall's duties now required so much liaison with the Western Australian Government that it was more efficient for him to live in Perth. He would be more effective based there and better able to form closer relationships with the people in government and public service. Under this scenario he was to establish a small office with a limited number of personal staff in rented accommodation just off St George's Terrace in Sherwood Court where Paul McInerney, appointed Manager of Three Springs Talc in 1961, already had an office. The operations office would remain in Kalgoorlie and continue to function as previously. I was transferred from Melbourne to Kalgoorlie officially as from 31 December 1964 to become Deputy General Superintendent to Brodie-Hall.

Whether it was ever realistic to expect to have a small office in Perth is doubtful. Once the gate had been opened, other staff found reasons why they had to be based in Perth. Already by February 1965 plans were in hand to build a WMC office in Perth. By the end of the year a single storey office with adjacent metallurgical laboratory had been constructed close to the airport on a large block of land at 191 Great Eastern Highway, Belmont. Gilbert Ralph has recorded the history of Belmont Office in *Group Historical Information* collection.

The location of the office in Belmont was based on several considerations:

1. Senior Perth office personnel were expected to travel frequently and the Belmont location was close to the airport.
2. A large block of land could be bought in Belmont which would provide for the metallurgical laboratory at the back of the office, together with ample space for the storage of samples, parking for vehicles, etc. The laboratory was initially to process iron ore samples for Geraldton Operations Joint Venture.
3. The building could be expanded as needed. Rented space in a city building would not have the same flexibility.
4. There appeared to be no particular reason for the office to be located in the city. While companies such as Hamersley and BHP opted for space in city skyscrapers, the view in WMC at the time was that we were a more down-to-earth company and preferred to have a working office rather than a glossy shopfront.

The irreverent added that the location was also very convenient for Brodie-Hall, who lived in Kalamunda. While this no doubt was not a disadvantage, I do not believe that it influenced the decision unfairly.

The Belmont Office was opened by Bill Morgan on 24 October 1965.

For many years the location served the Company well. The only criticism of which I am aware was that the female staff missed the opportunity for lunch-time shopping.

### **In Summary**

In summary, the Diversification Era from the mid-1950s introduced Western Mining to overseas business partners and long term contracts for bulk commodities and bulk shipping, but did not change the essential features of management practices. The Company remained as lean and unbureaucratic - today it would be said unsophisticated - as it had been since its establishment. It is remarkable that this unsophisticated group of people managed to bring about within a short time and at a very low cost new developments which would set WMC on the way to becoming a major minerals producer.

This is not just my perception. I recall the then Managing Director of CRA, Arthur Rew, embarrassing me in the late 1960s by asking his staff in my presence why it was that WMC could do things so much more quickly and cheaply than they could!

### **The Nickel Period 1966 to 1975**

The discovery of nickel at Kambalda on 28 January 1966 was a major change point in the Company's history.

There was a shortage of nickel in the world market, which was in normal times dominated by one large producer in Canada. This was a rare opportunity for a new producer to enter the business.

The Board of WMC made a deliberate decision to disregard normal procedures. Exploration had not yet outlined the first orebody when construction began. Plans were amended progressively, sometimes daily, as more results came in and the scope of the project expanded. Surprisingly few mistakes were made in spite of this unorthodox approach.

The first nickel concentrate was shipped to a customer just 17 months after the first drillhole intersection. A refinery to produce nickel metal commenced operations three years later and a smelter two years after that. WMC became one of the largest nickel producers in the world.

The financial transformation of the Company has been described in Part A *THE SHINE OF NICKEL, A Company Transformed*. Equally significant was the quantum leap into smelting and refining and worldwide marketing of concentrate, matte and metal, described in the same chapter.

### **Construction and Contractors**

In consequence, a number of senior people with skills not available internally were recruited from outside, although many were trained 'on the job' within a short time. Another change was that outside contractors were employed to build plants; previously virtually all design and construction had been carried out by the Company's engineers.

Initial construction at Kambalda still used second-hand equipment from the Group; the Silver Lake headframe, winder and winder house came from the Nevoria gold mine of Great Western Consolidated. Part of the mill building came from Bullfinch and other buildings came from the old Celebration Mine. Some secondhand compressors were used. One reason for using second-hand equipment was its immediate availability which was vital to achieve the early production target. Gradually, however, new plant began to be ordered and the Kwinana Refinery and the Kalgoorlie Smelter used brand new equipment.



The refinery was designed and built by Bechtel Corporation, with the technology provided by Sherritt Gordon Mines Limited, the developers of the process. Sherritt also assisted and advised with the start-up which was just as well, because none of the refinery staff had any previous experience with such a plant.

Some WMC staff were sent to Fort Saskatchewan for training and a small group of Sherritt staff, led by Charles Hames, was at Kwinana during commissioning. A J (Allen) Gittos, the Resident Manager, was a metallurgist with ore dressing and alumina refining background. It took about six months of hard work after start-up to begin producing substantial quantities of nickel metal and about a year for the plant to settle down, which was a commendable performance for a completely inexperienced team.

The smelter was constructed with WMC Engineering Department acting as the construction managers, the design being contributed to by the licensees, Outokumpu of Finland. M D (Michael) Softley went to Outokumpu to coordinate the smelter design and S A (Stan) Evers made a substantial contribution. For the operating crew we had a very experienced smelter man, C J D (Ned) Williams ex E R & S at Port Kembla as Manager and Peter Miller, the Smelter Superintendent was experienced, but very few others had pyrometallurgical experience. Ned trained his team on the job. Again, after an initial troublesome period which is not unusual even with an experienced team, the smelter settled down well.

### **Nickel Marketing**

For the worldwide marketing of nickel metal WMC employed in August 1968 R W (Bob) Allard, with INCO marketing experience, who headed a small marketing team in Melbourne. Doug McIntyre, with one assistant, handled the initially vital long term concentrate and, later, matte sales contracts in Japan and to Sherritt in Canada.

### **WMC Staff in 1972**

The nickel operations became additional operations on the established Western Mining pattern. While the Kambalda operation had a key group of pre-1966 staff, the Kwinana Refinery and Kalgoorlie smelter staff were almost entirely outside appointments. There were also significant outside additions to corporate staff.

Maurice Brown (see 'The Brown Review' below) looked into the background of 43 most senior staff in operations in 1972 and concluded that 'managers at WMC form two cultures: 'the gold miners, and the rest'.

The gold miners, representing 20% of the group, had been with the Company for fifteen years or more, had worked together in the bush, and remembered when the Company was small. Most of them were trained at the Kalgoorlie School of Mines.

The rest', representing 70%, had been with WMC since the Kambalda discovery, less than six years. Thus 90% of WMC's managers had been with the Company less than six or more than fifteen years.

Maurice made the point that this created the need for an alternative to the old tradition of free-and-easy relationships and mouth-to-mouth communications. This was recognised and one step in that direction had been the establishment in November 1969 of periodical Operations Review Conferences, at which I and corporate staff spoke on corporate matters, Resident Managers described their activities, the results were reviewed and budgets and plans discussed. Maurice attended such a conference in July 1972.

Maurice also observed that:

'As is usual and perhaps inevitable and proper in mining companies, the most influential jobs in WMC are filled by professional technologists: though interestingly enough this is not predominantly true at the very top. Some jobs are done by technologists which would be better done by others - a situation which has come about, I suspect, because the job had to be done and there didn't seem to be a better man readily available. Especially at junior management levels, there is some feeling among the non-technical professionals that they take a back seat.'

## **Organisation**

The Company's organisation was described in an interview I gave in August 1971 as a 'double yolked egg' representing the Melbourne and Perth offices and ringed by the operating divisions.

'Both Melbourne and Perth are really part of the same office but for convenience we have separated them. This is shown in a double-yolk where each has its own separate function but there is an area of overlap. We try to work it so the overlap between the two yolks is minimal.'

'I'm not saying that we have the perfect system but we believe that what we have suits our present circumstances best. We generally like to think we leave as many decisions as close to the problem as possible. .... Our policy is that if there is not a very good reason why something should come to Melbourne, then it does not come. We try to give people in operations as much autonomy as we can.'

On another occasion I described the Melbourne and Perth offices as one office, with two floors in Melbourne and four floors in Perth.

Maurice Brown in his report commented on three organisational areas where he felt there was a need for some improvement: personnel, industrial relations, and research activities.

The Standing Instructions established in 1954 had been reworked and expanded in 1970 by G M (Gilbert) Ralph, who was seconded to Melbourne as Bill Morgan's Technical Assistant, into a Group Policy and Procedures Manual which, as Maurice observed, dealt mainly with personnel matters. 'Elements of personnel work take place in various accounting offices, in the Secretary's office and of course in the operations. There is also a small and uncomfortable personnel section in Perth office. It is not well staffed and it is not clear about its job.'

The Perth personnel office had been briefly headed by a man who had attempted to establish a then conventional fully blown Personnel Department overnight and had left, frustrated.

The handling of industrial relations during this period and subsequently is described in *Employee Relations*.

The handling of technological innovation and research is described in *Technology*.

## **Human Relations Unit**

One unusual episode during this period was the Human Relations Unit.

Sir Lindesay, who was also the Chairman of BH South, had become friendly with the Professor of Psychology at Melbourne University, Oscar Oeser, who had convinced him that there was a role for psychologists in closing the traditional adversary relationships between management and the unions. Oeser had been engaged to apply his skills to this at Cobar Mines in the BH South Group, with good

results according to Sir Lindesay. Sir Lindesay got the agreement of Bill Morgan for Oeser to try the same at WMC. He and one or two assistants formed the Human Relations Unit, with the mission to improve relationships at Kambalda.

He no doubt did not get a fair opportunity to show what he could do. Oeser's intention was that he would sit in on, if not lead, any discussions between the Company and the unions. This would have been the veritable red rag to the Resident Manager at Kambalda, J B (John) Oliver. John was the son of Charlie Oliver, the legendary General Secretary of the Australian Workers Union and, rightly or wrongly, regarded himself as an authority on union matters. Between him and S J (Stan) Carter, who combined a long experience as an industrial relations officer with a showman's personality of the highest order and did not willingly concede the slightest role to someone else, Professor Oeser did not have a chance.

Maurice Brown's report records that: 'This is a sad story ..... Whatever the original purposes contemplated, the Unit has now become a tiny sociological research cell looking at matters connected with the Kambalda township'. They did produce a report and Professor Oeser presented a paper at a UNESCO Conference held in Kambalda. The Unit went quietly out of existence shortly thereafter.'

### **Perth Office**

The Perth Office in Belmont had grown almost continuously since 1965. Exploration Division had located a substantial number of staff in Perth. The undercover car parking areas were converted to offices. When it was decided in 1968 to purchase an IBM 1130 computer for technical applications, with K E (Ken) Denham in charge and R (Roger) Pankhurst and K J (Kevin) Rosich Computer Programmers, the office had to be extended by adding a new section in front of the original building, linking the two at first floor level, and adding a second floor. The new building was designed by the architects Forbes Fitzharding to be capable of extending up to eight floors.

In June 1969, the Kalgoorlie Operations Office, about 15 people headed by Bill Blown as General Manager - WA, moved to Perth. The 55 Macdonald Street Office became the Head Office of Exploration Division. Work on extending the Belmont Office was completed in November.

The introduction of the first computer in WMC in Perth Office in 1969 is described in the section titled *Technology*.

The initially vacant second floor did not stay vacant for long. Within a year it was enclosed and offices partitioned. In the late 1970s two more floors were added to provide for the expanding Engineering and Accounting departments.

Exploration Division established an exploration base in Perth in September 1974. This was, however, not in Belmont Office but in rented premises in nearby Daly Street.

Brodie-Hall retired as Executive Director - WA on 30 June 1975. He continued as a non-executive Director, as Chairman of the gold companies, liaised between the WMC Board and the Western Australian Government, and acted as a consultant to the Company. Keith Parry, who joined the Board in June 1976, became Director of Operations. R (Roy) Woodall was appointed Director of Exploration in June 1978.

### **Public Relations in WA**

Gilbert Ralph has recorded a detailed account of the development of the public relations function in WMC (see *Group Historical Information Collection - GHI-WMC-110 History of Public*

*Relations/Corporate Affairs in WMC).*

In 1967 Brodie engaged R (Rex) Tremlett to produce a quarterly in-house magazine called *Westminer*. Other than that, public relations work continued to be handled part-time by operating personnel.

The Official Opening of Kambalda on 15 September 1967 was organised virtually single-handedly by Gilbert Ralph, then Design Engineer in Kalgoorlie Office. It was a major event including 440 visitors, many from the Eastern States and overseas. Nothing like it had been attempted by WMC previously and today there would be many people involved in the planning and execution. Gilbert managed it splendidly on his own.

In 1970 Bob Gude was appointed Public Relations Officer in Perth Office and soon acquired an assistant, Mike James. Both contributed to *Westminer* but the nature of the magazine changed and various operations started issuing their own newsletters, with contents of greater relevance to them. The last issue was in the summer of 1972-73.

During the major nickel industry downturn in 1974 both Gude and James were retrenched and public relations matters reverted to the managers. Later, it became one of the responsibilities of the Administration Manager, W B (Bruce) Gardener. Gilbert Ralph, then Executive Assistant to Brodie-Hall, handled many such matters on Brodie's behalf.

### **Melbourne Office**

I was transferred from Kalgoorlie to Melbourne immediately after the Kambalda Opening on 15 September 1967 and appointed General Manager of WMC in February 1968.

The main additions to Melbourne Office were in the metal sales and commercial area and some accounting and administrative staff. J O (John) James became the first in-house lawyer (Group Legal Officer) in February 1968. The Head Office remained reasonably compact and, after I succeeded Bill Morgan as Managing Director in 1971, I kept it deliberately so. My ambition was to keep the numbers limited to 70 and I was successful in doing so partly because the office accommodation was strictly limited.

We still did not have Public Relations or Corporate Affairs people in Melbourne; the rationale was that dealing with such matters was a part of the responsibility of the Managing Director and other senior executives. The only slight exception to this was that we retained one person (Ian Sabey) to notify the media when there were press conferences to announce half-yearly or annual results, or any other matters. Ian had been doing this for Bill Morgan and I continued with him. Otherwise I was always available to the media if they had a question and never declined to be interviewed. I was told that this was unique.

Over many years I did not find this practice an excessive demand on my time and I like to think that it contributed to our good relationships with the media.

Later in the 1970s 'public relations' was gradually included in what came to be known as 'corporate affairs'. The first record of this is the change in Hugh Clark's title from Director of Administration to 'Director - Corporate Affairs' in 1976.

Some time in 1971 - I think in February - I started the practice of having Staff Meetings on Monday mornings (provided I was in Melbourne). These were to last no more than one hour and were principally a means of keeping senior Melbourne staff informed of what was happening - definitely not for decision-making. My Technical Assistant was responsible for writing brief minutes, preferably one

page but no more than two pages. Maurice Brown attended one meeting, and found it 'brusque and terse, with little discussion, as distinct from announcement'. This is exactly what they were meant to be!

In these days of high level security arrangements it is perhaps hard to believe that in September 1972 I wrote a note to Hugh Clark, asking him to review the security precautions in Melbourne Office.

It is relatively easy for outsiders to enter our offices and once entry is gained through the main door from the passage the individual offices have no locks. Security therefore would appear to require that all officers or their secretaries have a lock-up cabinet for confidential materials ..... You might also consider enquiring from Perth Office and from the main operating offices (Exploration Division, Kambalda, Kwinana) what security arrangements they have.'

When WMC decided to take an interest in energy minerals, E D J (Doug) Stewart, an ex-colleague of Bill Morgan from the State Electricity Commission (SECV), joined Melbourne Office staff in 1970. Doug was soon after appointed Deputy General Manager WA under Bill Blown and succeeded Bill when he retired in July 1971.

Doug came back to Melbourne in March 1973 as General Manager (Operations), but the appointment was changed in February 1974 to General Manager, Fuel and Energy Minerals, with responsibility for coal, petroleum, and uranium. He was joined by Ken Lamin (also ex SECV). John Oliver had been transferred from Kambalda to Brisbane in 1971 as Project Manager for Hail Creek Coal Project and Ken acted as WMC's representative in the Joint Venture.

Doug McIntyre, Commercial Manager, was appointed Assistant General Manager in 1969, General Manager (Commercial) in 1971, General Manager - Metals in 1974 and General Manager - Planning and Development in 1975.

H S (Harold) Amos, Financial Controller, was appointed General Manager - Finance on 23 August 1974. Harold had joined WMC in July 1968 from the Department of External Affairs, where he had been Assistant Secretary (Finance) Department of Territories.

After WMC withdrew from the Hail Creek Joint Venture in 1975, John Oliver was relocated to Melbourne Office in November as General Manager - Projects. Most of the projects were in Western Australia and John transferred to Perth in January 1979. He was restless in the job, in poor health and resigned in February 1981 to pursue a consulting career. John died in January 1990, aged 50 years.

Early in 1974 WMC and several other tenants in Collins House moved to the newly built City Mutual building at 459 Collins Street while Collins House was demolished and rebuilt. WMC returned in 1978 to floors 28 and 29 in the new 35 floor Collins-Wales House at the 360 Collins Street address, a joint venture between Bank of NSW and Apsonor (in which WMC later 'inherited' a one third interest after taking over BH South in 1980).

### **Change of Managing Directors**

Bill Morgan suddenly discovered that he had cancer just as he was about to set out for overseas in early 1971. The trip was cancelled and Bill's health deteriorated very quickly. He started to come to the office less and less and take less and less interest in the Company's affairs.

In May 1971 I was appointed Deputy Managing Director and my instructions from Bill Morgan were to act as if I were the Managing Director. Bill retired on 9 November 1971 and I succeeded him as Managing Director. He died on 2 February 1972.

## The Brown Review

In November 1971, after discussions with Doug Stewart, I asked Maurice Brown, the then recently retired Principal of the Australian Administrative Staff College in Mt Eliza which I had attended in 1964, to 'advise us on our general management practices, company organisation, management development practices and other similar matters'. He was free to go wherever he liked in Western Mining, talk to whomever he wished, and report his impressions and recommendations by October 1972.

In advising Western Australian staff of this, Doug Stewart said in a memo:

The thinking behind the appointment is that over the last five years the Company has gone through a period of very rapid expansion and is now settling down to face a somewhat different future. The time is, therefore, opportune to take a critical look at ourselves and to consider how we may be able to improve on the philosophies and methods of management which have served us effectively in the past.....'

Maurice's report *Where Angels Fear - Observations of WMC by a Privileged Outsider* (in *WMC Historical Information Collection*) is a fascinating snapshot of the Company at that time; those interested in WMC's history should read it in full. Some of his general comments are given below; more specific observations are shown elsewhere in this section.

'WMC is not a conservative body in a stuffed-shirt sense, but it is a highly traditional one. It used to be small and it was sometimes hard up. Most of its work was in the country, and in Western Australia at that. Most of its people were trained in mining, engineering or metallurgy, and they were very, very, very Australian. All these things show through, and the Company sits a little uncomfortably in a sophisticated, modern industrial world.'

The company has a somewhat old-fashioned air ..... (but) Kambalda and Kwinana .... are in different worlds.'

There is a strong conviction in the virtues of austerity, as becomes the hard, rugged life of the explorer: a pride in doing without facilities which others might think essential. The laboratory at Kalgoorlie is I think the most squalid I have ever seen (Maurice means the temporary geochemical laboratory in a shed on Boulder Road), and the plan to build a new one was announced to me with a tinge of guilt. Mining, one is made to feel, is not a business for those addicted to feather beds.'

'At a Review Conference I attended ..... there was considerable stress on the need to restrain costs by postponing inessential capital projects and in other ways. Not only were these plans heeded without protest: one got the feeling that they were received with a certain masochistic pleasure.'

The Company's history and the nature of its business have also given rise to a very strong tradition of personal autonomy, especially as regards people who work in the producing operations. Even before I began my work, Arvi Parbo said to me "We want people to feel they run their own shows". From the Chairman ("We know we must have order, but we don't want bureaucracy") and from the foremen I heard the same view reiterated. When I hear it in other places it makes me suspicious, but in WMC it is a profound and genuine conviction, which can be tested in various ways. When a need arises to co-ordinate the activities of two or more operations, however great the need or mild the proposal, the job is undertaken with the greatest

circumspection and reluctance.'

'Autonomy of this sort is a great strength and something of a hazard. The hazard will grow as scale, and particularly the number of operations, grows .....

'... WMC's attitude to joint venture is cautious, tentative and reluctant. It doesn't feel like an international company. Among its own managers one hears a certain irritation expressed at relationships with partners .....

'By far the most impressive and valuable thing about WMC's climate is the outstandingly good relations between individuals. I can scarcely be wrong about this. I have listened to scores of people talking about their bosses, their peers and their juniors and I have done my listening in circumstances where no-one had anything to gain by painting a too rosy picture.'

'WMC was until recently small enough for all its managers to know each other personally. Often when I have asked the question "Do you know So-and-so?" the answer has been "Know him? We worked together at Bullfinch!" The quality of leadership is of course important too. WMC has been wise and fortunate in selecting its chief executives and its other senior officers, most of whom are naturally enough representatives of the band-of-brothers era. Their pioneering "golden dawn" attitudes to each other have stained into the whole Company.'

The personal climate of the Company was summed up for me by a group of younger managers who were brought together at my request and with whom I spent an afternoon and evening in Perth. There was a good deal of criticism of some of the Company's practices, but when I asked the group what were WMC's strong points they said, unanimously, that the things they valued most about their work in the Company were informality, freedom, humanity, candour and consultation.'

The present structure, together with the tradition of giving the resident managers a good deal of autonomy, leads to a strain that is nothing specially to do with WMC ..... it is akin to the problem of a federal system of government .....

'WMC does not at present have substantial problems of this kind .....

In my view, much more co-ordination in certain accounting, staffing, equipment and similar fields would save money and increase productivity. But there is a healthy reluctance to take any step which even seems to restrict the independence of the Operations, and I see no present danger of regimentation.'

'But the situation may be different one day. As size, diversity and dispersion grow, as they will, co-ordination will become at once more important and more difficult, and it will be very important that it be done with good will, intelligence, and imagination, so as not to foul the Company's whole climate.'

'In all these matters of structure there is a great reluctance in the Company to formalise and codify. When I came to WMC it was explained to me that the Company did not go in for organisation charts and the like, and I was in fact given charts which Bob Nichols had drawn because he was going off to the Administrative Staff College and needed them to take with him. They have been very helpful to me, and I suspect they would be useful to a lot of other new boys as well.'

'I sympathise with people who fear rigidity and formalisation. I am also aware, however, that as the Company grows, and especially as the number and diversity of Operations grows, increasing problems of organisation will arise and will need to be resolved. If this is not done, people will

be increasingly uncertain of what they are supposed to do: and accordingly to their temperaments will either poach on the preserves of others or retreat from the fray. Problems of communication will grow, and it will be discovered, perhaps too late, that important things are not being done at all.'

Maurice proposed that a relatively junior Organisation Officer, responsible to the Director of Administration, should be appointed. When I discussed this with the senior executives reporting to me, none of us could see any merit in it. Our conclusion was that resolving any confusion in this area was the responsibility of the next senior line manager, not a junior staff member drawing lines on paper in Head Office. The responsibility for ensuring that no important activity was overlooked rested with the executive directors in their particular areas.

### **External Perceptions**

Maurice Brown was particularly asked to find out what outside people think of WMC. Here is the result:

- 'Decent' .... a lucky company, but a good one to deal with' - John Hohnen, lately of CRA.
- 'A good company .... a lot of good chaps' - Geoffrey Blainey the historian.
- 'A good company to deal with, but Alcoa is the best' - Jim Pascoe (Western Australian Railways) and Hugh Rudderham (Fremantle Port Authority).
- 'Overmanaged ..... This enormous overhead in Perth and a great office in Melbourne' - Dirk Zeidler of I.C.I.

(Dirk Zeidler's comment is puzzling as there were about 40 people in the Melbourne Office at the time. The Perth Office was much larger, but included the corporate computer and WMC Engineering Services, which were not 'overhead').

- 'They have the courage to go on looking' - an independent mining consultant.

Maurice also quoted a young graduate with sociological interests who 'does not begin with a prejudice in favour of capitalist enterprises' as saying:

'WMC has a good image and a progressive attitude. The top chaps are interested in aboriginal employment, and in sociological matters generally: more so, for example than CRA or Nabalco. Mind you, they strike nickel wherever they dig, and can afford to be benevolent. But all the same there is a good spirit there.'

Regarding press, Maurice reported:

'It seems always favourable, and in particular journalists regard WMC as unusually conservative in the matter of announcing discoveries: "traditionally conservative, tight-lipped posture on exploration": expertise it has shown in almost all its exploration programs": "no other company .... gets so much value out of its exploration dollar" (Financial Review). "Known for its conservative announcements" (Australian). Traditional conservatism' (Age). Kind words are said too about the management: "competent miner and a respected company" (Financial Review). "Shown the strength of its existing management" (Ian Potter & Co.). Ian Coghill in his *Australia's Mineral Wealth* makes (page 158) an enthusiastic reference to WMC's speed of



operations and its care of the environment. The Company has no satisfactory explanation of this happy state of affairs. There is no galaxy of press liaison or public relations officers. There is a part-time publicity consultant who speaks when he is spoken to, which is not often. I am told that the Company's contacts with journalists are always through senior managers ("a bit of a chore, but worth it"): but that is also true of many companies about which scribes are very rude.

Perhaps it is simply that the company deserves its reputation. I should strenuously recommend that the present way of handling these matters be continued.'

### **Perth Office**

Bill Blown, who had succeeded me in Kalgoorlie in September 1967 and moved to Perth in 1969 as General Manager (WA), retired in July 1971. Bill Morgan was ill, and I hosted a farewell dinner for Bill and Nancy Blown on his behalf in the Parmelia Ballroom on 7 July.

Bill intended to record his recollections of the early days at WMC. We provided him with a tape recorder and sent him copies of Annual Reports, but I do not think he got too far - in any case, there is no knowledge of anything he may have recorded.

Initially it was contemplated that the successor to Bill as General Manager (WA) would be John Oliver. I recall approaching John about this while we were both in Perth in early 1971. To my great surprise, he started to negotiate the conditions for his appointment, which was unheard of in Western Mining at that time (and for a long time afterwards). I promptly concluded that he was not the man we wanted in the job and Bill was succeeded by Doug Stewart.

Doug returned to Melbourne on March 1973 and was succeeded by Keith Parry. Prior to his appointment Keith attended the Australian Administrative Staff College at Mt Eliza in the second half of 1972.

### **Change of Chairman**

Sir Lindesay retired as the Chairman of WMC at the end of the Annual General Meeting on 17 October 1974. I had been Vice-Chairman since October 1973 and was appointed to succeed him as Chairman, while also continuing as Managing Director.

### **Organisational Changes**

In 1974 the nickel market was in a serious downturn and WMC faced a substantial negative cash flow (see *Corporate Philosophy*). As a part of the effort to improve the Company's performance, some organisational changes were made. The changes were 'from a geographically oriented organisation to task or product oriented units'. Much of it was confirmation of how the Company already functioned.

In August 1974 the Company's activities were divided into seven divisions or groups:

Exploration Division	-	headed by	R Woodall
Fuel and Energy Group	-	"	E D J Stewart
Corporate Finance	-	"	H S Amos
Corporate Administration and Services	-	"	H O Clark
Nickel Division -	-	"	K F Parry
Gold Division	-	"	L C Brodie-Hall
Planning and Development Group (incl. Overseas Offices)	-	"	D P McIntyre

J O (John) Reynolds was appointed Manager - Corporate Planning. He was succeeded as Commercial Manager - Nickel Division by A D M (David) Green.

Particular emphasis was laid on better financial control. In a memo to Harold Amos on 10 December 1974 I said, amongst other things: 'The main problem we have at the moment is that any reliable figures are history, sometimes up to two months old. Recent forecast figures have been not only unreliable but grossly misleading and therefore worse than useless.' Harold Amos followed this by a memo on 13 December 1974 to senior managers, setting out an improved procedure.

Formalising WMC did not come easily.

After a number of discussions during 1974 and early 1975 the role of Corporate Planning was recorded in a memo in August 1975. In December 1975, John Reynolds commented in a note:

During most of 1975, corporate planning has not been used as was intended. There have been a number of important strategic decisions taken during the year, in which corporate planning has in no way been involved.

..... corporate planning needs to be exposed much more fully to events and issues in the top management areas on a continuing, rather than an ad hoc occasional basis. Otherwise, corporate planning will play purely a management services role which is less than its potential value to the company.'

I must have been the main culprit in short-circuiting the formal procedures.

### **The Olympic Dam Development Period 1975 to 1988**

During this period nickel, and in the 1980s gold, remained the main income sources for Western Mining, but I have named it after Olympic Dam because changes in community perceptions and the anti-uranium protests which took place throughout this period led to an antagonistic attitude towards the minerals industry, including WMC. This had a major effect on management practices.

Olympic Dam was discovered in 1975 and produced its first product in 1988. Its development and the anti-uranium campaigns during that period are described in Part A, *THE BURNISH OF COPPER*.

### **External Conditions**

During this period word processors, personal computers, and subsequently lap-top computers became commonplace and the fax machine was introduced, making the telex obsolete. Jet aircraft were used for virtually all commercial air travel.

### **Perth Office**

Ken Denham resigned as Manager - Technical Services in November 1977. He continued as a director of Central Norseman.

In Perth, the office kept growing. The adjoining property in 193 Great Eastern Highway was leased in mid-1980s by WMC Engineering Services Pty Ltd, until they needed more space and rented an office in 63-69 A bernethy Road. A part of the Exploration Division moved from Kalgoorlie to an office in Daly Street, Belmont and also rented additional space in nearby Stoneham Street.

Keith Parry died suddenly in May 1986. After a short period during which I acted as Director of Operations, it was decided not to fill this post and B J (Brian) Hurley, General Manager - Nickel Division was also appointed Senior General Manager - WA. (See a fuller description of these events under Melbourne Office.)

### **Adelaide Office**

To accommodate the Olympic Dam Project staff an office was established in Greenhill Road, Parkside, a suburb of Adelaide immediately south of the parklands. This also accommodated petroleum exploration staff. Roy Woodall, appointed to the Board as Director of Exploration in June 1978, also moved from Kalgoorlie to Parkside. After the takeover of BH South in 1980, minerals exploration staff inherited another office in the Adelaide suburb of Pasadena. They also had local offices in Preston, a suburb of Melbourne, which later became ExDiv's Australian headquarters, and in a number of other localities throughout Australia.

### **Melbourne Office**

Doug McIntyre resigned from WMC on 1 July 1975. His wife had become seriously ill and Doug could no longer spend lengthy periods away from home. He became a lecturer at the RMIT. Doug's duties were shared by Hugh Clark, Doug Stewart and Keith Parry.

H M (Hugh) Morgan, Bill Morgan's younger son, joined WMC as Executive Director in September 1976 from North Broken Hill Ltd where he had been Director of Marketing and Finance. His responsibilities were defined in January 1977 as commercial and marketing policy, financial and general business policy, and outside investments. All matters previously referred to me in these areas were to be referred to Hugh in the future. In December 1978, with John Oliver transferring to Perth, he also became responsible for the Projects Department in Melbourne Office.

In September 1977 I J (Ian) Duncan was appointed Business Manager, responsible to Hugh Morgan. In October 1977 S J C (Colin) Wise was transferred from Perth Office and appointed Manager, Legal Services, also responsible to Hugh Morgan.

When the size of the Olympic Dam orebody became apparent, it was decided in 1979 to invite a joint venturer to share the cost and risks of development. At that time all the large oil companies had decided to become involved in minerals and WMC invited bids from a number of these. Another company interested was BHP.

Hugh Morgan handled the approaches, the bids, and the evaluation of these. BP turned out to be the successful bidder and Hugh was also in charge of setting up the joint venture and the subsequent negotiations of an Indenture Agreement with the South Australian Government.

This was quite different from the previous WMC experience with partnering Alcoa. BP was a very different company from Alcoa, the anti-uranium atmosphere meant there was a high political content in the project and there was a very high level of legal involvement in everything. The environmental movement was well underway and a massive *Environmental Impact Study* had to be prepared.

The senior management structure in that period until 1986 was that reporting to me as Managing Director were Keith Parry who as Director of Operations was in charge of all projects and operations, including nickel marketing, and represented WMC in Western Australia, Roy Woodall as Director of Exploration, Hugh Morgan, who as Executive Director had the responsibilities mentioned above, and Hugh Clark as Director of Administration and, from 1976, Director of Corporate Affairs.

Doug Stewart took early retirement in July 1979. Hugh Clark retired in November 1981. Don Morley was appointed to the Board as Director of Finance in March 1983.

Don had been trained and worked for a short time as a metallurgist. He then graduated in 1970 as a Master of Business Administration from the University of Chicago. While in their final year, a number of Australians studying for the same degree made up a booklet containing their biographies and sent copies to companies likely to be interested in employing them. WMC received a copy.

Harold Amos, Doug McIntyre and I had been discussing the need for a financial analyst to strengthen WMC's financial and commercial activities. Also, there was a question for a successor for Harold when he retired; there was no-one suitable in the organisation. Don looked good to us, particularly because his metallurgical background meant that he was familiar with the minerals industry.

We invited Don to fly to Melbourne for an interview at WMC's expense. He did, and was employed. Don subsequently told me that he had a number of job opportunities, but chose WMC because he was impressed with the no-nonsense way in which he had been invited to come half-way around the world for an interview.

When Harold Amos retired on 14 July 1980 Don did succeed him as General Manager - Finance.

Long time Company Secretary S K (Kevin) Larsen retired in 1983 and was succeeded by G S (Grahme) Dixon.

### **Technical Assistants in Melbourne**

Because Melbourne Office did not have technical staff familiar with Western Australian operations, in 1949 Brodie-Hall was assigned for temporary duty in Melbourne as Technical Assistant to Managing Director (then Mr Lindesay Clark). This also gave an opportunity for senior people in Melbourne to make a personal assessment of promising young staff members, who would in due course return to Western Australia with a good knowledge of Head Office people and activities.

After Brodie became General Superintendent of Great Western Consolidated NL in 1951, there was a gap. The next secondment was C M (Colin) Kleemann from January 1959 to March 1960, followed by me as Technical Assistant to Bill Morgan from May 1960 to December 1964 and K E (Ken) Denham from November 1964 to July 1968. (Ken's title from December 1965 to July 1968 was Operations Engineer.)

During my term there was also a second technical person in Melbourne Office; D A (Don) Huxtable from December 1961 to June 1963.

When I became General Manager in Melbourne in 1968 I worked closely with Bill Morgan's Technical Assistants Gilbert Ralph from December 1968 to July 1970 and B J (Brian) Hurley from April 1970 to July 1971. R A (Bob) Nicholls from April 1971 to May 1972 was initially Technical Assistant to Bill Morgan and, subsequently, to me.

In 1972 the designation was changed to Executive Assistant to Managing Director, a position filled by J H (Jim) L alor from July 1972 to June 1973, P R (Peter) Webster from May 1973 to January 1974, Geoff Hopkins from October 1974 to January 1975, C A (Charles) Hohnen from January 1975 to March 1976, and G D (Geoff) Loftus-Hill from March 1976 to March 1977.

The practice was discontinued in 1977. I visited Western Australia frequently after being appointed General Manager in 1968 and Keith Parry came to Melbourne once a month after being appointed to the

Board in 1976. There was no longer a need for technical assistance in Melbourne. A J (Andy) Cullum was Assistant to Hugh Morgan as Managing Director from September 1991 to March 1995 but this was an exception, partly as a holding position for Andy while his future with WMC was being sorted out.

### **Corporate Affairs**

In recognition of the increasing activity in what may be termed 'corporate relations' area, in 1980 J O (John) Reynolds was appointed Manager Corporate Affairs based in Melbourne Office and Gilbert Ralph was transferred from Perth to become Assistant Manager Corporate Affairs. John was a metallurgist who joined WMC from CRA in 1972 as Commercial Manager Nickel Operations. He was well known in the industry. Among other things he made a major contribution during the negotiations of the Roxby Downs Indenture Bill and organised the revival of the Victorian Chamber of Mines. When John retired in 1986 he became the first Executive Director of the Chamber.

John was succeeded in late 1985 by D R (Duncan) Bell who transferred from Perth, where he had been working in this area in the WA Chamber of Mines and had subsequently been Executive Director of the Australian Goldmining Industry Council. He assembled a small but very competent group of people such as G H (George) White (his Deputy), and G D (Gavan) Collery, a former journalist, who handled public affairs, publicity, and community matters. Duncan reported to Hugh Morgan.

### **Employees**

Salary determination during most of this period was still a simple activity which took a day or so of my time twice a year. I reviewed the salaries of the most senior people individually with Keith Parry, Roy Woodall, and Hugh Morgan in their respective areas. For the rest of the staff an average percentage increase was decided and managers down the line made the adjustments, ensuring that the average was not exceeded.

The philosophy was that the Company did not set out to attract people with high salaries - we aimed to be somewhere in the middle of the range. Staff were thought to work for WMC not just for money but because they liked it, as they had in the past.

During the rights issues to shareholders to finance the Alcoa shareholding and the iron ore and Kambalda developments there had been staff share issues which proved a great benefit to the recipients. The concept of a regular staff share plan, following a practice which was becoming prevalent in Australia, was first introduced in a hesitant way in 1983 and gradually became an integral part of employee remuneration as described in *Employee Relations*.

Work and private life were kept strictly separate. Staff who had been with the Company for a long time were fiercely independent and self reliant and would have been offended if the Company had attempted to interfere with their home life or personal affairs. Many staff worked long hours, but this was at their own discretion and I can't recall anyone complaining.

### **Managing Directorship**

While this was not formally spelt out, Keith Parry and Hugh Morgan occupied positions of equal and more senior status than the other executive directors. There was considerable speculation as to which of them would succeed me as Managing Director.

They were very different people in terms of background, experience, personalities, style, and strengths. Both were excellent in their particular areas but Keith had no experience in most non-operating matters and Hugh had no experience in operations. Kept separate, they worked reasonably well together, but it

was clear that neither would want to work for the other. Another consideration was that Keith and I were almost the same age, while Hugh was 14 years younger. An appointment of Keith as Managing Director would necessarily have been for a short term and we would subsequently have retired together.

I did not try to settle the succession because I did not think it was necessary or desirable to do so until perhaps two to three years from my retirement, which was due in February 1991. As a general principle, an early appointment of a successor to any officer commits the Company quite unnecessarily to what may later be seen an unwise appointment and naturally creates a difficult relationship between the person with a distant retirement date and the successor-elect. In this particular case it would also have created a difficult relationship between Keith and Hugh, whichever way the decision went.

As it happened, the decision point came much sooner.

Keith had said to me towards the end of 1984 that he would like to retire before the normal retirement age. On 9 December 1985, on the eve of his 60th birthday, he sent me a hand written note saying that he intended to retire on 15 July 1986, 'but am flexible and will fit in with your wishes, either way'. We had earlier discussed, and he confirmed, that he would like to continue as a non-executive director of appropriate group companies.

This intention was not put to the test because of the sudden death of Keith from a heart attack on 10 May 1986. I was telephoned the news in the Qantas Chairman's Lounge in Sydney by Hugh Morgan on Sunday morning, 11 May, while returning from the United States and waiting for my connection to Melbourne.

I flew to Perth that evening and assumed the duties of Director of Operations until new management appointments could be decided. In a memorandum to the Board I noted that

'two relevant factors to take into account are that Keith's responsibilities had grown too big for one man, and that I will reach the executive retirement age of 65 in just over four years' time'.

A Board meeting on 5 June 1986 approved my recommendation that I relinquish the responsibilities of Managing Director in favour of Hugh Morgan, that I become Executive Chairman, that no Director of Operations be appointed, at least for the time being, and that these duties be shared by the three Operations General Managers and the Director of Finance, responsible to the Managing Director. Roy Woodall, Director of Exploration, would continue to report to the Managing Director.

At the same time Don Morley, Director of Finance, was appointed Director of Finance and Administration, Brian Hurley, General Manager, Nickel Division, was also appointed Senior General Manager WA, R A (Dick) Tastula was General Manager, Western (Non-Nickel) Operations and A J (Tony) Palmer General Manager, Eastern Operations.

In March 1988 J A (Jeff) Smith, previously Group Chief Accountant, was appointed General Manager Accounting and Taxation, reporting to Don Morley.

## **The Transition Period 1988 - 1994**

### **External Conditions**

This period saw the computing, information technology and telecommunication revolution sweep the world. Direct dial telephoning virtually anywhere in the world, mobile phones, portable fax machines, lap-top computers, automated copying machines and colour copying, desktop publishing, e-mail and voice mail and the internet became everyday working aids.

### **Change of Managing Directors**

With Hugh Morgan's appointment as Managing Director and with the commencement of production at Olympic Dam in 1988, a transition period began.

While I continued in an executive capacity and formally continued to have the Chief Executive responsibility, Hugh and I in fact shared it because I deliberately gave him as much room as I could to exercise executive authority. I had never been in favour of rigid job descriptions and it seemed to me preferable for Hugh to move into the Chief Executive's chair in a gradual manner.

Hugh, quite naturally, had his own views on management and the external environment in which the Company now operated was substantially different from the pre-Olympic Dam era. He was also in a different position from me in not having long personal relationships with many of the senior people in operations and therefore necessarily had to rely on more formal organisational arrangements.

I was later told that Hugh had a difficult time in establishing himself with the people in operations. After some false starts, and with inconspicuous intermediation by Brian Hurley, things eventually settled down.

Grahme Dixon retired as Company Secretary in December 1989 and was succeeded by F S (Fred) Grimwade.

### **My Retirement**

I was due to retire on my 65th birthday on 10 February 1991. Late in 1990 there were rumours of adverse changes in superannuation arrangements with effect from 1 January and I was advised to retire before then. Accordingly, I advanced my retirement date to 28 December 1990. Hugh Morgan was now the Chief Executive.

The Board had earlier in the year asked me to continue as non-executive Chairman after retirement and confirmed this in December. I was very conscious that in this role I should not interfere in management matters and made a deliberate effort not to do so. It was very difficult at times! The comments regarding WMC's management starting in 1991 are therefore based on observations from some distance.

### **Change In Philosophy**

Slowly, but surely there were changes in management practices.

WMC embarked on the development of a Management Information System (MIS). G D (Geoff) Loftus-Hill, formerly General Manager Exploration, was appointed General Manager Corporate Services in 1989.

Career development became a conscious activity, expressed in the formation of functional groups ('guilds') within the Company. Formed initially in the accounting and administrative area, this practice was extended to engineering, mining engineering, and metallurgy in 1992 and was reported to be 'a success and is materially raising expectations of more professionally managed career development'.

A very significant change occurred in July 1993 with the appointment of P B (Peter) Johnston as General Manager - Human Resources. Personnel matters, from being understated in the Company, now became a focal point. A Human Relations Manager was appointed to every operation and formal personnel procedures introduced. There was a distinct change in the attitude towards people who became, as the name said, a 'resource'. This was not peculiar to WMC but had occurred generally

throughout the business world; WMC was a late starter.

While not a WMC management decision, it indicates the changes generally taking place that on 26 August 1992 a memorandum was distributed to all Melbourne office staff, advising them that the owners of the office building at 1 Southbank Boulevard had prohibited smoking in all parts of the common, or public, areas of the building including the lifts, stairwells, lobbies, tea rooms, toilets and the foyer. I think that the ban on smoking was applied generally in Melbourne buildings at that time. Smokers would henceforth indulge themselves on the footpath in front of the building.

It was a sign of the times, and I do not recall it being a big issue with anyone. Personally, having given up smoking in 1963, I am glad that people no longer smoke in my presence - not because of any fears of dangers to my health which I think are grossly exaggerated, but because I now consider the smell of stale smoke in the room and on my clothes as very unpleasant.

Another new development in the 1990s was Risk Management. What used to be largely insurance, subsequently including hedging, grew gradually from the 1970s onward into risk assessment and management of virtually all activities of the enterprise (see *Risk Management*).

There was in this an element of the Risk Management Department promoting itself and enlarging its paddock and senior executives (and, indeed, the Company) protecting their backside. I find some of the methods of risk 'management' questionable in the final test of whether they add value to the corporation, but there is certainly the benefit of making people aware of the issues and dangers. As with all management activities, the real question is at what point the law of rapidly diminishing returns starts to operate and where to cut the activity off. The people involved are usually not good judges of this.

Salary and benefits determination became increasingly formalised, using the Hay system for guidance. A part of it was a regular issue of share options to all staff and employees. Performance assessment became an extensive procedure.

Following the Ernest Henry debacle in 1993, a Code of Conduct was introduced (see *THE TROUBLES, Ernest Henry*) and distributed to all employees. The covering letter is appended to this section.

## **Perth Office**

By 1990 the corporate staff in Perth had grown to 330. Besides 191 Great Eastern Highway, there was rented office accommodation in five other locations. The staff numbers were forecast to grow to 415 by 1994.

On 30 January 1991 a number of senior appointments were made in Western Australia.

P C (Phil) Lockyer, previously General Manager - Nickel Division was made General Manager - WA Operations.

R A (Dick) Tastula resigned from WMC to become Managing Director of Homestake (Australia).

T M (Tim) Moran, Resident Manager Kambalda Nickel Operations, was named Regional Manager - Southern WA Operations, responsible for operations at Kambalda, Kalgoorlie, and Norseman.

R A (Rob) Dennis, Resident Manager - Leinster Nickel Operations was named Regional Manager - Northern WA Operations, responsible for operations at Leinster, Agnew, Windarra, Lancefield, and Mt Magnet.

Tim Moran and Rob Dennis reported to Phil Lockyer, who retained direct responsibility for the



Kalgoorlie Smelter and Kwinana Refinery.

This was a change in management responsibility from product groupings to regional responsibilities. It did not work well, partly because product groupings did have a natural relationship which was now disturbed, and partly because both Moran and Dennis had their hands full with Kambalda and Leinster respectively.

On 30 October 1992 A G (Andrew) Michelmore was appointed General Manager of WA Operations as from January 1993, responsible to Director of Operations in Melbourne (see later). Andrew, a chemical engineer, had been working for ICI, CRA, and as General Manager of Nabalco (the Gove alumina joint venture) and immediately before joining WMC as Chief Executive of Swiss Aluminium of Australia Limited. Also in 1992 the Group Geographer's Office under Dr S L (Stephen) Davis was established at 177 Great Eastern Highway (see *Aboriginal Relations and Native Title*).

With Perth Office staff growing, after a review of the alternative options it was decided to move most of the staff into rented accommodation in the QV1 Building in St George's Terrace. While I was not involved, my guess is that to the new generation of people the status of being based in a prominent building in the city was a relevant consideration. The move took place in 1994. The mainframe computer installation and staff remained at Belmont and the remaining Belmont accommodation was occupied by Exploration Division in 1995.

In June 1996 Andrew Michelmore was transferred to Melbourne. He was succeeded as Executive General Manager - Nickel and Gold by Peter Johnston. G J (Greg) Travers was appointed to succeed Peter as General Manager - Human Resources and David Griffith expanded his brief from Human Resources into Industrial Relations and then Corporate Affairs, which included Indigenous Affairs.

### **Melbourne Office**

In June 1989 most of the WMC office was relocated at 1 Southbank Boulevard, Southgate, south of the Yarra River, leaving only a small group of most senior executives at Level 29 at 360 Collins Street.

Some time after Keith Parry died and Hugh Morgan was appointed Managing Director, a search was initiated to find someone of the stature of Keith to become Director of Operations. The search (by Egon Zehnder) was worldwide and a number of candidates were interviewed. On 9 January 1991 K R (Keith) Hulley, a South African, now a US citizen and working in the United States, was appointed Executive General Manager Operations, reporting to Hugh Morgan. He was also appointed a director of Western Mining Corporation Limited, the fully owned subsidiary of Western Mining Corporation Holdings Limited.

The appointment to the main Board as Director of Operations was made in November 1991.

George White was appointed WMC's first Environment Manager in 1991 and Gavan Collery became Duncan Bell's Deputy in Corporate Affairs. His brief subsequently came to include a wide range of matters, including community relations at offshore projects in the Philippines, Uzbekistan, Cuba, Northern Canada, and China.

In 1992-93 a Business Development Group reporting to Director of Finance and Administration, was established, headed by a Group Manager (C W D [Bill] Blandy), three geoscientists and support staff. It met with the three Exploration Managers informally on a monthly basis. The Group's responsibilities were strategic planning to guide corporate and exploration efforts, evaluation of advanced projects, and acquisition analysis.

An International Business Development Manager J H (Jim) Lalor reporting to Director of Operations, with three staff, doubled as President of Westminer Canada.

In 1993 the question arose of staff wishing to stand for election to State or Federal parliaments. The Board adopted the policy that any staff member was free to do so, but had to take four weeks of leave without pay before the election. This was similar to the policy in the Public Service and also by a number of other companies.

### **The New Era 1994 - 1999**

The major formal change in organisational and management arrangements came in 1994. A paper in November 1994 by Hugh Morgan (Book Three, *Appendix X*) describes these in detail.

The changes already under way were undoubtedly given an additional impetus by the 'troubles' in 1993 and 1994. Hugh Morgan had found himself exposed to criticism in three events in quick succession which were almost fatal to his business career: the unsuccessful North American acquisitions, the Seabright court case, and the Lady Bountiful affair. While Hugh had a personal involvement in all these, in all three cases a part of the reason for the unhappy outcomes was unsatisfactory staff work.

It was clear that procedures within the Company needed tightening up, staff needed to be made aware of potential dangers of their actions and had to accept responsibility for these. More formal responsibility had to be allocated in areas previously not covered or dealt with informally. The result was inevitably more bureaucratic, more complicated and more paper driven management, not least because the managers concerned needed in turn to protect themselves. In the changed external environment this had to be done; the only question was the extent to which it was necessary to go.

An article based on an interview with Hugh Morgan in *Business Review Weekly* on 2 December 1996 gives an insight into his thinking at the time:

In 1996 the structure is much cleaner. Reporting lines are more direct and more logical, with five business units - nickel-gold, copper-uranium, petroleum (which is for sale), industrial minerals and exploration - and five corporate departments: corporate development, human resources, finance, projects and business development, planning and technology.

The business units have won more responsibility. Rather than being primarily production-based with corporate functions being run solely from Melbourne, they now have their own corporate support staff such as finance, engineering, legal, human relations and corporate affairs. The corporate bureaucracy at Melbourne headquarters is much reduced.'

In the enthusiasm to transfer corporate functions to business units, in my view mistakes were made in overstaffing the business units. Boxes on the organisation chart were filled because they existed, regardless of whether there was a real need. This view is supported by a subsequent wind-back and consolidation of these functions in 1998. It is also questionable whether the 'corporate bureaucracy at Melbourne headquarters' was 'much reduced'.

The article continues ...

Some external impacts such as the environment, sexual discrimination and native title legislation make the requirements of decision making much more ambiguous ..... So the change is not because somebody was doing it badly, the change is because the conditions in which we operate have changed dramatically. We didn't have a corporate affairs department. We didn't have a human resources department. We didn't have a group geographer's office to

help with native title issues ..... Unfortunately the world for the production engineer has got more complicated and burdensome. The problem is, if not accepting it, at least understanding it. The sorts of issues that are now facing them can, with a stroke of the pen, have huge impacts on a corporation that are bigger than decisions that are made at an operation about some options. This seems - and I say this personally - a most unsatisfactory development in many ways. But that is the reality of life today.'

The 1980s had some very good things about them but it also had a realisation that we really hadn't developed people. That was our fault, not the people's fault. We had a lot of very good people but we had a culture that took pride, if you like, in the simplicity with which it approached the world. I think there was a sense of lost innocence in the 1980s and a recognition during the early part of the 1990s that we had to change.'

'We had some particular aspects that some might well say that in a perfect world we would like to retain. We were very uncomplicated in our attitudes. We focused on production. Full stop. Just get it done. Go and do it. And if you made a mistake, well, you would apologise for it afterwards. Of course the focus on production is of vital importance, and it is competitive production.'

The journalist (Mark Davis) concluded: 'There are still some simple things left in life.' What he should have said was: 'Until recently there were still some simple things left in life.'

### **External Conditions**

The information and telecommunication services revolution really hit its stride in the second half of the 1990s: the internet, e-mail, mobile telephones, e-commerce, and so on. Already in August 1994 there was a comment that 'Most of Melbourne Office staff can now be sent electronic mail - at least to their secretaries'. (Before long, everyone was sending e-mails to everyone else, whether necessary or not! E-mails were said to be sent to people sitting at the next desk in an office.)

### **Staff**

In addition to the natural change in senior management due to retirements and the need for staff with different skills and arising from the re-organisation, the appointment of Peter Johnston as General Manager Human Relations in 1993 began the replacement of a number of long-serving managers. This established a new team whose members had allegiance to the new top management, a very human desire and almost expected - certainly not unusual - today in business generally when top management changes.

A note prepared for me in January 1995 shows that, while the average length of service at that time for the 50 top executives was still 13 years, there was already a proportion of staff with less than 5 years' service. The break-up was:

20 years and above	-	15 executives
20 years to 15 years	-	5 executives
15 years to 10 years	-	8 executives
10 years to 5 years	-	4 executives
5 years to 1 year	-	11 executives
Less than 1 year	-	7 executives

A similar note in May 1996 shows the following distribution:

20 years and above	-	12 executives
20 years to 15 years	-	5 executives
15 years to 10 years	-	3 executives
10 years to 5 years	-	2 executives
5 years to 1 year	-	18 executives
Less than 1 year	-	10 executives

The average length of service had become 10 years. The changes were, however, even greater than the statistics indicate: of the 11 people reporting to Hugh Morgan only one (Don Morley) had been there in 1991!

The infusion of new people brought the benefits of varied experience and a fresh outlook, but was inevitably accompanied by considerable loss of corporate memory.

In keeping with trends in business and industry generally, the distinction between work and private life became blurred. The old-timers who would have resented this were increasingly no longer there; the new people not only did not resent it but appeared to expect it.

### **Senior WA Staff**

Tim Moran, Resident Manager, Leinster Nickel Operations, left the Company on 13 October 1995 and was succeeded by P A (Peter) Smith on 30 October 1995.

D (Deming) Whitman, transferred to Melbourne, was succeeded as Operations Manager - Gold by A J (Tony) O'Neill on 1 October 1996. A K (Alan) Dundas was appointed Manager - Projects, Engineering and Technology and was succeeded as Acting Resident Manager - Kwinana Refinery by D J (David) L oth.

In Perth, C (Chris) Hawkins became responsible for Corporate Affairs.

### **Melbourne Office**

Port Jackson Partners were engaged in 1994 to assist in developing changes to the WMC organisation.

In August 1994 it was announced that WMC had embarked on a management restructuring to give greater accountability and authority to the various business units. Personnel who provided advisory services to these units would now report directly to the managers of the units. A number of Executive General Managers were appointed to head up the main business and corporate units.

One of the consequences was that the function of General Counsel would cease to exist. S J C (Colin) Wise would therefore retire, but would continue to act as a non-exclusive consultant with WMC, in particular managing all matters relating to the Canadian litigation.

In the course of the restructuring C B (Chris) Leptos was appointed Manager Corporate Development. Chris had been an adviser to politicians and came to WMC from the Victorian Government where he had been on the staff of the Treasurer, Alan Stockdale. His responsibilities in WMC included environment, public policy, government relationships, corporate communications, and information services. Duncan Bell - Manager Corporate Affairs, reported to him until he died of a heart attack at Tullamarine airport on 7 April 1995.

Chris's appointment was another important step in the changes taking place in WMC.

Until the end of the 1960s the minerals industry in Australia had the unqualified support of governments

and the public. This changed to virtual antagonism by the end of the 1970s. The industry's - and WMC's - view was that the community was being misled by activists, and that proper explanation of the industry's vital contribution would re-establish the public's support. The efforts of industry bodies and, within WMC, myself, Hugh Morgan, John Reynolds, Duncan Bell, and others were directed towards explaining why the activists were wrong.

In the mid-1990s a different view emerged which concluded that, regardless of the rights or wrongs, the solution was to compromise: if you can't beat them, join them. Chris Leptos, with a background in politics, was a leading proponent of this new approach.

He introduced the Company to the 'soft', negotiating, approach to external relationships, willing to yield to some extent to the rhetoric of the various activist groups and go some way along with them if this was necessary to progress the Company's business. Instead of fighting the issues, his approach was to seize the initiative from the activists and mollify them. It was strange to WMC, but increasingly adopted by the industry.

Chris introduced the WMC Environmental Report and shepherded the Olympic Dam Expansion legislation through the political minefield. It was probably partly a reflection of his background in government service that the personnel in his responsibility area expanded greatly during his tenure.

Chris Leptos left WMC in July 1998 and G A (Gordon) Drake, who had joined WMC from BHP, became responsible for Corporate Affairs, reporting to Executive General Manager - Corporate Services, G J (Greg) Travers.

Fred Grimwade resigned as Secretary on 1 January 1996 and was succeeded by A R (Alan) Knights.

The various WMC offices in Melbourne were relocated and brought together in the IBM Tower in 60 City Road, Southgate. The registered office of WMC changed from 360 Collins St to that address on 20 May 1996.

On 7 June 1996 Andrew Micheltore was transferred from Western Australia to Melbourne and appointed Executive General Manager - Business Development, Planning and Technology.

Keith Hulley decided to return to the United States and resigned as Director of Operations on 30 September 1996. Keith was not replaced, but R P (Ross) McCann was appointed Executive General Manager - Projects as from 1 October 1996. Also on 1 October D (Deming) Whitman, Operations Manager - Gold, was appointed Group Manager - Business Development and Planning, reporting to Andrew Micheltore.

### **The SAP Project**

In 1996 Hugh Morgan decided to introduce the SAP computer programme throughout the Company, which integrated all management information in a single computerised system. This was a major undertaking, involving some 100 WMC employees and contractors and costing \$37 million in 1996-97 and \$25 million in 1997-98. Internally, it was known as the Information Integrity Program, or IIP. The SAP programme 'went live' in the corporate area on 6 April 1998.

According to its German developers, the SAP computer software package makes it possible to track and manage in real-time sales, production, finance, accounting and human resources in an enterprise. Traditional computer information systems accomplish some specific tasks and provide reports and analysis of events that have already taken place. Examples are accounting general ledger systems. Occasionally, some systems operate in a 'real-time' mode that is, have up to date information in them and

can be used to actually control events.

A typical company has many separate systems to manage different processes such as production, sales and accounting. Each of these systems has its own databases and seldom passes information to other systems in a timely manner. SAP takes a different approach. There is only one information system in an enterprise, SAP. All applications access common data. Real events in the business initiate transactions. Accounting is done automatically by events in sales and production. Sales can see when products can be delivered. Production schedules are driven by sales. The whole system is designed to be real-time and not historical. These are the benefits; on the other hand the system necessarily introduces rigidity and bureaucracy.

The SAP system made it possible for WMC to introduce shared services such as Group Financial Services, established on 1 June 1997. It also facilitated the 'One WMC' project (see below).

### **Group Financial Services**

A note by Charles Reis in July 2002 follows.

WMC's decision in 1996 to move to a single information management platform provided, for the first time, an opportunity to consolidate certain financial activities which were of a transaction nature, such as accounts payable and accounts receivable.

The concept of Shared Services was not new, however with the implementation of SAP in 1997, WMC had the necessary infrastructure to begin eliminating processes and activities at site which did not directly contribute to its core operational activities.

Under the stewardship of the then Financial Controller Urs Meyerhans, a business plan was developed to concentrate all of WMC's financial transactional processing to one location, Group Financial Services (GFS) in Melbourne.

GFS was a start-up enterprise, autonomously managed by a former WMC Treasury executive and Commerce graduate, Gordon Petty. Petty had a vision of a low cost, highly efficient provider of transactional services. The group was given autonomy and physically located in a greenfields site in South Melbourne. This was intended to detach GFS from the Melbourne corporate office, and thus overcome negative perceptions that Shared Services was a move to centralisation. Furthermore, the plan called for business units to become customers, and for GFS to develop as a client-centric provider of professional financial services.

In November 1997, GFS opened the doors to its first client, the Nickel Business Unit.

The early days were patchy. System difficulties due to the complexity of SAP, lack of process understanding and compliance by users, and poorly skilled staff combined to create operational difficulties from the start. Petty was required to fight fires on all fronts. As vendors failed to get paid, supplies of goods and services to site threatened to dry up, angering operational managers. The pressures were compounded by constant employee turnover and corporate demands for evidence of cost savings. These were dark times. However, Petty persevered. His energy, drive and enthusiasm saw him fix the problems. He travelled relentlessly to sites, and in time he secured management support.

Progressively, each of the Company's operations and Corporate office were added as clients, and as time passed, criticism waned. It had been the most difficult assignment of his working life.

In 1999, Petty tendered his resignation to join an external consulting firm. Charles Reis, an MBA graduate managing WMC's Shareholder Relations, was appointed Petty's successor. From 2000, the focus of GFS changed. Emphasis was placed on planning, capabilities and costs. Projects were developed to automate transactional processing. And programs devised to improve work culture and stem employee turnover.

In October of the same year, Reis visited JP Morgan's Shared Service in the US and brought back an improvement idea called Six Sigma. Six Sigma is a method of identifying and eliminating waste in a process and has been championed for many years by GE and Motorola. Seeing the opportunity this had for GFS, plans were quickly developed and implemented to re-train all staff in applying the tools of Six Sigma.

Reis involved his staff in identifying the processes which caused the most grief for the Company, established self-governing improvement groups and then provided each with the necessary tools and coaching. Six Sigma required each group to identify a process problem, measure its consequences, analyse the cause, then develop and test process changes to arrive at a solution. Improvement projects included process workflows with GFS, invoices which were stalled couldn't be paid, accrued liabilities in the balance sheet account and the Company's payroll. At first, productivity went down as the team became stretched between their immediate tasks and their improvement projects. However, as processes improved, evidence of success began to emerge. Costs declined and staff became more efficient. The Company's vision of low costs and efficiency for financial administration was finally being realised.

By 2001, GFS had joined with the Company's Human Resource Service Centre, Properties Service Centre and Legal Agreements Registry to form WMC Shared Services. Tim Scully moved from his role in Human Resources to become General Manager of the bigger Shared Services group, championed long-term functional planning, Six Sigma across all Shared Service functions and a collaborative, service-focussed culture. Ten months later, Scully moved back to a senior HR role and was succeeded by Charles Reis as Acting General Manager.

In 2002, Shared Services is maturing. It has begun substituting transactional with administrative activities. The focus today is on eliminating repetitive transactional work, ensuring tight risk management and providing governance oversight. Where previously the Company had employed more than 90 staff to perform accounts payable, HR support and Property service activities, Shared Services has increased output and functional scope and yet reduced comparative staffing to fewer than 40 people. Since 2000, GFS has reduced its costs year on year by no less than 5% per annum and is expected to deliver similar results through to 2004.

The hard years at GFS have paid off. In recent benchmarking conducted across Eastern states, GFS was found to be one of lowest cost providers of shared financial services in Australia.'

## **Outsourcing**

Contractors have been used in the minerals industry for a long time: typical areas have been cartage and earthmoving. The argument for using contractors has been that they had specialised experience and equipment and were able to operate with less restrictions from union rules because they were either owner-operators or employed their workers on a contract basis. For these reasons, they were able to do the work cheaper than the companies themselves. Also, using contractors was thought to be more flexible in that contracts could be terminated, if need be, more readily than company activities.

In the 1990s 'outsourcing' - contracting out work previously done by company employees - became a management fashion. It was actively promoted by management consultants and, of course, the contractors. In WMC a major change to using contractors in underground mining, previously thought inappropriate for contracting out, took place in mid-1996 at Kambalda and St Ives. Outsourcing was also gradually introduced elsewhere (including even receptionists in Melbourne Office).

My own view was that there had to be good reasons, other than the current fashion, for contracting out. In particular, unless it was for a short term job or to meet an emergency, outsourcing had to be cheaper than the alternative of doing the work by Company staff. For this to be so, the efficiency of contractors compared with Company employees had to be substantially higher because they had to achieve a profit as well as cover costs. I was assured that this was so, although there was never any hard evidence presented.

A report by C (Charles) McHugh in January 2003, stated to be based on Company records, argues that the cost of using contractors underground at Kambalda and St Ives (in real terms) from mid-1996 onwards has been 8% per ton lower than that previously using company employees at the Revenge Mine, but 12% higher at Victory, 30% higher at Junction, 73% higher at Victor and 60% higher at Long. He says that contractors also had a poorer safety record, the flexibility of terminating contracts had a high cost attached to it and the variability of ore production increased significantly. Because of the higher mining cost the economic ore reserve and resource were reduced which led to the nickel mines at Kambalda being sold, WMC becoming just the processor of purchased ore. In sum, outsourcing underground mining had not been a success.

The report looks convincing, although one would like to see the management's response to it.

One of the reasons for WMC to replace underground employees with contractors in 1996 was to change the industrial relations situation. It is tempting to speculate that another reason was that the new mining engineers and managers who had gradually replaced the old-timers did not have the experience or the inclination to manage the underground workforce. Outsourcing relieved them from this. The Company could not subsequently return to the previous system even if it was desirable to do so, because whatever experience there had been had now been lost.

Whether this is so or not, outsourcing does deprive company personnel from gaining experience in the outsourced activities. On the other hand it can be argued that, with staff now changing much more rapidly than previously, long term experience cannot be readily accumulated in the company, anyway.

### **Career Development**

A career development programme was also introduced in 1996. Employees at specified levels were interviewed annually to determine their training and development plans. Extensive questionnaires had to be filled in by the employees and their managers.

In October 1996 my secretary, Barbara Giles, received the appropriate forms (one for herself, and one for me) from Senior Human Resources Officer, Anthony Allen. Barbara passed these to me, with a note:

'I am happy with the career I already have'.

I sent them back to her with the comment:

'So am I! Why not tell Anthony that we have no greater ambitions!'

The Rogan Corporation were engaged as consultants on a 12 month contract in September 1997 to assist



and advice on workshops for appropriate staff on negotiating skills, in meetings management and in team building exercises; the latter had commenced in October 1996.

## **Organisation Review**

WMC organisation chart as at 28 March 1997 is shown in Book Three, *Appendix X*.

In November 1997 Dave Roberts was appointed to head up an organisational review. Australian Consulting Group was engaged for four months to assist.

## **Melbourne Office**

H M (Harry) Goern, who had been appointed Executive General Manager Alumina, Chemical and Industrial Minerals in 1994, retired on 31 January 1998. Andrew Michelmore as Executive General Manager Industrial Minerals and Fertilizers assumed his responsibilities for AWAC and Talc, as well as for Hi-Fert and post-construction responsibility for the Queensland Fertilizer Project.

On 30 April 1998 a reorganisation and reduction in staffing of Melbourne Office was announced.

Corporate functions were reduced by about 80 positions, or 25 per cent. There would be a small corporate office comprising functions such as audit, financial control, legal, company secretary, tax, and policy and standard setting. All other functions would be carried out by Corporate Services or Shared Services, all directly related to the various Business Unit activities or major project work such as the Information Integrity Program and Year 2000 Project. As it happened, the residual corporate office was not exactly small.

## **Information Technology (IT)**

In common with every other corporation, WMC's management practices in this period were greatly affected by advances in information technology. These were not of an unqualified benefit because the rapid developments inevitably left senior management decision-making in this area somewhat at the mercy of the technologists and the equipment and service suppliers, whose aims did not always necessarily coincide with those of management.

The marketing of IT was greatly assisted in 1988-99 by the concerns about possible malfunctioning of computer systems during the change from the year 1999 to the year 2000 ('Y 2K' in jargon).

A comment by the Boston Consulting Group in late 1999 was:

'During the preparation for Y 2K, IT expenses have risen quickly ("no choice"), investment allocation has been easy ("do or die"), and the CIO has been often given dictatorial powers ("martial law").'

'...by February they (CEO's) will be shocked to find that IT costs and problems are still increasing. The next planning cycle will unleash a tidal wave of demands that were deferred to meet Y 2K needs: upgraded functionality for old systems and development requirements for new ones.'

'Research conducted by The Boston Consulting Group found that even before Y 2K, more than 40 percent of IT projects failed to cover their costs, and many more failed to create lasting value.'

In the event, the Y2K changeover occurred virtually without problems. The high level of attention leading up to the event unquestionably helped; it is not possible to judge how much of the work was unnecessary.

Paradoxically, improved communications technology appeared to generate more paper. In October 1997 Don Morley pointed out that WMC had made 44,000,000 photocopies in the previous year and solicited suggestions for reducing this. I doubt whether it made much difference.

### **The 'New Economy'**

Beginning towards the end of the 1990s, publicity inside and outside the Company began to put emphasis on 'New WMC'. WMC's 2000 Annual Report was entitled 'A New Company'.

This coincided with a share market boom in telecommunication and information technology companies, including many hopeful new floats with nothing but good intentions to their credit. This in turn led to extravagant claims that there was now a 'new economy'; by implication the 'old economy' was becoming unimportant. This was not just a misconception by the uninformed; the Chief Executive of Telecom, Ziggy Switkowski, declared in 1999: 'The past is over'. Learned articles and books were written about the new economy.

By 2001 the boom had collapsed. The phrase 'New Economy' quietly disappeared.

### **'One WMC'**

The concept of 'One WMC' was launched at a meeting of the top 70 senior staff 'The G70' in July 1998.

The rationale was to capture the benefits of size (said to be ability to create best practice, leverage our best people and practice, and capture cost advantages) and combine these with the characteristics of a small company (named as thirst for knowledge, leadership and mutual interdependence, desire to share, and a flexible, dynamic, lean and efficient organisation).

In September 1998 a Task Force Team (TFT) under the leadership of A J (Tony) O'Neill, reporting to the Managing Director, was appointed to:

- determine the optimal level of integration and collaboration to maximise the long-term shareholder wealth
- define the 'way of doing business' which supports the optimal level of integration/collaboration
- prepare an implementation strategy and plan for the completion of the necessary actions to establish the 'new way of doing business' throughout WMC.

The process included use of consultants, workshops including presentations and the experience of other companies, transition management steering teams, project teams, etc.

A review document prepared in 2000 concluded:

'Substantial changes have been put in place during the last few years and excellent progress has been made as a result of these changes. The availability now of secure reliable information throughout the company provided a significant opportunity to revisit what we are doing and provided an important step forward in the way in which the company was operated. The installation of SAP gave rise to various process committees being established to enhance shared services, i.e. group supply, group financial services and other activities, leveraging the improved outcomes across the whole of the company.'

## **General Comment**

By the end of the 1990s, the most desirable careers in the Company were no longer in operations, but in Head Office. This was reinforced just before my retirement as Chairman, when Hugh Morgan decided to bring the Executive General Managers of all business units to Melbourne. I thought this very undesirable, but because of my imminent retirement abstained from comment when a special meeting of non-executive directors discussed it with Hugh Morgan. Ian Burgess chaired the discussion. A number of directors had misgivings before and after the meeting, but the move proceeded.

Another distinct development in the 1990s was that people became reward-motivated; they were deliberately encouraged to do so. Loyalty to the Company was still talked about, but in reality many people put their career first, whether within WMC or somewhere else. It did not go unnoticed that while people were described as the Company's greatest asset, there had been instances where retrenchments and dismissals had occurred in a casual and insensitive manner. The introduction of the SAP computer programme throughout the Company, while introducing standardisation and control, also encouraged bureaucracy and a legalistic attitude. Various comments by outsiders and my own observations confirmed the impression that most staff now acted according to 'the book'; this was the safe thing to do, whether it made sense or not.

In keeping with the practice in business and industry generally, WMC in its Annual Reports and other publications became involved in self-praising publicity. The Public Relations people no doubt believed that this was what they were employed to do.

It was embarrassing to people like myself, brought up in a different environment. I wondered whether it did not have a negative effect instead of benefiting the Company. Sober and matter-of-fact reporting would certainly have stood out!

A further development was the introduction of slogans of various kinds, presumably to enthuse people to do what was proposed. This became the practice not only in business and industry but throughout the community. Having experienced the slogan culture during my time under the Soviet regime, I remain unimpressed by this technique.

## **In Retrospect**

Quite clearly, the management practices had to change as the Company itself and the world around it changed.

Those like myself, who were able to spend most of our working lives in an environment of simplicity, trust, directness, and doing what we believed made sense rather than what was thrust upon us, can regard ourselves as fortunate indeed.

While I believe that most changes in WMC management practices after my retirement as an executive have been necessary in principle, I have not always agreed with many of the changes in detail. It is probably unrealistic to expect that such matters progress in a straight line from where one starts to where one ought to finish, and there have in my view certainly been occasions when the pendulum has swung too far.

By background and temperament I am likely to err in such matters on the side of not going far enough, rather than doing too much. I have always been particularly reluctant to establish new departments or organisational structures because, by observation, once started, these tend to acquire a life of their own. Once this happens, they are very hard to curb and even harder to abolish.

Established and staffed by energetic and ambitious people, their mission becomes to build on their task, to find more reasons why they are indispensable and should grow. In most cases it is very difficult indeed to assess whether all they do is really necessary and making a contribution to the Company. This is the classic dilemma of government bureaucracy where it is even harder to measure performance and clean house.

My criterion was to ask: 'What would happen if we did not do this?' If the answer indicated that the activity was really necessary, the next question was: 'How can we do this within the existing structure, without expanding the organisation? Who could do this in addition to their existing responsibilities?' I always thought (and still think) that moderately overloaded people work better and are happier than those with not enough real work to do. They are also less likely to indulge in empire building and make-work type activities. There is no doubt that, as Professor Parkinson postulated, work expands to fill the time available!

The modern answer to this is outsourcing, which owes at least some of its popularity to the very problem of controlling organisational growth. I suspect that outsourcing is not necessarily and not always cheaper, but it is easier to discontinue buying a service than to keep one's organisation under control.

Overshadowing everything, however, is the perceived need of senior executives today to cover themselves against criticism and attacks from all directions. After Paul Anderson retired as the Chief Executive Officer of BHP-Billiton in 2002, he commented that today's Chief Executives are 'frightened people'. Paul was certainly in a position to know.

In retrospect it is easy to see many things which could have been done better. One of these in management decision-making is that during my time with WMC we did not as a matter of standard practice always question the proposals before us strongly enough. If I were to do it again, I would arrange in any significant decision for someone to act as the 'Devil's Advocate', presenting forcefully all the arguments against proceeding, enabling the Chief Executive and subsequently the Board to act as the jury.



## ***RISK MANAGEMENT***

### **Background**

Until the 1990s, in accordance with the then business practice generally, the only provision made for risks was to ensure that the Company's physical assets and personnel were adequately insured against accidents. Other risks were seen as a natural part of business; no particular effort was made to assess these or protect against them. The exchange rate was fixed by the Government. Markets in many other areas, such as forward selling of metals or exchange rate hedging did not exist, or were very small. There was no 'derivatives' market.

In the 1990s insurance became a part of 'risk management' which covered consideration of a wide range of risks. This was partly in recognition of new risks such as arising from floating exchange rates (the Australian dollar had been floated in 1983) and partly what may be called 'greater sophistication' of management. In addition to risks which could be covered by insurance or hedging, possible changes in a wide range of known or projected circumstances and remedial actions began to be consciously considered. 'Crisis management' became a part of this activity: guidelines were developed and practice sessions held to deal with assumed crisis situations.

This was accompanied by building a staff structure and by much analysis and paperwork; a new corporate activity was created. It was partly a response to the much more complex outside environment including the trend towards a more critical and litigious society, partly a consequence of the growth in staff numbers which meant that many more people had to be involved in any actions, and partly an expression of a changed mental attitude of the new generations of people.

### **Risk Management Department**

J A (Jim) Royer was appointed the Insurance Manager in Perth Office in 1980, dealing with insurance. Initially operations did their own insuring, Jim being responsible for insurance for Group activities. He reported initially to D M (Don) Morley and subsequently to the Group Chief Accountant J A (Jeff) Smith.

In 1986 Jim's group consisted of three people. Gradually operations insurance was transferred to this group in Perth Office. Also in 1986 Sedgwick were appointed the insurance brokers (previously it was Bowrings).

In 1988 assets acquired in USA and Canada were included and in 1988-89 a captive insurance company - Westminer Insurances Pte Ltd - was established in Singapore to participate in WMC Group insurance.

Jim was succeeded in 1995 for a short period by his former assistant Val Marshall and then by J L (John) Pearce as Group Risk Manager, who broadened Risk Management beyond insurance. He was in turn succeeded (after a temporary appointment of a Marsh employee for six months) by K (Keith) Bowyer. The Department continued to be a part of the Finance function.

### **Hedging**

Currency hedging had been practiced, with Board approval, since February 1973. The typical cover at that time was for six months, with additional cost for longer periods. The cost of longer term cover was available on application to the Reserve Bank. A Board meeting in July 1973 approved covering sales revenue for a rolling six months period.

The rationale for currency hedging was that the Company's costs were incurred mainly in Australian dollars while the revenue was almost entirely in US dollars. It had no control over the prices of its products and its profitability was highly sensitive to exchange rate and price movements. While this had always been so, the floating exchange rate introduced in 1983 made the consequences of movements in the exchange rate and prices more visible. Hedging was seen as particularly appropriate for new investments in ensuring a known return from the investments. It was also seen as a means for locking in favourable prices and for supporting growth through market downturns.

In the late 1980s - early 1990s cover was typically taken out for periods not exceeding a rolling twelve months.

In 1992 Don Morley (Director of Finance and Administration) submitted a long-term currency hedging policy for consideration at the Board meeting on 7 October. The recommendation, that up to 30% of net US\$ receivables could be hedged on a 13 - 36 months rolling basis, was approved.

The policy was subsequently amended on a number of occasions, the percentage of receivables which could be hedged was increased, and the term was extended to up to 10 years.

At the Board meeting on 5 April 1994 a report regarding the formation and operation of the Risk Management Committee was discussed and approved. A fundamental principle was that WMC would only hedge a proportion of its own known and projected production and revenue. It would under no circumstances speculate.

### **Risk Management Committee (RMC)**

The Committee members were the Managing Director (Chairman), Director of Finance and Administration, Director of Operations and co-opted company officers or outside members as decided by the Chairman. The objectives were to manage the Company's exposure to exchange rates, interest rates, and commodity prices to:

- moderate volatility of revenues and earnings
- lock in a fixed return on assets
- lock in an acceptable rate of return on a new project
- take advantage of favourable prices

The RMC would meet at least once a month. The day to day management of hedging was delegated to the Treasury Committee, within limits set by the RMC. The broad policy would be reviewed by the Board from time to time. The Treasury Committee would provide the RMC with the following information:

- History of prices
- Performance measures of strategies against approved benchmarks
- Mark-to-market valuations
- Profit profiles pre and post RMC approved strategies
- Relevant accounting implications
- Relevant taxation implications
- Relevant credit implications
- Suggested performance benchmarks

In September 1998 an updated Price Risk Management Policy (appended to this section) was approved.

## **Hedging Results** (see graphs attached)

A review of the results of currency and price hedging in 1998 showed a realised cumulative gain of A\$302.5 million and a deferred gain from gold price hedging of A\$260 million (to be taken into account as the production occurred). At that time the \$A had against all expectations weakened considerably against the US\$. Instead of the expected trend towards US0.70 cents per Australian dollar, the rate had dropped to 58 cents. The mark-to-market result of the then existing hedges showed a future loss of A\$800 million at that exchange rate.

The situation in the short term had also been affected adversely because, although the policy was to hedge only a proportion of the total estimated revenue, this had been calculated at a substantially higher nickel price than existed in 1998. The actual proportion hedged was therefore much higher than intended.

It was noted that peer companies in the industry hedged, except for Rio Tinto. The Board decided to continue hedging, but to keep the situation under review. In the immediate future, currency hedging in year 1 was to be limited to 50% of revenue and 25% thereafter. Hedging for 10 years ahead was considered too far out and management was asked to curtail forward hedging.

At the Annual General Meeting in April 1999 I made the following statement regarding hedging:

In the 18 month period under review WMC benefited from price hedging by \$117.2 million, but incurred losses of \$182.9 million on exchange rate hedging, a net reported loss of \$65.7 million on all hedging. However, in accordance with accounting standards, price hedging gains of \$251.1 million realised during the period remain to be brought into account in future years so that the actual overall result was a cash gain of \$185.4 million. It is in the very nature of hedging that we cannot expect to make gains all the time. The merits or otherwise of hedging are decided by the cumulative result over a period of time. In the last ten years this has amounted to a gain of more than \$500 million.

## **Crisis Management**

In early 1994 the Company's preparedness to manage 'company threatening' situations was raised. In November 1994 TM Services Pty Ltd was engaged to review the situation, prepare a Crisis Management plan, and propose a Crisis Management Team. This was finalised by end of June 1995.

The Core Team consisted of:

- Chief Executive Officer
- Director of Finance
- Director of Operations
- General Manager - Corporate Development
- Executive General Manager - Exploration
- Executive General Manager - Oil & Gas

There was also a Business Service Support Team, Administrative Support Team, and Media and Human Relations Support Teams.

Around this time, Campbell Crisis Management and Recovery Pty Ltd was engaged to initiate development of a Crisis Management capability at operational sites, so that they could respond effectively to site-based crises such as fatalities, fires, mine emergencies and major environmental



incidents.

A presentation on the Communication and Crisis Management organisation in WMC was made to the Board in 1997. An Emergency and Crisis Preparedness Standard was subsequently introduced (in 2002), but by the Department of Environment, Health and Safety and not the Risk Management Department.

## **Subsequent Events**

### **Hedging**

After April 1999 the \$A parity to \$US weakened further, to a low of less than US0.50 cents in the second half of 2000. In November BHP announced that it had decided to discontinue hedging. WMC wound down its hedging, but continued to suffer considerable losses.

### **Risk Management**

Marsh became WMC insurance brokers in 2000.

In August 2002 Keith Bowyer wrote in a memorandum that his Department's activities were still largely limited to insurance and proposed the introduction of an Enterprise-Wide Risk Management (EWRM) strategy. The Department would assume responsibility for a 'co-ordinated business risk approach across the organisation'.

### **General Comment**

Risk Management continued to grow as an activity. For example, The Australasian Institute of Mining and Metallurgy adopted in 2002 the Risk Management Policy of The Australian Council of Professions, as follows:

The Australian Council of Professions recognises that the professions have a responsibility to provide services to the community which encompass the highest standards of quality and competence. This responsibility includes the need for professional associations and statutory licensing authorities to maintain standards of entry to ensure that only fully-qualified professionals are able to practise in areas where professional skills are required.

The community has a right to expect competence and attention to the management of risks where they might occur in the provision of professional services.

However, it is necessary for the community:

- a. to improve its understanding of the nature of risk; to manage expectations; and
- b. to have available a system for reasonable compensation for any loss due to action or omission by professionals.

To achieve this, the ACP recommends that professionals should:

1. at all times exercise their knowledge and skills in the interest of others, be they client, patient, the community or its institution;

2. practice only in their areas of competence, save in exceptional circumstances for an emergency;
3. continue their professional development throughout their careers and actively encourage and promote the extension of knowledge to all members of the profession especially those under their direction;
4. exercise judgment based on experience, technology and understanding of the needs of their clients;
5. identify likely risks inherent in their practice, take action to minimise them and, where possible, make provision for unsatisfactory outcomes;
6. apprise the client of any risks likely to prove significant, either to the client or the community and of their consequences; and
7. contribute, where appropriate, to the processes whereby:
  - a. risk can be managed;
  - b. the understanding within the community of the nature of risk (including managing of expectations) can be improved; and
  - c. a system for reasonable compensation for loss due to action or omission by professionals can be established.

The Municipal Association of Victoria advertised in October 2002 free Risk Management workshops for community and non-profit groups, and televised risk management seminars.

The impetus for this was given largely by increasing litigation, large damages awards, and the consequently increasing insurance premiums for even activities such as school sports. Beyond that, insurance was not even available for some activities. The Institution of Engineers was in 2002 working with the Australian Council of Professions and industry to develop satisfactory practices and legislation to include proportionate liability and capping of liability in time and damages.

The NSW Division of The Australian Academy of Technological Sciences and Engineering held on 14 May 2002 a workshop *Living With Risk in Our Society*. The summing up included the following:

The complexity of the present situation can be summarised as a number of interrelated paradoxes. They are:

- *The Risk Paradox:* Humans need to continue to take risks but they are becoming highly risk averse.
- *The Legal Paradox:* Risk-taking requires the law of negligence to be logical and precise, but it is illogical and imprecise.
- *The Regulatory Paradox:* The regulatory environment is entering a phase when its complexities will inhibit sensible developments. There are three identifiable specifics:
  - lack of consistency in our multi-jurisdictional environment
  - inability of regulators to keep up with technological development

- litigation threats to regulators

- *The Investment Paradox:* Today's investments need patient money, but financial markets cannot provide it.
- *The Disaster Paradox:* Many avoidable major disasters (physical, financial etc) occur in spite of clear warning signs, even in large and respected organisations.

No one sector of the community is responsible, but most sectors contribute, including the general public. Therefore moving forward will require wide consultation with and involvement of those sectors, and a careful balancing of the benefits and costs to individual sectors compared with those to society as a whole.'

The large number of firms and individuals now comprising the Risk Management industry will make such a balance hard to achieve.

## ***EMPLOYEE RELATIONS***

### **Background**

Traditionally employees in Australia were divided into two categories: 'wages' and 'staff'. The pay and working conditions of wages employees, a large proportion of whom were members of trade unions, were covered by legally binding 'Awards' which were negotiated by the unions and decided from time to time by the Industrial Tribunal, a quasi-legal body of commissioners and presidential officers appointed by the Federal Government. The pay and conditions of staff employees were largely determined by the companies.

Western Mining naturally conformed to this system, but with two modifications.

In underground mining it had been a long established practice to employ 'contract' miners, who were paid in accordance with performance. 'Contract rates' were negotiated from time to time as so much per foot of drive or per ton of ore or waste broken, scraped, trammed, or hoisted. Non-monetary award conditions applied to contract workers and when contract earnings did not exceed award rates, these rates were paid.

The second modification (also applied by many other companies) was that staff were subdivided into 'Staff' and 'Senior Staff'. The latter were by definition in more senior responsibilities, more highly remunerated, and entitled to additional benefits.

In April 1975, at the instigation of Allen Gittos who was then Manager, Corporate Services in Perth Office, a group of senior staff were designated Executive Staff for the purpose of determining fringe benefits. These were generally Divisional or General Managers and Managers of Operations and one level below, depending on the scope of the operation. The initial list in WA contained 22 names.

### **The Trade Unions**

Trade unions became widespread in Great Britain in response to the development of manufacturing industry and commerce from late 17th century onwards. They were typically local in scope and related to particular crafts. During the 1830s there developed a movement towards general unionism.

British settlers brought unionism to Australia. The main impetus to the establishment of industrial relations tribunals came with the major strikes in the 1890s which caused widespread dislocation and distress. There was a growing belief that 'an independent third party' should arbitrate between the employers and the unions, which led to compulsory arbitration (see below).

Political parties sponsored by the trade union movement had been formed in the various colonies in Australia during the 1890s. These became a federal party when the colonies federated in 1901. Initially referred to by titles differing from colony to colony, the name Australian Labour Party was adopted in 1908 and amended to Australian Labor Party in 1912.

By 1910 Australia was the most highly unionised country in the world. By 1927 some 47% of the workforce was organised.

Smaller unions depended on the legal arbitration system, but larger organisations took increasingly advantage of the alternative of direct bargaining and strike action. In 1927 the Australian Council of Trade Unions (ACTU) was formed as the national umbrella organisation. The large Australian Workers Union (AWU) joined the ACTU in 1967. Mergers with two leading federations of white collar unions - the Australian Council of Salaried and Professional Associations in 1979 and the Council of Australian

Government Employee Organisations in 1981 gave the ACTU about 2.5 million members, more than three quarters of union membership in Australia. It became the recognised representative of organised labour in centralised wage negotiations and has had a major role in Australian politics.

Union membership has gradually decreased; in 1999 20% of private sector and 50% of public sector workers were unionised, as against 39% and 50% in 1982. In 2001 the financial membership of unions as a proportion of all employees was 24.5%.

### **Conciliation and Arbitration**

Parallel with, and following political union through Federation in 1901, compulsory arbitration which explicitly recognised and protected unions was introduced against strong employer opposition. This had been already established in Western Australia in 1900 and in New South Wales in 1901. The Commonwealth's power to regulate industrial relations is defined by section 51 of the Constitution as 'conciliation and arbitration for the prevention and settlement of industrial disputes extending beyond the limits of any one state'. All other powers rest with the States.

The first Federal tribunal - the Commonwealth Court of Conciliation and Arbitration - was established in 1904. It initially consisted of one High Court Judge.

A crucial Arbitration Court's judgement by Higgins J in the *International Harvester* case in 1908 held that a living wage was a first charge upon industry and set a 'sufficient' wage for unskilled labour (which came to be called the *basic wage*) at a substantially higher rate than previously. It was determined not by profits or productivity, but by income necessary for the 'modest requirements of the worker's household'. The basic wage was regularly adjusted for changes in the cost of living and the concept remained for 60 years.

The Court was reconstituted in 1926 to comprise a Chief Judge and other judges and the legislation was broadened. Provision was made for the appointment of Conciliation Commissioners to assist parties to reach agreement. Ten had been appointed by the end of 1944.

The Conciliation and Arbitration Act 1904 was amended in 1947 and again in 1952. The machinery underwent a fundamental change in 1956 following the decision of the High Court in the *Boilermakers Case*, which held that it was unconstitutional for the Arbitration Court to have both arbitral and judicial powers. Two separate bodies were established:

- the Commonwealth Conciliation and Arbitration Commission (renamed the Australian Conciliation and Arbitration Commission in 1973) to conciliate and arbitrate, and
- the Commonwealth Industrial Court (which in 1977 became the Industrial Division of the Federal Court) to exercise judicial power.

In conditions of full employment and high inflation after World War II, the Australian industrial relations system came under considerable strain. Drastic action by Governments was necessary to defeat militant communist-led actions such as the 1949 coal strike in Australia and the 1951 wharf strike in New Zealand. Tendencies towards direct bargaining and strike activity persisted until a crisis was reached in the 1960s. Unions were fined for strikes with increasing frequency. The imprisonment of a union official in 1969 in an attempt to recover payment of fines led to a wave of protests and tacit abandonment of penal sanctions. Doubt grew as to the continued usefulness of the system.

In 1983 the Hawke Government established a Committee chaired by Professor Hancock, an academic and University Vice Chancellor who had at one time worked as an ACTU research officer, to

comprehensively review the Australian industrial relations law and systems. Members of the Committee were George Polites, for many years the leading advocate for the employers and Charles Fitzgibbon, a long time leader of the Waterside Workers Federation and ACTU Vice President. The Report, issued in April 1985, recommended continuation of the Australian conciliation and arbitration system. This was not surprising because members of the Committee had been long time participants in the existing system, sometimes known as the *Industrial Relations Club*. However, they also recommended that the system be revised and improved.

As a part of the follow-up to the Hancock Report the Government proposed in 1987 to abolish the secondary boycotts provision of the Trade Practices Act for which the ACTU had been pressing. This was withdrawn after a television advertising campaign by the National Farmers Federation, supported by employer groups, on the theme that unions would have legal privilege not enjoyed by anyone else.

In March 1987 the Business Council issued a statement *Towards an Enterprise Based Industrial Relations System* which pledged Australia's major companies for the first time to a deregulated labor market. This coincided with the Unions also searching for a new wage system, particularly because of the wage discipline imposed upon the ACTU to combat the 1986 current account deficit. A two-tier wage fixation system under Accord Mark III was introduced in March 1987 (see below).

The Commission, in a series of national wage decisions, sought to provide a framework to encourage the industrial relations parties to improve efficiency and productivity. The principles sought to regulate improvements in award wages and conditions by increasingly linking such improvements to award modernisation and workplace reform.

The Conciliation and Arbitration Act was replaced by the Industrial Relations Act of 1988. The changes included:

- establishment of the Australian Industrial Relations Commission to replace the former Arbitration Commission and three specialist tribunals covering the maritime industry, public sector employment and airline pilots;
- establishment of the Australian Industrial Registry as a statutory authority to replace the former Office of the Industrial Registrar which carried out administrative arrangements for the Commission;
- provision for persons to hold dual appointments on the Commission and a State industrial tribunal.

There was widespread debate about the need and scope for the implementation of enterprise bargaining in the Australian context. The growing focus on enterprise bargaining led to the amendment of the Industrial Relations Act in 1992 to facilitate approval or certification of agreements by the Commission.

The Keating Government, soon after winning the March 1993 election, signalled a major policy thrust in industrial relations and indicated that the Government was working towards a model of industrial relations which placed:

'primary emphasis on bargaining at the workplace level within a framework of minimum standards provided by arbitral tribunals... (and) ... under which compulsorily arbitrated awards and arbitrated wage increases would be there only as a safety net'.

The outcome was the *Industrial Relations Reform Act* which came into effect on 30th March 1994 and made major changes to Federal industrial relations arrangements. Significant parts of the Reform Act

had their jurisdictional basis in the external affairs and corporations powers of the Constitution. In brief, the main changes introduced by the *Reform Act* were:

- encouraging and facilitating workplace and enterprise bargaining and agreements;
- protecting wages and conditions of employment through awards;
- ensuring labour standards meet Australia's international obligations;
- providing a framework of rights and responsibilities for the parties involved in industrial relations consistent with a less centralised system;
- preventing and eliminating specified forms of discrimination;
- inclusion of provisions on secondary boycotts - these replaced and amended provisions previously in the Trade Practices Act; and
- establishment of a specialist labour court (the Industrial Relations Court of Australia) to take over functions previously exercised by the Industrial Division of the Federal Court, and receive applications alleging unlawful termination under the minimum entitlements provisions on termination of employment.

The Act clearly distinguished between the arbitrated award safety net and the bargaining stream. It intended that the actual wages and conditions of employment of employees would be increasingly determined through bargaining at the workplace or enterprise.

In November 1996 the Industrial Relations Act 1988 was changed to the Workplace Relations Act 1996.

It addressed the new Howard Government's priorities, reshaped the Australian industrial relations system, and supported a more direct relationship between employers and employees, with a much reduced role for third party intervention and greater labour market flexibility.

The key changes involved:

- maintaining the award system to provide a safety net of fair and enforceable minimum wages and conditions
- providing for effective choice and flexibility in reaching both collective and individual agreements
- confining the Australian Industrial Relations Commission's arbitral role, so as to avoid inappropriate interaction between agreements awards
- ensuring greater employee choice about representation and removing uninvited union involvement in the bargaining process
- replacing the unfair dismissals provisions with a system based on a 'fair go all round'.

## **The Accords**

In 1974 and 1982 there had been major wages explosions under the existing system which in effect destroyed the Whitlam and Fraser governments. Mindful of this, the Labor Government elected in 1983 began to seek what became known as an *Accord* between the unions and the government, the purpose of which was to prevent wages explosions in boom times and to deliver sustained growth.

An *Accord* between the ALP and the unions was approved by a Special Unions Conference on 21-22 February 1983, before the 1983 election won by Bob Hawke. It covered the economy, industrial relations, tax, welfare, foreign investment, health, education, industry and immigration. Prior consultation with the unions was required for virtually all government decision-making. The trade-offs for giving the unions a major role in governing Australia were wage restraint to generate more jobs, shift of emphasis from money wages to the social wage, and settlement of disputes by conciliation and arbitration. The *Accord* was premised on wage indexation determined by the Full Bench. There were to

be no extra claims except 'in special and extraordinary circumstances'. The aim was real wage maintenance 'over time' - meaning temporary real wage cuts if necessary were acceptable. The living standards should be 'through time increased with movements in national productivity'.

At the National Economic Summit in July 1983 Prime Minister Hawke sought to expand the *Accord* to include business. His good friend Sir Peter Abeles proposed this at the Summit, but business representatives did not accept the principle of collective decision-making. In any case, there was no body to speak for business as a whole.

In addition to representatives of various business associations invitations to attend the Summit had been extended to 18 individual senior businessmen, of which I was one. There had been for some time a move to merge the Australian Industries Development Association and the Business Roundtable to form a Business Council to speak for them collectively but this was not accomplished until September 1983. I was involved as Chairman of the Committee of six people planning the merger.

During the Summit, Bob Hawke invited me to join his table at lunch in the garden of Parliament House and asked me what he should do about involving business leaders as distinct from associations in the formal structures he was considering. I told him of our plans. He said that in the light of these he would involve us fully in future consultative mechanisms. This later led to claims, not discouraged by Bob, that the Business Council was initiated by him. The truth is, as a later Executive Director of the Business Council, Peter McLoughlin, put it, that Hawke 'was neither father nor midwife, but had some role in inducing the child'.

*Accord Mark II* was agreed in September 1985 in recognition that full wage indexation was incompatible with the balance of payments problems. The ACTU consented to a 2% real wage cut, compensated by income tax cuts. There was further agreement for a 3% productivity increase, paid for not by higher wages but by occupational superannuation benefits.

Bob Hawke attempted to get the Business Council to endorse *Accord Mark II*. The then President of the Council, Bob White, called to the telephone during a Council meeting, told him that the Council would not do so, and was treated for twenty minutes to language which Bob White had not heard since he was an apprentice. The full Council was commanded to assemble before the Prime Minister in Canberra. It took three days of behind-the-scenes work between the Secretariat and the PM's office to defuse the situation.

*Accord Mark III* resulted in another 2% wages discount in response to the 'banana republic' crisis in June 1986. The indexation system was ended on 23 December 1986, after being in force for three years. There was a shift to a two-tier wages system, ratified by the Commission in March 1987. The first tier was a flat \$10 a week across-the-board increase plus a deferred 1.5% for all workers. The second tier, not to exceed 4%, was to be negotiated between individual unions and employers on the basis of efficiency gains and improved productivity.

The inclusion of productivity was maintained in *Accord Mark IV*, with the Industrial Relations Commission in August 1988 opening the way to reform of the award structure to promote greater efficiency. This was the origin of the enterprise bargaining philosophy.

In *Accord Mark V*, backed by a Special Unions Conference on 9 February 1989, the Federal Government gave a hefty tax cut and better welfare benefits in return for the unions supporting award restructuring instead of exploiting the economic boom to chase higher wages. This was very reluctantly agreed by the unions in the expectation that they would have greater flexibility in *Accord Mark VI*.

Bob Hawke, the architect of the 1983 Accord, described it in 1992 as the most successful national wage



policy implemented in Australia. He also admitted that by 1992 a different approach was required. In his view the way to higher living standards was that 'workers, their representatives and the managements be engaged directly in determining wage outcomes in their own workplaces ..... with an increasing emphasis on workplace bargains based on productivity'.

### **The Labour Market**

From World War II until about the mid-1970s Australia was chronically short of labour. This was one of the important reasons for the major immigration effort initiated in 1947, which brought 5.5 million new settlers to Australia over the next 50 years. The labour shortage naturally entrenched and enhanced the power of the unions who were able to virtually dictate to employers, the only moderating influence being the conciliation and arbitration machinery. The largest employer was the Government, and the Public Service unions were as activist as any.

During the major mineral developments in the 1960s and 1970s individual companies recruited workers overseas for their projects. School leavers and new professionals were virtually guaranteed several job offers, new graduates often several years before graduation. Those employees who did not want to change their employer were in effect in lifetime employment.

While companies in the agricultural and minerals industries were open to competition in overseas markets which took by far the largest part of their output, manufacturing and service industries were protected by tariff barriers. Agricultural and minerals producers survived the non-competitive labour market because of the high quality of their resources and the efficiency of their operations.

The major change in this came when world economic conditions in the mid-1970s, compounded by legislation for equal opportunity, the increasing number of women in the workforce, etc. introduced significant unemployment into Australia. A contributing cause may have been legislation affecting employment conditions which made employers more cautious in employing people. While President of the Australian Council of Trade Unions (ACTU), R G (Bob) Hawke had said that when unemployment exceeded 2%, there would be 'blood in the streets'. The unemployment rate rose to about 5% in 1975-76 and has remained above that level ever since. There was no blood anywhere, but the unions gradually lost their power and militancy.

#### **Unemployment Rate (in August)**

1974-752.4%	1983-849.9%	1992-9310.5%
1975-764.6%	1984-858.5%	1993-9410.7%
1976-774.7%	1985-867.9%	1994-95 9.2%
1977-785.7%	1986-878.0%	1995-96 8.1%
1978-796.2%	1987-887.8%	1996-97 8.5%
1979-805.8%	1988-896.8%	1997-98 8.4%
1980-815.9%	1989-905.7%	1998-99 7.8%
1981-825.6%	1990-917.0%	1999-00 7.0%
1982-836.7%	1991-929.5%	2000-01 6.2%

The initial world downturn causing the unemployment was followed by increasing 'globalisation' - erosion of the barriers to capital flows and investment and to the flow of goods and services across national borders. The Australian economy became increasingly exposed to world competition. This in turn put strong pressure on the labor market being similarly freed.

## Staff and Wages Employees

The differences between staff and wages employees included different entitlement to annual leave, entitlement to overtime and other penalty payments, and so on.

D J (David) Griffiths, who had become the Group General Manager - Corporate Affairs in 1993, recalls that Unions dominated the scene. There were different site agreements and the Unions used this to play one site off against another. It was largely to overcome this that Hugh Morgan in 1994 initiated a drive to offer wages employees individual contracts, in effect offering them staff employment: fixed salary instead of award rates plus overtime and penalties, inclusion in the staff superannuation scheme, and participation in employee share options.

This was naturally resisted by the Unions who could see themselves becoming less important or even irrelevant. The issue was handled extremely well: all wages employees were given the choice of remaining on award conditions or accepting staff conditions. Membership of a union was no longer a necessary precondition for employment (the 'closed shop' arrangement) which had in effect, if not formally, existed on some operations for many years.

After some initial hesitation, the vast majority of employees accepted the new employment conditions. Those few who chose to continue under award conditions either joined the others after a time or left, so that in due course all employees were staff.

The offers at individual operations and locations were made at different times, depending on local circumstances, starting with the Kalgoorlie Nickel Smelter in 1994. The Unions were gradually faced with a fait accompli. By 1996 all staff employment of Company employees was established throughout WMC, Olympic Dam being the last location. Many of the contractors employed by the Company also organised their people under similar conditions; some continued to have wages employees, but the two systems worked well side by side. The AWU Office in Boulder closed in 1998.

The benefits seen in this were abolition of the differences between two classes of employees ('them' and 'us'), better productivity, and better conditions such as full superannuation for previously wages employees.

An internal Company document prepared in 2003 describes the changes introduced generally from 1994 onwards as follows:

In 1994 five main business units were formed. In addition four corporate functions were established; Finance, Human Resources, Corporate Development and Operations (Projects and Technology).

In 1994, a number of performance management disciplines were reinforced or introduced for the first time. Much of the responsibility for these changes was vested in the restructured HR function, not only at the corporate level, but more specifically in the business units themselves. Driven by the company's vision of being the preferred employer of those people who could most effectively add value to WMC, the HR practitioners commenced the development and roll out of a wide range of HR programs and activities.

One of the most significant changes was the introduction of processes and structures for rewarding people based on their performance. To make this effective, appropriate measures and accountabilities were identified and documented for each position ... these performance indicators were cascaded down from the business plan and were based on the responsibilities of that person in meeting that plan's objectives.

... First line supervisory staff and managers were also introduced to the IM program which was aimed at providing managers with skills to counsel, discipline and motivate employees. It also focused on the importance of open communication and trust in the relationship between an employee and their immediate manager.

.... The responsibility for handling Employee Relations matters was shifted; instead of being a specialist head office staff function, it was devolved to the line managers in the field. A central employee relations unit was maintained at divisional level to coordinate activities and ensure consistency across the sites. A major effort was put into reducing the influence of trade unions, particularly in the area of demarcations and restrictive work practices. The company commenced a number of "all staff" programs whereby individual contracts were offered to all award employees in a particular operational area. The company brought in contractors and outsourced activities which were judged to be non core.'

In 1994 the WMC Performance Management Resource Kit was introduced.

### **1995 Employee Relations Strategy**

In January 1995 the Group Manager Employee Relations wrote the first Employee Relations Strategy. The Strategy statement was

"The company's Human Resources Mission Statement is:

*to align people and human resource issues to the strategic  
direction of WMC*

We believe this will be achieved through the creation of a new results - orientated culture with a participative, consultative, style of management. We aim to achieve a seamless workforce which is well compensated and totally flexible.

The strategy is designed to provide maximum autonomy for each location to pursue initiatives tailored to their particular circumstances, whilst ensuring that:

- a. Each location moves in a direction consistent with Western Mining's vision, values and strategic objectives; and
- b. Any initiatives taken at one location do not adversely affect the operation of any other location.

The key elements of the strategy statement include:

- Replacing collective agreements with individual contracts where remuneration is based on performance as opposed to current award system of time served.
- Introducing a participative and consultative approach with our workforce.
- Developing individual skills - both technical and team / supervisory.
- Developing team work relating to business objectives.

- Establishing direct and effective communication between the company and its employees.
- Developing and maintaining direct relationships between the company and its employees.
- Introducing annual performance appraisals which will serve as the basis of salary reviews and career development.
- Ensuring that all remuneration arrangements are market competitive.
- Removing all demarcations and workplace restrictions other than those based on competency and safety.
- Promoting initiative.
- Providing training to achieve total flexibility of workforce skills and application.
- Ensuring consistency in application of policies to all employees.
- Promoting individual responsibility and accountability of employees for work performed.
- Fostering commitment of the workforce to the business objectives of the company.
- Introducing a conflict resolution procedure to be adhered to at all times and guarantees continuity of supply.
- Training employees to demonstrate supervisory attributes.
- Introducing total flexibility in terms and conditions of employment free from traditional restrictions but developed in consultation with business units and workforce.
- Emphasising the Code of Conduct and its application to all employees.

This approach is characterised by the devolution of greater decision making responsibility and accountability to individual employees working within integrated workgroups.

### **Remuneration**

Develop employee remuneration and recognition arrangements which encourages the acquisition and utilisation of relevant skills and knowledge, motivates employees, encourages positive behaviour and initiative and rewards work performance.

### **Cost**

Any changes to workplace arrangements must be able to demonstrate cost effectiveness.

### **Freedom of Choice**

Individual contracts will be offered to existing employees. Employees will not be subject to any coercion or pressure from the Company to accept an individual contract. Employees may wish

to remain employed under the prevailing terms and conditions of the existing award. WMC will respect the individual's election in this matter and employees will suffer no discrimination in the workplace because of that election.

### **Freedom of Association**

Employees have the right to freedom of association. Employees will not be discriminated against at the workplace in any issue affecting their employment because of their membership or non-membership of a union. Western Mining respects the right of individual to belong or not belong to a union and Western Mining will respect that choice and the role of the union at law."

### **Distinction between Surface and Underground**

The strategy drew a distinction between the surface and underground operating cultures.

### **The Introduction of Salaried Staff Arrangements and Workplace Agreements**

1994 the Western Australian Government introduced the West Australian Workplace Agreements Act and other supporting legislation.

From 1995 individual workplace agreements were introduced in all Western Australian operations.

In 1996 the underground operations at Kambalda were contracted out. Underground mining crews were employed by contracting companies on Western Australian Workplace Agreements.

In 1996 staff contracts were offered at Olympic Dam.

In 1996 the Federal Government introduced the Australian Workplace Agreement legislation and other changes to the Workplace Relations Act.

In 1999 Australian Workplace Agreements were offered to employees of HiFert, and to new employees commencing in the Queensland Fertilizer Business.

In 2001 a change of Government in Western Australia heralded the end of the West Australian Workplace Agreement Legislation.

In 2002 Western Australian employees were signed onto Australian Workplace Agreements. A conscious decision was made not to offer employment on Western Australian Employer Employee Agreements.

### **Industrial Relations in WMC**

Public relations and industrial relations were in the early days of the Company handled by the General Superintendent and the Superintendents of the operations, although in Kalgoorlie Office there was towards the end of the period one person ('Parley' Wickens) who acted as a general troubleshooter and 'fixer'.

It is relevant to note that the industrial relations record of the gold mining industry in Western Australia was excellent: in a speech in 1981 Brodie-Hall recalled that the last major strike in Kalgoorlie had been in 1935, on the issue of whether the working week would be reduced from 48 to 44 hours. It lasted 6 weeks and was resolved by agreeing on 88 hours a fortnight! This record, an example of realism in the

face of adversity, is the more remarkable because wages had dropped well below the norm elsewhere in the industry. WMC did not strike the first serious industrial relations issue until the 1970s, well after the entry into the nickel industry in 1967.

When Perth Office had been established, Brodie-Hall had come across an experienced but unorthodox industrial relations officer, S J (Stan) Carter, who was about to be fired from the Chamber of Manufactures because he did not fit into their bureaucracy. Stan's highly idiosyncratic way of working appealed to Brodie, who engaged him as Group Industrial Relations Consultant. Stan's brief was to provide advice and assistance to the operations and to represent them in the Industrial Court and elsewhere as necessary. Within a short time he became in effect Group Industrial Relations Manager.

Maurice Brown in 1972 was concerned that 'He takes a pride in having no colleagues, no secretary, no records. He is good - he admits it himself - but he is probably not immortal. He should in my view become a consultant in a real sense, and a Group Industrial Relations Officer should be appointed ....'

This overlooked that Stan was completely incapable of working in or with a team. He continued to operate in his own inimitable way for some time after the normal retirement age of 65, until December 1991.

Towards the end of Stan's tenure B D (Barrie) Purvis, who succeeded him, joined the Company. The industrial relations at the Olympic Dam Project came under Stan's general overview but were handled by L (Laurie) Pilgrim.

Barrie Purvis was succeeded in 1993 by David Griffiths as Group Manager - Employee Relations. K (Ken) Ives took over when David succeeded Peter Johnston as Group General Manager - Corporate Affairs in 1996, and C (Chris) Mitchell succeeded Ken Ives when the latter became an Industrial Relations Commissioner.

### **Annual Report to Employees**

In 1976 an Annual Report to Employees was produced, explaining the Company's results in a simplified manner. It was at that time a popular thing to do.

The Report had a mixed reception. Stan Carter strongly criticised it and opposed its distribution to wages employees. The argument, with some justification, was that it implied employees were less intelligent than shareholders. He may have also seen his dealings with union officials jeopardised in some way.

In any case, the circulation of the report in WA was very restricted and the Report to Employees in WA was not issued again.

### **The 1986 Strike at Kambalda**

There was a six weeks' long strike at Kambalda in 1986, which is described in Part A, *THE SHINE OF NICKEL, Kambalda: Where It Started*.

### **WA Work Practices**

In 1990 Hugh Morgan began a determined effort to change the long entrenched work practices in the mining industry in Western Australia. This was a major undertaking which, as expected, met with considerable resistance from the unions and reluctance to act by the Labor Government in Western Australia.

The changes in work practices were pursued as a part of a number of issues, the others being the sulphur emissions at the smelter, rail freight charges, and royalties and the cost of energy to the Kwinana Nickel Refinery. A comprehensive review of WMC's nickel operations in 1990 had resulted in a plan to upgrade and expand the nickel business, ensuring its future for the next 20 years. The new investment of \$300 million to achieve this depended on the satisfactory resolution of all these issues.

Ore processing, because of the nature of the process, had always been a 24 hours a day, 7 days a week operation. Underground mining, however, was restricted by law to six days a week. The only work permitted on Sundays was shaft inspection and maintenance, pump inspection and maintenance, and other activities of this nature.

Western Australia was the only State where these restrictions, established when working conditions had been very different from modern standards, had not been lifted. The Chamber of Mines and Energy made representations to the Government, which agreed to amend the Mines Regulation Act 'with appropriate consultation between the parties concerned'.

While there were no legal restrictions during the rest of the week other than the length of the shift being 7½ hours, gradually there had emerged a great reluctance to work night shift and even the afternoon shift was unpopular. This meant that expensive underground openings and equipment were idle for a large part of the time. Working day and afternoon shift only for six days a week meant working the investments for only 90 hours out of the possible maximum of 168 hours.

A side issue was that, during intensive mechanisation of the mines over a number of years piecework rates had not been adjusted to reflect the consequent higher productivity and the earnings of pieceworkers had therefore reached unreasonable levels.

While exemptions from underground restrictions could be obtained, these were not guaranteed and sometimes involved long delays. WMC decided to launch a campaign for repeal of the restrictive sections of the West Australian Mines Regulation Act. It was fully backed in this by the West Australian Chamber of Mines because the WMC effort was in effect a test case for the mining industry in the State. The matter was discussed throughout 1990 at Kambalda, where there was the largest number of underground metalliferous miners in Western Australia. Senior management met with the Premier and Deputy Premier, the Minister of Mines and the AWU Section Committee. In early January 1991 a joint union on-site committee was formed and the Company met over the next several months with the AWU, the State Mining Engineer and Government officials.

On 21 May 1991 there was a 24 hour strike in protest over WMC's alleged inflexibility in negotiating; in reality there were also internal union issues regarding AWU representation. At a conference before the Industrial Relations Commission both parties accused the other of misrepresentation and belligerence.

On June 21 the dispute became focussed on the Revenge Mine where exemption had been granted to enable introduction of continuous rosters.

The Company offered:

1. Five weeks annual leave - an increase of one week.
2. Twelve rostered leisure days instead of the current five, for workers engaged on 8 hour shifts instead of the current 7.5 hours.

3. Work on a public holiday paid at the contract rate plus the single time award rate. When rostered off on a public holiday, payment at the single time award rate.
4. The ex gratia payment of 10% for night shift to be retained.
5. Agreement to amend award rates to reflect previous national wage decisions of 4% and the two wage increases of \$10-\$15, subject to agreement to work continuous shift work and 8 hour shifts.
6. Moratorium on continuous roster for airleg miners until December 1992.
7. An additional first aid centre at St Ives manned 24 hours a day 7 days a week.
8. Pieceworkers not entitled to penalty rates for weekends and overtime unless their earnings on contract are less than they would have been at these rates.

Continuous shift work would be introduced as amendments to the Mines Regulation Act were made.

The proposed changes were not represented accurately to a workforce meeting on the Kambalda oval on 1 July, which decided to go on strike until the next morning. The meeting imposed conditions which were unacceptable to the Company, the major issue being the retention of 7.5 hour shifts.

Hugh Morgan therefore addressed the miners at Kambalda on 5 July 1991, telling them that the introduction of a continuous mining roster was essential to the long term viability of nickel mining at Kambalda. The Australian industry could no longer rely on the quality of its resources in meeting competition. He appealed to the miners to work with the Company in resolving the issue. If the operations could not be made more efficient, they would have to be curtailed.

Hugh informed the men that they had one week to come to a decision. If the Company's position was rejected, employees surplus to requirements would be offered continuous shift work on the Revenge Gold Mine, or redundancy pay. He confirmed that the Company had placed its proposed \$300 million nickel expansion programme on hold, pending the outcome of these discussions and discussions with the WA Government regarding competitive energy supplies and freight rates, and a sulphur dioxide management programme.

The AWU declared that an industrial dispute existed and applied for an urgent hearing before the WA Industrial Relations Commission, which took place on 11 July. At the hearing the AWU sought an adjournment, which was granted until 15 July.

The Company put its case in an Open Letter to the People of Kambalda, advertised in the media on 22 July (copy enclosed).

On 26 July Commissioner J Gregor approved a 24 hour 7 day continuous roster at the Revenge Mine, provided underground employees were not required to work more than 21 days in any 28 day period, and not for more than 13 consecutive days without a 24 hour break. Regarding the Union claim for a penalty for Sunday work in addition to contract rates, the Commissioner urged the parties to reach agreement, failing which he would arbitrate on the basis of accepting without amendment one of the parties' final proposals.

Agreement by the Government to an independent review of rail freight charges for concentrate from Leonora to Kalgoorlie resulted on 4 September 1991 in an announcement to proceed with a \$127 million expansion of the Leinster Operations. The programme, over two years, involved purchase of



additional mining equipment and expansion of the metallurgical and power plants, to lift throughput from 1 million to 2 million tonnes per year.

On 13 September it was announced that, following discussions with the Government on energy and gas prices and royalty rates, a \$50 million upgrade and expansion of the Kwinana refinery would proceed. This would lift capacity from 30,000 tpa to 42,000 tpa over 2 years.

On 27 September it was announced that, following agreement with the Government on an air quality strategy, a new oxygen plant and other upgrading at a cost of \$41 million will increase smelter capacity from some 55,000 tonnes nickel in concentrate to 65,000 tonnes over 2½ years.

Agreement on continuous shift work and other amendments to work practices, however, remained unresolved, and meanwhile the \$105 million upgrade at Kambalda continued on a hold.

One of the difficulties was that the AWU, long known on the Goldfields as a reasonable and co-operative union, was led by a new State Secretary since May 1991, Bruce Wilson. Bruce had first come to public attention in 1986 when he led a group of unionists who took over Woodside Petroleum's North Rankin oil and gas platform offshore Western Australia which was then isolated by Woodside. It was suggested that the Australian Military Forces should intervene.

The situation was resolved by the Western Australian Labor Minister for Minerals and Energy, David Parker, confronting the men and telling them in no uncertain terms that, unless they abandoned the occupation of the platform, there would be no place for them in the Australian workforce in the future.

Also in 1986, Bruce Wilson as an AWU organiser had been the main force behind fomenting industrial unrest at Kambalda, culminating in the long strike in April and May of that year.

In 1991, the 34 year old Wilson appears to have seen Kambalda as an opportunity for renewed prominence. He was extremely skilled in building on various frustrations and fanning these into a major and long term confrontation. Internally, there had been a long power struggle between Wilson and the existing Union officials.

An AWU organiser in WA, he unsuccessfully stood against the long serving National Secretary, Errol Hodder, in 1989. Under Union rules, he could not then nominate for another term as WA organiser and was out of a job when his bid failed. Supporters within the national executive got him a job as a WA-based Federal organiser, which sparked a 10 months' legal battle during which he was ordered not to work as an organiser in WA and restrained from entering the State Branch offices. He was employed preparing a report on the mining industry.

The Federal Court ruled in his favour in February 1991. Wilson resumed duties as an organiser and was appointed State Secretary in May after the long serving Secretary, Joe Keenan, agreed to step down in mid-term to resolve the crippling power struggle and nominated Wilson as his successor to serve out Keenan's remaining term. There is no politics like Union politics!

Some 20 Union employees left within a few months after Wilson's appointment. He announced that he would also ask the Union's long time President and full time industrial officer, Joe Isherwood, to resign. Isherwood lost the presidency to a Wilson ally and then quit as the industrial officer in July.

The situation was complicated by the nickel price declining rapidly close to the end of 1991, the nickel operations losing money, and the Company having to contemplate closure of some operations. In these circumstances rumours thrived and some were fabricated for particular purposes.

In an effort to circumvent the rumour mill, the Company resorted to the unusual practice of making detailed public statements and writing to all employees, explaining its position and recording the various events, including discussions with the Government.

To add to the confusion, the AWU officials largely lost their authority over the employees at Kambalda, who on a number of occasions rejected the agreements reached and recommendations by the Union.

On 8 October 1991 underground miners at Kambalda went on strike about piecework rates at Foster Mine which the Company had declined to discuss separately, ahead of a review of piecework rates throughout Kambalda. A subsidiary issue raised was possible exposure to asbestos fibres in the ore, with the Company insisting there was no hazard. The miners returned to work on 21 October following a recommendation of the Western Australian Industrial Relations Commission. They went on strike again on 22 October over the asbestos fibre claim, but returned the following day.

On 29 October WMC confirmed it would not invest in upgrading the Kambalda Nickel Operations until the State Government had amended the legislation to allow a seven day working week and indicated that, in the absence of such action, there would have to be cutbacks to high-cost production and consequent retrenchments.

On 4 November 1991 the Government announced that it would grant exemptions enabling WMC to work seven day rosters, pending preparation of legislation to amend the Act. A meeting at Kambalda on the same day accepted the exemptions, but insisted that the exemptions restrict shifts to 7½ hours. WMC in an advertisement in the media on 6 November pointed out that a continuous shift roster was unworkable with 7½ hour shifts, and that the exemption granted to the Revenge Mine provided for continuous 8 hour shift rosters.

On 12 November 1991 WMC made a statement headed 'Downsizing At Kambalda'. Phil Lockyer was quoted as saying 'In our talks in the last few days, chaired by Western Australian Deputy Premier Ian Taylor and attended by Mines Minister Gordon Hill and representatives of the Australian Workers Union, we made a number of concessions and this package was accepted by the AWU and subsequently confirmed as a genuine record in terms of settlement by Deputy Premier Ian Taylor. Incredibly, AWU representatives, who were due to put the agreed proposal to members at a mass meeting in Kambalda yesterday afternoon, reneged less than one hour before the meeting by advising they would not accept the offer ....'

(What happened was that, on their way to the meeting at Kambalda the Union officials were told that the meeting would reject their recommendations. Rather than face this, they decided to back out of the agreement reached.)

Downsizing plans were to be implemented immediately and retrenchments of 150 employees would commence as per established procedures.

The miners went on strike, but returned to work after the matter was referred to the WA Industrial Relations Commission. The Government said it would now not amend the Act or grant exemptions until the dispute was settled - in effect giving the Union the power to make the final decision.

Commissioner Gregor on 11 December decided there were no legitimate reasons to oppose continuous mining. Out of the 150 retrenched people 90 had left, and Gregor ordered that action regarding the remaining 60 be suspended for 30 days to allow the Government to issue an exemption for at least one Mine - the Long - so that the men could continue to be employed.

On 16 December there was a two day strike over staff doing jobs previously done by AWU members (operating the mill during stop-work meetings), and deciding on return to work to have stop-work

meetings every week.

Ian Taylor had written to me on 20 December 1991, seeking a meeting with the WMC Board to address the Kambalda issues. He pointed out that he was also Minister for State Development and it was his duty to foster major projects in WA. He also wanted to explain that 'suggestions which have been made by some officials of Western Mining that I am only interested in pushing the union case ... (could not be) ... further from the truth'.

I knew Ian Taylor personally; he and I had both been members of the Duke of Edinburgh Study Conference in 1964. He was not an extremist and I did not doubt his sincerity, but he was no doubt exposed to very strong pressure from the unions.

The letter was not received until 6 January 1992. I replied immediately that he was welcome to meet with the Board, but pointed out that the Board as such did not pursue any negotiations and had complete confidence in the management's handling of the situation. I offered to arrange for him to attend at the next regular Board meeting on 12 February, but he did not take up the offer.

The 30 day period ran out on 10 January 1992. Following a meeting between Phil Lockyer and Deputy Premier Ian Taylor on 7 January, WMC decided not to proceed with the retrenchments after a meeting at Kambalda on 10 January decided to end the stop-work meetings and while Bruce Wilson and WMC industrial relations adviser Laurie Pilgrim met on 11 January. Discussions continued.

On 5 March 1992 it was reported that WMC and AWU were 'on the verge of reaching agreement on the introduction of continuous rosters in Kambalda mines'. The discussions were between Pilgrim and Wilson.

On 17 March 1992 there was a strike of underground employees over piecework rates at Kambalda. Another Open Letter to the People of Kambalda (enclosed) was published on 23 March.

A recommendation by the Commissioner on 26 March to return to work in accordance with the agreement reached with the Union was rejected by the workers on 27 March. On 31 March the Union agreed to recommend a return to work, which was again rejected on 2 April. Phil Lockyer said in a statement on 2 April 1992:

'WMC has been negotiating piecework rates in accordance with the restructuring principles since January 1992 and continues to seek progress.

AWU underground workers at Kambalda are seeking an increase in piecework rates - a pay rise - and have rejected the principle established by Industrial Tribunals throughout Australia and by the WA Industrial Commission that such negotiations be productivity related. They are currently seeking an 18% across the board increase in piecework rates and a 30% increase for one specific section of the workforce, but are unwilling to negotiate on restructuring of workplace practices that would allow economic efficiencies and greater productivity to be achieved.

Over recent time, some 35 days work time has been lost by the underground workforce at KNO.'

The Company then applied for a return to work order, which was complied with on 6 April. The order provided for 14 days of negotiations under the chairmanship of the Commission.

However, the strikers at the Langfranchi Mine stayed out longer because of an argument about a junior

mining engineer, an AWU member, obtaining experience at the mine and WMC applied to have the Union deregistered because of industrial action in breach of the Commission's order.

On 7 April Phil Lockyer and I called on the Premier, Dr C M (Carmen) Lawrence, following up while I was in Perth a conversation between the Premier and Hugh Morgan in the previous week. The purpose was to make sure that the Premier was fully informed about the situation.

Phil Lockyer went through the history of the issues at Kambalda over the previous two years. According to Phil's notes:

- Sir Arvi continued and made the point that the 7-day issue was the top priority. We needed to get the working relationship fixed for the future of Kambalda. We were puzzled to understand why all this was happening at Kambalda when relationships at Norseman, Leinster, the Smelter and the Refinery etc have been continuing in a positive manner towards change. Western Mining found it difficult to understand that there were 7-day operations in other States of Australia, there were operations in Western Australia on a 7-day system and there was even a mine at Kambalda operating on this system and there appeared to be no problems with any of them.
- The situation had reached the stage that if the Commissioner had not given the Order to return to work on Friday, and the workforce had not returned to work on Monday, Western Mining would have implemented the force majeure on our international nickel contracts.
- The situation was that the paperwork for the force majeure had been prepared on the Friday.
- If the Kambalda situation cannot be resolved, Western Mining is prepared to put the operation on hold for one or more years.
- Already the decision to put on hold the capital expansion money is showing a decline in the operation.
- The Premier basically said she thanked us for our discussion. She would not be making a public statement over this issue but she would be making her good officers aware of the conversation.
- PCL closed in saying, in the relationships with the Arbitration Commission we had to be like Caesar's wife and that is how we conduct our business with the Commissioner.
- Sir Arvi then commented we do not believe the other parties are conducting themselves in a like manner and it has got to the stage enough is enough.'

We had certainly made sure that the Premier was aware of our views. However, it is doubtful whether this had any effect on the dispute. The Premier's nickname was "Dr Feelgood" - she made everybody feel that she was sympathetic, but this was usually the only outcome.

On 23 April it was again reported that 'resolution of the roster dispute is in sight'.

On 28 April WMC and AWU signed an agreement to make a joint approach to the Government to amend the Mines Regulation Act, following agreement between themselves. On 29 April 1992 WMC made a statement requesting the WA Government to honour its undertaking in January to amend the Mines Regulation Act. On 30 April, after accepting continuous mining at a meeting at Kambalda, the miners then walked out for 24 hours claiming WMC had allowed three miners to work on an Easter public holiday. Bruce Wilson said that The workers are still very unhappy about the Act being

amended'.

On 30 May 200 miners rejected a piecework rate agreement and went on an 24 hour strike

There was apparently strong behind the scenes pressure on the Government to wriggle out of its undertaking, because on 5 June WMC made another announcement which said the Government's amendments did not agree with the Memorandum of Understanding and WMC would not proceed with the \$105 million investment.

On 10 June WMC advertised in the media, saying the Government had reneged on its agreement.

On 12 June Ian Taylor again wrote to me expressing his concern and implying that we were unfairly blaming the Government. I was overseas and could not reply until 1 July:

The Company's aim over the past two years has been to introduce modern work practices at Kambalda, so that the major investment necessary to ensure the future of Kambalda may proceed in the knowledge that the operation will be world competitive. We have requested that the Western Australian Mines Regulation Act be amended to abolish restrictions on hours and days of work underground and thus bring it in line with similar Acts in South Australia, Victoria, Tasmania, Queensland, etc.

In September, 1991, the Premier and yourself assured the Company that this would be done. In January, 1992, we were informed that this would done, provided the Company reached agreement with the Australian Workers' Union on the introduction of a seven day continuous shift roster. You were informed on 29th April that such agreement had been reached.

The subsequent amendments by the Government to the Private Members' Bill to amend the Mines Regulation Act did not meet the assurances given to us in September, 1991, and in January, 1992.

Occupational health and safety are matters to which the Board of Western Mining accords the highest priority. Amending the Western Australian Act to bring it into line with the corresponding Acts in other Australian States does not in any way diminish the Government's ability to control health and safety aspects, which it already has under Section 61 of the Act.

The hours and days of work should be negotiated between employer and employee and, when agreement is reached, ratified by the Industrial Relations Commission. There it can be reviewed and input made, if required, by relevant Government authorities to ensure that the work times and related matters do not pose a health risk to workers.

Giving the Minister the power to make changes to working hours is, in our view, not a satisfactory basis for an investment which can only be justified on the basis of restrictions on working hours being removed. The power of Parliament to disallow any such changes which the Minister may make, which may or may not be exercised, does not give the necessary assurance for such investment.

We regret that we cannot proceed with the investment at Kambalda, and therefore ensure its growth and the security of employment at that operation, until the Western Australian Mines Regulation Act is amended to provide for modern working practices in line with those in other Australian States and in accordance with the Government's assurances in September, 1991, and in January, 1992.'

On 14 July a mass meeting at Kambalda again discussed the dispute.

On 17 November there was another 24 hour strike at Kambalda over losing bonus payments because a stop-work meeting went over the agreed time.

On the same day Hugh Morgan and Keith Hulley called on the Premier of Western Australia, Dr Carmen Lawrence, seeking immediate implementation of changes to the Mines Regulation Act. In a subsequent letter on 19 November Hugh sought to explain that it was essential changes to working hours could not be left to ministerial discretion, and that the changes in the Act were necessary for the long term health of the industry and were not an endeavour to ignore health and safety issues in return for agreeing to keep the mines open in uneconomic circumstances.

On 22 and 23 November there was a strike over 'extremely trivial issues' following which, Hugh Morgan reported to the Board, 'the attitude of the AWU changed markedly with a recognition that market conditions, if nothing else, were of immediate concern'.

On 24 November W B (Bill) Anderson wrote to all employees at the request of the AWU in Kambalda, denying information given at a stop-work meeting that morning that, in the absence of approval of changes in working hours, WMC would close Kambalda and not re-open until after the next State election, although the low nickel price may require suspension of production at some mines in which case the affected employees would be used in mine development.

On 26 November Bill Anderson wrote again, appealing to all AWU members to ignore the strike called on 30 November in protest against the Victorian Government's industrial relations initiatives.

On 28 November, in a meeting with Labor members of Parliament Julian Grill and Mark Neville and Kambalda representatives the Company confirmed its position that it would not move from the agreement reached on 28 April when it was agreed that the Company and the Union would request the Government to abolish the limitation on working hours underground.

In January 1993 WMC sought an exemption to be able to operate the Junction Mine on a continuous roster basis.

In mid-March 1993 it was reported that the Liberal-Country Party Government, which had won office in February 1993, intended to introduce legislation in June, amending the Mines Regulation Act to permit continuous underground mining.

The amendments were passed on 9 December 1993. A meeting of WMC and AWU before Commissioner Gregor in Kalgoorlie on 2 February 1994 finally agreed that continuous mining would proceed with a target date of 14 February, to be introduced first at the Long Shaft.

As a matter of interest, Bruce Wilson was transferred by the AWU to the Eastern States and faded from the public eye.

The continuous roster system quickly became very popular. A year or two later anyone proposing to go back to the old system would have faced great difficulty with the workers.

## **Remuneration Practices to 1986**

### **Non-Staff**

WMC remuneration practice for wage employees not on contract was to pay the appropriate Award rates. These were determined by the Arbitration Court from time to time, with cost-of-living increments

being added at regular intervals between determinations.

Contract employees (mainly miners and other underground workers) were paid the higher of the Award rates or the calculated contract earnings. The latter were determined by the piecework performance during the period, multiplied by the agreed contract rates plus allowances, if any.

## **Staff**

Remuneration for staff was set by the Superintendent of the operation or Head of the Department, in accordance with any guidelines which may be handed down from corporate office. Remuneration for senior staff (on WMC payroll) was set by the appropriate corporate Departmental Head, with the agreement of the General Superintendent in Western Australia and the Managing Director in Melbourne. The Chairman, with the ultimate approval of the Board, was involved in deciding the remuneration of the most senior executives.

These practices continued until I retired as the Managing Director in June 1986. The general percentage increase to be applied would be decided by me and Keith Parry and we would agree the remuneration of the most senior people in Western Australia, with the exception of Exploration Division where Roy Woodall would recommend adjustments to me. In Melbourne, Corporate Department Heads (later Hugh Morgan) and I would decide the adjustments. All these decisions would be submitted to the Board for final approval. I would write personally to the most senior executives (termed 'senior executive staff'), advising them of salary increases.

## **Executive Director Salaries**

In the case of executive directors the non-executive directors (usually headed by Sir Wilfred Brookes) would decide their remuneration and Wilfred would advise them in writing, after having obtained the agreement of the other executive directors to the proposed adjustments.

On only one occasion, in March 1982, was a query raised. Hugh Morgan wrote to Wilfred, suggesting that the remuneration of all four executive directors was at the low end of the scale and referring particularly to my salary, including the practice of returning my directors' fees from Alcoa US and Alcoa of Australia to the Company.

Wilfred spoke to me about this. I was conscious of the once again difficult nickel markets; it was not a good time to have a special review of executive directors' salaries. I believed that executive directors, and certainly myself, should lead by example and suggested that the matter be left for future consideration. In fact, some months later we froze all salaries (see below).

In all my time with WMC I never had a contract of employment or negotiated, or even discussed, my salary and conditions with my superiors. This applied to all senior executives until a performance assessment was introduced and overseas executives began to be employed in the 1990s. The first executive to have an employment contract was probably Keith Hulley.

In my time there was no formal system of job evaluation, the merits of particular jobs and particular people being judged by the appropriate superior officer and, in the case of the most senior people, agreed by me. Outside consultants (mainly the Hay Group) would be used to ascertain the extent of the adjustments made by comparable companies and someone from WMC would also attend the 'Canberra Conference' where a selected group of larger companies exchanged information. After Keith Aird came to Melbourne Office as Group Administration Manager in March 1974, the assembling of this information became one of his responsibilities.

For most of the period from 1974-75 to 1985-86 the industry (and WMC) was going through tough times; the return on shareholders' funds was less than 10% in 11 of these 12 years. There was a strong focus on containing costs and the salary and wages bill was an important part of the total expenditure. The policy was to position the WMC remuneration rates at the average of the industry. Containing the people cost was helped by executive rates of pay in Australia not having yet started to emulate American practice.

As far as I am aware, the WMC remuneration practice was reasonably well accepted within the Company. I did not receive any complaints.

During a particularly difficult period in the nickel markets I decided in August 1982 to freeze all WMC staff salaries until June 1983 and to increase working hours by half an hour. Again, there were no complaints. The staff interviewed by the media took it, according to a reporter 'with a mixture of calm and good humour'.

The WMC action received favourable comment in the media and outside the Company generally and was followed by CRA and Myer. Many other companies said they were introducing economy measures such as restricting replacement of company cars, staff travel, and so on. The support for a salary freeze was not uniform: I was told that BHP thought it was a bad idea.

The Australian economy also was in a very bad shape, largely because of a wages blow-out. The corporate actions may have encouraged the decision by a meeting of the Federal and State Governments on 7 December 1982 to freeze wages for one year. It came too late: in February 1983 the Federal Coalition Government lost office because of the poor state of the economy. (The victorious Labor Prime Minister was ex-ACTU President Bob Hawke!).

### **Staff Bonus**

It had long been WMC's practice to pay a discretionary Christmas bonus to all staff. Pre-Kambalda the bonus was related to the dividends paid. This practice was discontinued during the construction and development period at Kambalda, when dividends had little relationship to the level of activity.

The bonus thereafter was set as a percentage of salary. There was no incentive component in terms of individual performance. Bonuses paid were 6% in 1970 and 1971, 7.5% in 1972 and 6.5% in 1973 and 1974.

On 3 March 1975 the Board decided to discontinue the annual staff bonus and to increase all staff salaries by the last bonus rate (6.5% in December 1974) as from the date the bonus was discontinued. The Company would offer to deduct the extra salary for any staff member wishing to accumulate a lump sum to be paid at Christmas time.

On 11 April 1975 the Board decided to defer the implementation of this decision - can't now find out why. A bonus of 3% was paid in December 1975.

Subsequently the bonus was incorporated in salary until the re-design of remuneration practices introduced incentive bonuses to senior executive staff in the 1990s. There was no resumption of bonuses to all staff, although all staff by then were eligible to participate in staff share issues.

### **Fringe Benefits**

The fringe benefits available to WMC staff, like the salaries, were modest. Senior executive staff were



allowed to take up to 5% of salary as a representation allowance which was tax free, subject to the

employee being able to satisfy the Commissioner of Taxation, if need be, that it was used for representational purposes. Nominated senior staff were entitled to Company cars and to four weeks annual leave instead of the statutory three weeks. The Company paid for staff members' personal accident insurance cover of 2.5 times annual salary. Sick leave would be granted in excess of the statutory provision if necessary. From 1975 onwards senior executives were entitled to a free annual medical check-up.

After Doug Stewart had become General Manager - WA, he queried in April 1972 whether the Company would consider introducing more 'tax effective' fringe benefits. My reply, after consulting Hugh Clark, was decidedly discouraging.

### **Remuneration Practices After 1986**

The appointment of Human Relations Managers for both the Company and the operations within the Group in 1993 led to remuneration practices being formalised and staff being appointed to deal with various aspects of remuneration.

The Board established a Remuneration Committee consisting of non-executive directors. I was a member of this committee, which was chaired by D J (David) Brydon. Hugh Morgan attended meetings, but was not a member. The Corporate General Manager - Human Relations reported to the Committee and proposed policies, some of which were approved by the Committee and others were referred, with the Committee's recommendation, for approval to the Board.

The basic salary policy, which had been to keep WMC remuneration at about the average of comparable companies, was upgraded over a number of years to achieve the third quartile level. Various incentive bonus systems for senior executives were tried, involving both short term and long term components. Federal government action in introducing a fringe benefits tax changed the composition of remuneration 'packages', which were to some extent designed to meet the wishes of individual staff members.

I have not attempted to detail the changes over the years, which would require a great deal of time in perusal of files. Hopefully, the Human Relations Department is keeping a historical record, although this has not been, in my experience, WMC's strong suit in other areas where I have tried to find a record of the events post-1986. This would be a pity because with frequent changes in personnel there is not likely to be a great deal of corporate memory retained.

### **Employee Benefits**

#### **Superannuation**

##### **Staff**

WMC staff were eligible to become members of the Staff Superannuation Fund since the establishment of the Associated Mining Companies Staff Superannuation Scheme in March 1940. The provisions of the Fund were updated and improved from time to time. In 1974 the basic arrangement was that staff members paid 2.5% of their salary into the Scheme, which was supplemented by 2.5% contributed by the Company. The contributions continued until attaining the age of 60, or completing 30 years of continuous service, whichever occurred last.

The benefits varied depending on length of service at retirement or on leaving the Company. After 30 years' service the maximum benefit was seven times the average annual salary during the three years

prior to retirement. The superannuation membership also included insurance against death and partial or total disablement.

As from 30 June 1976 the contributions by staff and the Company were increased to 3.4% of the basic annual salary. In the share market boom in the 1980s high investment returns resulted in large surpluses in the Fund and the Company's contributions were suspended for some years.

For a considerable time the WMC Fund was very generous compared with other similar funds, and well ahead of its time. It was only in the early 1990s that other funds began to close the gap.

### **Non-Staff**

Until 27 May 1970 non-staff (wages) employees were not entitled to superannuation. Their entitlements on death or partial or total disablement were as set out by legislation from time to time.

Largely at the instigation of Brodie-Hall, the Company voluntarily introduced a superannuation benefit to wages employees. These were administered through the Employees' Provident Fund.

All employees with two months of satisfactory service were eligible. Employees and the Company both contributed equal amounts and the balance earned interest at 6% per annum. During the first five years the Company made initial contributions of \$40 for each year of service to the account of members with past service.

On retirement or total and permanent disablement members (or their dependents) would receive the accumulated sum in the account. On resignation the entitlement was the accumulated contributions plus interest by the member and one half of the balance created by the Company's contributions after 5 years' service, rising to 100% after 10 years' service.

While Stan Carter was the Industrial Relations Manager, superannuation benefits to non-staff formed a part of the negotiations of wages and conditions and any changes therefore had to be agreed by Stan.

### **Amalgamation of Funds**

In May 1994 WMC had three superannuation funds:

1. Westminer Staff Superannuation Fund (WSSF): a defined benefit fund, 2200 members, assets \$220 million.
2. Westminer Employees' Superannuation Fund (WESF): an accumulation fund, 2100 members, assets \$18.5 million.
3. Nifty Superannuation Fund (NSF): a defined benefit fund, 50 members, assets \$1 million.

It was proposed, and the Board agreed, that these would be amalgamated into one fund by 1 April 1995. The defined benefit category of WSSF would be closed to new members and WSSF would be renamed Westminer Superannuation Fund (WSF). New accumulated benefits would be introduced for new members:

1. The Superannuation Guarantee Charge: then 5% for award employees
2. 11.5% for new staff hires and transfers from award to staff
3. 20% for new executives.

On 1 October 1994 members of the closed defined benefit category had three options:

- transfer to the 11.5% accumulation category taking the value of their defined benefit with them.
- freeze their defined benefit and make future contributions to the accumulation category
- continue to pay for the defined benefit and make additional payments to the accumulation category.

On 1 April WESF and NSF would be merged into WSF. WESF members would qualify for the Superannuation Guarantee Charge category. NSF members would have the same three options as the members of WESF closed defined benefit category.

On 1 May 1995 elections would be held for member-elected Directors of WSF Trustee Board in accordance with Superannuation Industry (Supervision) Regulations which came into effect on 1 July 1994, and the elected members would be appointed in addition to the Trustees nominated by WMC as from 1 June 1995.

### **Employee Share Issues**

During the rights issues to shareholders to finance a part of the WMC interest in Alcoa of Australia in 1961, the Koolanooka iron ore venture in 1964 and the Kambalda nickel project in 1966, staff were given the opportunity to take up shares on the same terms as shareholders and were offered loans. As the shares appreciated greatly after the issues, this was a very valuable benefit to staff. These circumstances did not exist after 1971, and there were no employee share issues for a considerable period.

In accordance with the growing practice in Australia, at the 1983 Annual General Meeting an Employee Share Purchase Plan not to exceed 3% of the issued capital was approved in two parts, a staff plan and a general plan for all employees. However, only very minor issues to senior executives were made initially.

At the 1987 Annual General Meeting the Employee Share Purchase Plan was amended in general terms which then became the basis and authority for all future Plans, without the need to go back to shareholders.

Over the years there were the following Plans:

- Employee Share Purchase Plan 1986
- Employee Share Plans in 1988 - 1993 incl.
- Senior Officers Share Plans in 1987 - 1993 incl. (there were two such plans in 1987 and 1990)
- Stock Appreciation Plans for Salaried Staff 1989 - 1993 incl.
- Stock Appreciation Plans for Senior Staff 1989 - 1993 incl.

At the 1993 meeting the issue of shares to Executive Directors was for the first time specifically approved by shareholders, as was now required by the listing rules. Such approval was sought annually thereafter.

The share plans approved in November 1994 were put on hold pending the outcome of legislation introduced into Federal Parliament in October 1994 which levied fringe benefits tax (FBT) on share schemes effective May 1994. The legislation was withdrawn in December 1994 following intense lobbying from major companies.

In February 1995 the partly-paid share schemes were replaced with partly-paid options, thus minimising the Company's exposure to FBT. Directors were restricted to partly-paid shares as approved at the 1994 AGM.

From the 1993 Annual General Meeting onwards, share or option plans for executive directors were approved by shareholders annually. These were initially on similar terms to issues to senior staff. Beginning in 1997, however, the exercise price became the market price plus 10%.

At the Annual General Meeting in 1999 a new scheme was adopted where the 10% premium on market price was deleted and the number of options issued and exercisable was related to the Company's performance relative to a peer group of 20 comparable Australian and overseas companies.

### **Employee Assistance**

In September 1995 negotiations had been finalised with Prime Employee Assistance Services (PRIME) to provide an Employee Assistance Program at WMC. In the Annual Report for 1996 PRIME reported as follows:

'Over the initial 12 months over the programme, Prime Employee Assistance Services has engaged in a range of activities for WMC employees which are in addition to face-to-face counselling services. These have included:

- i) Critical incident responses on all major sites (Olympic Dam Operations, Leinster Nickel Operations, Central Norseman Gold and Kambalda Nickel Operations).
- ii) Consultancy support for redundancy processes at Olympic Dam Operations, Hill 50 and Kambalda Nickel Operations.
- iii) Policy development in areas such as:
  - Fitness for work;
  - Crisis intervention;
  - Equal opportunity; and
  - Peer support.
- iv) Training programmes in:
  - Next-of-kin support for managers and supervisors;
  - Crisis intervention;
  - Effective communication;
  - Parent education and child management; and
  - Preventative health (obesity, addiction).
- v) Crisis evacuation of acutely stressed staff from remote sites.
- vi) After hours emergency services for severely at risk employees.
- vii) Workplace mediation.
- viii) Consultation with managers:
  - Managing problematic performance; and
  - Assessing at risk behaviour.'

In a covering note to the Executive Committee Greg Travers, General Manager - Human Resources,

commented that there was 'a high usage of the service across a wide cross-section of age groups, professions, family members and for a variety of reasons.'

### **Long Service Awards**

Public Service Act said: Long service leave is an almost unique Australian provision. It started in a way in the 1860s; a provision in Victoria's

***'Where any officer desires to visit Europe or some other distant country, if he have continued in the civil service of this colony at least ten years, .... The Governor in Council may grant him leave of absence ....'***

In 1955 the New South Wales government passed the Long Service Leave Act which ultimately gave three months leave to private sector employees after 15 years of service with the same employer. The other States followed in due course.

It is somewhat surprising that long service was not recognised in any other way by WMC for many years, given the many employees with long service within the Company. There was some discussion of initiating an award in the 1970s, but it was not pursued.

One of the reasons for this at the time was the attitude of Roy Woodall who was very negative when I mentioned this to him, on grounds that many of his employees with short service may well have contributed more to WMC than long service employees. Roy was also against the then practice of issuing to senior staff cuff links (beautifully made in Japan) with WMC logo, and would not accept these for himself.

In 1996 there was established a complex system of service awards. A certificate and copper or silver coin was presented to all employees on completing 10 and 20 years of service respectively. On reaching 25 years of service there was a personal letter of recognition from the Chief Executive Officer, a commemorative 1 oz gold coin, and an anniversary function. These were repeated for each 5 additional years of service beyond 25 years and in addition benefits of net value of \$1000 after 30 years, \$2000 after 35 years, \$4000 after 40 years and every 5 years thereafter were given.

### **Redundancies And Employee Loyalty**

Until the mid-1970s it was rare for anyone working for WMC to be made redundant. When circumstances required, every effort was made to find the people concerned appropriate employment in another capacity or elsewhere in the Group. Employees on their part felt that they owed loyalty to the Company. This was also general industry practice; the community regarded retrenchments as undesirable, if not unacceptable.

Progressively industry practices and community perceptions changed; it became common practice to declare people redundant. Investors not only did not think anything wrong with this, but announcements of 'downsizing' were rewarded with share price increases. Somewhat reluctantly, WMC followed this trend.

In June 1977 I informed the Board that there were some ten staff members who had rendered excellent service in the past but had now become redundant. In most cases such people were approaching retirement age and the solution was to make arrangements for early retirement. I recommended that it was fair and equitable for the superannuation entitlements to be supplemented by ex gratia payments of varying amounts. At about this time Stan Carter had negotiated redundancy payment provisions for non-staff. These were related to length of service and expressed as a multiple of a weeks' wages.

By the 1980s making people redundant was no longer unusual or unexpected. Stan Carter renegotiated the non-staff redundancy provisions in 1982. A staff redundancy scheme had been introduced separately at about the same time. Stan was not very happy when he found out about it, as is evident from the attached telex in his inimitable style.

Redundancies in WMC became particularly noticeable after the introduction of Human Resources departments in 1993. The practice was made tolerable by increasing redundancy payments to both staff and non-staff.

This was naturally accompanied by changes in employee loyalty. As the proportion of employees with long service diminished and promotions from within were no longer the norm, people increasingly came to regard employment with the Company as a stepping stone in their careers. As one management writer put it, 'The sentimental notion of loyalty has given way to a new, more pragmatic loyalty based on meeting the changing expectations that the parties have of each other'.

Put in different words, employee relationships have become commercial matters. Senior managers are in effect mercenaries, going from one contract of four or five years to another, at times from one competitor to another.

I must admit to never having become comfortable with this.

# **BOOK TWO**

***WMC 1974 - 1999***

***PART C. CORPORATE ACTIVITIES***

**VOLUME SEVEN**

***CORPORATE ACTIVITIES*****VOLUME SEVEN****CONTENTS**

	<b>Page</b>
<b>Shareholder Relations</b>	<b>675</b>
<b>Government Relations</b>	<b>683</b>
<b>Community Relations</b>	<b>703</b>
<b>Aboriginal Relations and Native Title</b>	<b>711</b>
<b>Safety and Health</b>	<b>725</b>
<b>Environmental Care</b>	<b>731</b>
<b>Technology</b>	<b>737</b>
<b>Venture Capital</b>	<b>745</b>
<b>WMC Representation in Japan</b>	<b>751</b>



## **SHAREHOLDER RELATIONS**

### **The Company's Image**

For a long time WMC had an excellent market reputation and shareholder relationships without ever working at it. While a gold mining company yielding modest (but tax free) returns to shareholders, knowledge of the Company was essentially restricted to Australian and British gold investors. The Kambalda discovery in 1966, the subsequent rapid growth of the Company and the accompanying spectacular increase in the share price made WMC favourably known to a broad range of investors around the world.

The early expectations for the nickel business were not translated into profits following the downturn in the nickel markets in the 1970s, but the favourable image of WMC persisted until the mid-1970s when analysts and financial journalists occasionally started to make critical comments. Notwithstanding this, WMC still had the confidence of the market as witnessed during the BH South takeover in 1979-80, the good performance of the shares during the 1987 stock market boom and the 1987 share issue. The October 1987 share market crash, the inability because of production difficulties to take full advantage of the subsequent nickel boom and particularly the unsuccessful North American investments in the late 1980s, however, dented this confidence.

Until the late 1980s the Company did not have a formalised approach to public relations and shareholder relations; there were no departments or 'strategies'. I made a point of being readily available to the media - all they had to do was to ring my office and make an appointment or just speak to me on the phone - and always replied personally to letters from shareholders addressed to me. This was well known, unusual, and, I like to think, appreciated. It did not take as much time as one would think. I did not address meetings of analysts or investors, although they were able to have an interview just like journalists. There were no expensive and time consuming 'roadshows'. Any queries related to shares were handled by the Company Secretary.

### **The Share Price**

For WMC share price movements see Book Three, *Appendix IV*.

### **Shareholder Relations Formalised**

In September 1989 shareholder relations became the responsibility of General Manager Shareholder Relations. The first officer to formally hold this responsibility was F S (Fred) Grimwade who later (15 December 1989) was also appointed Company Secretary.

A review of WMC shareholder relationships was presented to the Board on 5 April 1989.

In addition to the listing of WMC shares in Melbourne and London, WMC had also listed in February 1988 in Zurich, Basle and Geneva and in July 1988 in Frankfurt. Listings in Paris and New York were planned for the second half of 1989. In the event the listing in Paris did not proceed, but WMC shares in the form of ADR's (American Depositary Receipts) became available on the New York Stock Exchange. WMC expected to become a global company and the overseas listings were to make it easy for overseas investors.

Investor presentations to small audiences and visits to operations and offices by analysts had been going on for some time. Dewe Rogerson in the United States had been appointed in 1988 to assist in disseminating information about WMC to US institutions and the press. The management felt, however, that the time had come to mount a major Investor Relations Programme.

Geoffrey Stephenson, the recently retired Secretary of BHP, had been commissioned to report on secretarial, share registry, and shareholders relations procedures. Stephenson saw WMC's favourable features as the personal interest and involvement of the Chairman and the Managing Director in the preparation of the Annual Report and Chairman's Address, 'formal, efficient, good quality, conservative, polite and well written, and to be respected' publications and Annual Meetings held outside Melbourne every second year. He saw the weaknesses as communications with shareholders being too impersonal, the only point of communication with the Company being through an intermediary (Coopers and Lybrand, the share registrars), no effort being made to analyse the make-up of the shareholders to better understand their needs and no regular contact with major shareholders.

His main recommendation was that WMC should substantially enhance its shareholder and investor relations, with an executive appointed to head up this activity.

Particular issues at April 1989 as gleaned from various other sources were:

- a. Since Olympic Dam started up, WMC was seen as having no growth prospects.
- b. Investors believed that the high nickel prices could not be sustained and saw this as a negative for the company.
- c. Alcoa's significance to WMC was not understood.
- d. There was concern that WMC's management was 'too thin' and without adequate backup or depth.
- e. The Company was seen as reluctant to provide information to analysts, fund managers, etc. and the information given was not as detailed as by other companies.

The actions contemplated by the Company were:

1. Presentations would be made to analysts, fund managers, and brokers following release of half-yearly and annual results, initially in Sydney and Melbourne.
2. Periodic presentations would be made in the major markets where WMC shares were traded - UK, Switzerland, Germany, and USA.
3. Information and data would be prepared in an easily digestible form.
4. Half-yearly and annual reports would be reviewed as to presentation and content.

One of the results of this was that the Managing Director and other senior executives of the Company would spend considerable time and effort in making presentations to investors and stockbrokers in Australia, USA, and the United Kingdom. (There have not been many, if any, presentations in non-English speaking countries).

In the second half of the 1990s there was increasing concern that large investors may be given (or may appear to be given) information which was not available to all shareholders.

Both the ASX and ASIC tightened regulations, insisting that information be made available to all shareholders at the same time. WMC was quick to adhere to (and more than comply with) these requirements by posting all briefings, announcements, results etc. simultaneously on the internet.

With companies making great efforts in this and other ways to make comprehensive information available to the public, the question arises as to the extent of value added by analysts who previously collated and interpreted such information for investors.

## Annual General Meetings

Until the mid-1970s WMC Annual General Meetings had been uneventful and very friendly.

The Company's financial year ended, as was common in Australia, on 30 June and the AGM was usually held in October or November. Before the discovery of Kambalda in 1966 the meetings were attended by some tens of shareholders, certainly less than a hundred. For a time they had been held in Mr (Lindesay) Clark's office which accommodated about 30, then in the Boardroom which increased the capacity to perhaps 50. According to *Westminer* magazine, there were just seven shareholders in attendance even in 1966! In keeping with the numbers, the meetings were low key affairs. There were hardly any reporters present. Very few questions were asked.

The attendance register was compiled by a staff member listing those he knew, and asking the others for their names. F B (Frank) Taylor recalls the story of Len Whitby on one occasion asking a distinguished looking gentleman for his name, to be told: 'I am W S Robinson, and I happen to be the President of the Company'!

After 1966 the meetings were moved to a rented hall. The attendance in 1967 was 180. The room rented in the Princes Gate building in 1968 accommodated 200; 350 attended and overflowed into the entrance hall. In 1970 the attendance was back to 150.

At my first meeting as Chairman in 1975 the nickel market was depressed; one half of the world's nickel was being produced unprofitably. WMC's profit was well down and I advised the shareholders that the outlook was 'quite uncertain'.

The Annual General Meetings in 1975 and 1976 were held in the National Mutual Theatre in Collins Street, Melbourne. The capacity of this small theatre was insufficient for the increasing attendance and from 1977 to 1982 inclusive the meetings were held in the Ballroom of the Southern Cross Hotel, with the exception of 1979 when, for the first time ever, the meeting was held outside Melbourne - very fittingly, in the Kalgoorlie Town Hall.

By 1977 we had announced the Olympic Dam discovery in South Australia and that any development would include the production of uranium. We had also been working on the Yellirrie uranium project since 1972 and were hopeful of bringing it into production before long. This was the era of anti-uranium protests in Australia and one of the early opportunities for them was to come and disrupt the WMC Annual General Meetings.

The 1977 meeting was disrupted by organised protesters acting in accordance with an agenda dictated by a leader (I was later told a university lecturer) blowing a whistle. Copper coins to the accompaniment of chants of 'money, money, money' were thrown on the Board table and one lady presented me with a plastic bag said to contain radioactive tailings from Olympic Dam. Asked what I would do with this, I said I would keep it on my bedside table as a memento of the meeting!

We had arranged for Roy Woodall to give a slide presentation of WMC's exploration activities. This was drowned out by the noise from the protesters. On two occasions I adjourned the meeting for a brief period to restore order. Police were present, but the disrupters were careful not to do more than be a nuisance.

When it came to the resolutions, they were numerous enough to ensure that every resolution was lost on a show of hands and had to go to a poll. Not expecting this, we had not organised to have all the polls together at the end of the meeting and had to hand out polling papers, collect them, count them, and announce the result one resolution at a time. This meant that the meeting dragged on for nearly seven

hours. At the end there were not too many left in the hall!

I remember telling someone later that the main qualifications for a public company Chairman were infinite patience, a thick skin, and a bloody good bladder - the Chairman could not leave the room unless the meeting was adjourned!

The 1977 meeting marked the end of one era and the beginning of another. For future meetings I had a Chairman's Manual prepared, setting out for reference generally accepted meeting procedures and rules in case someone challenged my conduct of the meeting. No-one ever did - many of the rules are not specific and the Chairman of a meeting has very considerable authority.

The protesters were there again at the 1978 meeting, rattling copper coins and throwing these on the table where the directors were sitting, disrupting by interjections and by being noisy and asking interminable repetitive questions.

In 1978 the Articles were amended to provide for 50 shares as the minimum registrable parcel for new shareholders (a marketable parcel was 100 shares). This was done partly to reduce share registry costs, but partly because anti-uranium protesters had been buying one share which entitled them to attend and speak as shareholders. It did not really solve that problem, because the owner of 50 shares could give proxies for one share each to 50 people!

Amendments to the Articles also gave the Chairman explicit powers to terminate discussion and adjourn the meeting at his discretion. The Australian Shareholders Association was very unhappy about this, painting extreme scenarios as to how these powers could be misused, and this added to the length of the meeting. All resolutions were, however, passed after about four hours.

Not everyone had the same view. One lady shareholder wrote to me after the meeting, complaining that those presently owning one share and causing a disturbance should have been prevented by directors from attending the meeting. By not doing so, directors had condoned the rowdiness! When I pointed out that we were unable to do so until the amendment to the Articles had been approved by shareholders, she thought we should have done it and had it approved afterwards!

One of the interjectors upset a shareholder sitting in the row in front of him, who turned around and swung a punch. The protester suddenly became a supporter of law and order and loudly appealed to me to intervene. I said I would listen to his story after the end of the meeting, but by then he had obviously thought better of it and was not there when the meeting ended.

A part of the reason for having the AGM in Kalgoorlie in 1979 was that Western Australia was in that year celebrating its 150th Anniversary. Present were 144 shareholders, proxies and visitors.

I was later told that two carloads of uranium protesters had arrived from the Eastern States. They were met at the town boundary by the local police, who politely suggested that it was very much in their interests to continue on without stopping in Kalgoorlie and escorted them to the exit to Perth.

The meeting was attended by Sir Lindesay and Lady Clark and I was able to announce in their presence the establishment of the Western Mining Sir Lindesay Clark Trust Fund. There were no protests; the only embarrassment was the number of speakers at the end of the meeting praising the Company and the directors. Two of these were elderly spinster ladies misses Laver (Elizabeth and Sheila) (see below).

In 1980, 1981 and 1980 the meetings were held in the Ballroom of the Southern Cross Hotel in Melbourne. The presence of protesters and critics of various kinds was now a standard feature.

In 1983, the 50th Anniversary year of Western Mining, the meeting was held in the Golden Ballroom of

the Sheraton Hotel in Perth.

At that meeting an Employee Share Purchase Plan not to exceed 3% of the issued capital was approved in two parts, a staff plan and a general plan for all employees. Also, the Articles of Association were amended, amongst the amendments being giving directors in certain circumstances the power to compel disposal of shares held by foreign persons.

Back in Melbourne, the meeting in 1984 was again in the Southern Cross Ballroom, but the 1985 and 1986 meetings were held in the Auditorium of the Regent Hotel (now Sofitel).

At an Extraordinary General Meeting in May 1987 shareholders approved the inclusion of an Article, to be renewed every three years or whenever the Articles of Association were amended in the future, providing that a partial takeover offer had to be approved by shareholders in a General Meeting.

The 1987 meeting was held in South Australia, in the Ballroom of the Adelaide Hilton, attended by 179 people. A Dividend Reinvestment Plan was approved and the Employee Share Purchase Plan was amended in general terms, which then became the authority and basis for all future Plans without the need to go back to shareholders.

In 1988 the meeting was in the Regent Auditorium, with 205 attending. Amongst the approved amendments to the Articles were modernisation of share transfers, confirmation of the partial takeovers provision and more flexibility in dividend payments. The partial takeover provision was subsequently renewed every three years. By this time we had experienced the disastrous North American investments and these were naturally questioned at this and subsequent meetings.

After the introduction of dividend imputation, companies could pass the tax paid on the amounts distributed as dividends on to shareholders as a tax credit. Beginning in November 1989, WMC shareholders could elect to take their dividends either franked (with tax credit) or unfranked.

The 1989 meeting was held for the first time in Sydney, in the Sydney Room of the Wentworth Hotel, with 420 people in attendance. Articles were amended to empower the Company to buy shares in itself, as determined by the Board from time to time.

The 1990 meeting was back in the Regent Auditorium, attended by 488 people.

The location in 1991 was the Grand Ballroom of the Hyatt Hotel in Perth, 283 attending.

Because of increasing attendance, the Melbourne location of the meetings in 1992 and 1993 was the Savoy Ballroom in the Grand Hyatt Hotel.

In 1992, with 584 in attendance, the Articles were again amended, including an increase in the maximum number of directors from 10 to 12, approval of computerised share transfer systems, and introducing a scheme to encourage shareholders to either dispose of small parcels of shares or to build these up to a marketable parcel of 100. Further updatings of the share transfer methods were approved at subsequent meetings. It was at this meeting that a shareholder questioned some controversial speeches by Hugh Morgan and I had to defend his right to speak out (see news cutting at the end of this section).

The 1993 meeting was initially planned to be held in Kalgoorlie on the 100th anniversary of the discovery of gold there, but following the embarrassment of the loss of Ernest Henry it would have appeared that the Board was trying to avoid critics by holding the meeting away from Melbourne. The 'troubles' were no doubt the reason for the record attendance of 1011. The media had speculated on fireworks at the meeting, but there was only one question on this subject.

Hugh and I were interviewed by ABC television after the meeting and, waiting for them to get ready, I said to Hugh sotto voce: 'Don't smile too much - we did not have such a good year'. This was picked up by the very sensitive microphone and shown on the programme!

At the 1993 meeting the issue of partly paid shares to Executive Directors was for the first time approved by shareholders, as now required by the listing rules. It was not the best timing in view of the Ernest Henry debacle, but there was no unusual criticism. Such approval was sought annually thereafter.

The Centennial Theatre of the Goldfields Arts Centre in Kalgoorlie was the location of the 1994 meeting, with 226 attending. An electronic share subregister (CHESS) was approved.

The 1995 meeting was back in the Savoy Ballroom at the Grand Hyatt in Melbourne. At this meeting the Company's name was changed to WMC Limited. The issue of partly paid shares to Executive Directors was changed to the issue of options.

The 1996 meeting was at the Adelaide Convention Centre in Adelaide.

The 1997 and the 1998 meetings were again in the Savoy Ballroom at the Grand Hyatt. At the 1997 meeting approval was given to converting the certificated share register to an uncertificated register, statements similar to bank statements being issued in the future whenever a change in a shareholding had taken place.

In 1999 the Annual General Meeting was held for the first time in the Melbourne Concert Hall. The Articles of Association were renamed the Constitution and a number of amendments were made. A major change to the Executive Directors' Option Plan was approved.

### **The Misses Laver**

Two extremely loyal shareholders of WMC were Misses Elizabeth and Sheila Laver, daughters of Dr Charles Waltham Laver after whom Laverton was named. There was a connection by Dr Laver with (Sir) Lindesay Clark during the purchase of the Lake View South leases in the 1930s.

The Laver family moved to Melbourne after Dr Laver died in 1937 and the sisters always made themselves known to Sir Lindesay and later myself at Annual General Meetings. In 1979 they were visiting Kalgoorlie at the time of the first WMC Annual General Meeting held there at which Sir Lindesay and Lady Clark were present as guests of honour and spoke in glowing terms about both Sir Lindesay and WMC.

In 1980 the sisters returned to live in Kalgoorlie and attended the WMC AGM in Perth in 1983, at which I used the opportunity to pay tribute to them.

Elizabeth died at the age of 85 in 1992, but Sheila was present (in a wheelchair) at the second WMC AGM held in Kalgoorlie in 1994. She died at the age of 92 in 1999. The ashes of both Elizabeth and Sheila were interred in the grave of their father.

### **Stan Bannear**

At the AGM in 1976 I had finished my Chairman's address of some 30 minutes and invited shareholders to ask questions or make comments. The first to rise in one of the front rows with a sheaf of notes in his hands was a shareholder, Stan Bannear, from Adelaide.

Stan had been a bookmaker and, whether through bookmaking or in other ways, had become a wealthy investor. He owned an investment company 'Think Big Pty Ltd', named after the horse which won the Melbourne Cup in 1975 and 1976. Presumably Stan had benefited from this. He proceeded to make a speech about as long as mine, explaining at great length how poor the Company's performance had been and what a miserable performance the managers had turned in.

This was not the first occasion for Stan to be critical of WMC. Already at the Annual Meeting in 1970 he had complained about 'paucity of information', particularly in regard to the then active nickel exploration at Mt Clifford north of Leonora and the Board's 'apathy, conservatism, and lack of consideration for shareholders'.

At the Annual General Meeting in 1977 Stan was again in one of the front rows with a handful of notes, and the first to rise at discussion time. I expected, hopefully a toned-down, repeat of the performance in the previous year. To my great surprise, Stan made a laudatory speech about the Company and the management and finished up by saying that Arvi Parbo was the greatest man since Jesus Christ!

The rest of the discussion time was taken up by anti-uranium protesters. Many shareholders, including Stan, were extremely annoyed by them and Stan referred to them disparagingly as 'longhairs'.

Stan did not attend the 1978 AGM but wrote to me afterwards, congratulating me on the handling of the meeting which was again severely disrupted by protesters. I responded by inviting him to join me at lunch next time I was in Adelaide, in April 1979. At the lunch I invited him to see our activities in Western Australia and we finished up firm friends.

In May 1979 Stan and Mrs Bannear visited our operations and Alcoa in Western Australia. They drove across the Nullarbor in their Rolls Royce Silver Shadow. I arranged with Gilbert Ralph to look after them in Kalbarrie and Kambalda, and for them all to stay at the Directors' Residence. Stan was most impressed with everyone and everything and particularly taken with Ned Williams. He insisted on calling him *Courtney*, one of Ned's Christian names which to my knowledge no-one else (except his wife Margaret) ever used.

In subsequent years he would ring me occasionally, always upbeat and supportive. He would send me the occasional poem written by himself which were quite good! I have no talent for poetry, but Barbara Giles had by then joined me as my secretary and she was very good at devising return verses.

Stan died in his mid-80s in the second half of the 1990s.

One of the highlights of winter horseracing at Gawler in South Australia is the running of the Great Northern Steeplechase in July. The day's events at Gawler now also include a tribute to Stan, with the running of the Stan Bannear Memorial Race.

## **Rewards to Shareholders**

Stan's criticism of the unsatisfactory financial returns to shareholders was quite correct. The minerals industry has rewarded shareholders well through capital gains at particular times, but at other times and over the long term the returns have not been high (see enclosed bar chart 1990-1998). This is a theme on which I spoke frequently while the Chairman, and which is discussed further under *Global Issues*.





## **GOVERNMENT RELATIONS**

### **Australian Governments 1974-1999**

During the period 1974-1999 in Australia WMC dealt with the Federal Government in Canberra and State governments in Western Australia, Victoria, South Australia and Queensland. In all cases there were periods when the Liberal-Country Party (or Liberal-National Party) coalition was in power, and when the Australian Labor party was in power.

### **GOVERNMENTS IN OFFICE 1974 - 1999**

#### **QUEENSLAND**

##### **Premier**

8/8/68	-	1/12/87	NP	Joh Bjelke-Petersen
1.12.87	-	25/9/89	NP	Mike Ahern
25/9/89	-	7/12/89	NP	Russell Cooper
7/12/89	-	19/2/96	ALP	Wayne Goss
19/2/96	-	26/6/98	LIB-NP	Rob Borbidge
26/6/98	-		ALP	Peter Beattie

#### **SOUTH AUSTRALIA**

2/6/70	-	15/2/79	ALP	Don Dunstan (resigned)
15/2/79	-	18/9/79	ALP	Des Corcoran
18/7/79	-	10/11/82	LIB	David Tonkin
10/11/82	-	4/9/92	ALP	John Bannon (resigned)
4/9/92	-	14/12/93	ALP	Lynn Arnold
14/12/93	-	28/11/96	LIB	Dean Brown
28/11/96	-	22/10/01	LIB	John Olsen
22/10/01	-	5/3/02	LIB	Rob Kerin
5/3/02	-		ALP	Mike Rann

**VICTORIA**

23/8/72	-	5/6/81	LIB-CP	Rupert Hamer
5/6/81	-	8/4/82	LIB-CP	Lindsay Thompson
8/4/92	-	9/8/90	ALP	John Cain
9/8/90	-	6/10/92	ALP	Joan Kirner
6/10/92	-	19/10/99	LIB-NP	Jeff Kennett
19/10/99	-		ALP	Steve Bracks

**WESTERN AUSTRALIA**

8/4/74	-	25/1/82	LIB-CP	Charles Court
25/1/82	-	25/2/83	LIB-CP	Ray O'Connor
25/2/83	-	25/2/88	ALP	Brian Burke (resigned)
25/2/88	-	12/2/90	ALP	Peter Dowding (resigned)
12/2/90	-	16/2/93	ALP	Carmen Lawrence
16/2/93	-	16/2/01	LIB-NP	Richard Court
16/2/01	-		ALP	Geoff Gallop

**FEDERAL****Prime Minister**

5/12/72	-	11/11/75	ALP	Gough Whitlam
11/11/75	-	11/3/83	LIB-NCP	Malcolm Fraser
11/3/83	-	20/12/91	ALP	Bob Hawke
20/12/91	-	11/3/96	ALP	Paul Keating
11/3/96	-		LIB-NP	John Howard

## WMC and Political Parties

WMC as a company was never formally aligned with any political party but it did have, and expressed, views on public policies relevant to its business. The policy was to work with the Government of the day while keeping the Opposition and the public informed of its views.

The Company made political donations to parties which in the Board's view pursued appropriate policies. Beginning in 1993, such donations were listed in the Annual Report. While most of the donations were made to the Liberal and National parties, on a number of occasions donations were also made to the Labor Party.

In Western Australia, where there was the Hawke Labor Government in power during the 1950s when Great Western struggled to stay alive, the government was very supportive, no doubt with an eye to employment. Subsequently, in the early 1970s, L C (Laurence) Brodie-Hall had a very friendly relationship with Labor Premier John Tonkin. Among other things in common, they were both keen gardeners (rose growers).

I made a point of not belonging to any political party although my views, which I expressed frequently, were clearly conservative. H M (Hugh) Morgan, also of conservative views, was, however, well known as a member of the Liberal Party, active in Party financial and organisational matters and handing out how-to-vote cards at polling booths. He was, of course, entitled to his personal views.

However, the basic policy of the Company was bipartisanship. Minerals projects being very long term in nature, it was essential to have a good working relationship with all governments.

## WMC and Political Issues

Although endeavouring to be non-political, WMC was on some occasions in the centre of political issues.

Perhaps the most important such occasion was when the Olympic Dam Indenture Agreement came before the South Australian Parliament for ratification in 1982. For a time it looked as if this may become an election issue in South Australia. (See Book Two Part A, *THE BURNISH OF COPPER* and *THE GLOW OF URANIUM*)

Another (indirect) issue was the power supply for the Alcoa smelter in Portland. After failing to reach agreement with the Victorian Coalition Government, a satisfactory agreement was concluded with the Labor Government in 1984 which had succeeded the Coalition in 1982. When a Coalition Government was again elected in 1992, Alcoa was advised that the Government wished to change the contract, on terms which were unacceptable. The Company stood its ground and, after quite a vicious publicity campaign against Alcoa by the Government, the matter eventually faded away. (See also Part A *THE BRIGHTNESS OF ALUMINIUM*)

There were occasions when I became personally involved in controversy regarding public policy.

In 1989, as the Chairman of BHP, I was critical of the Prime Minister, Bob Hawke, going back on his written assurance to BHP regarding the Coronation Hill gold project, saying on television that the Government could not be trusted, which Bob did not like. On another occasion, just before the Federal election in 1992, I wrote a letter to the Editors of all major newspapers, criticising the possibility of the Labor Government retaining high tariffs in favour of the car industry. In 1997 I spoke at the WMC Annual General Meeting regarding the effect uncertainties related to native title issues were having on the long term future of the industry and commended the Federal Coalition Government's proposed amendments to the legislation (see *Aboriginal Relations and Native Title*).

While these inevitably became related to party political issues, the subject matter in all cases was public policy relevant to the companies I represented.

## **Relations With Japan**

As a market Japan was of great importance to WMC, beginning with the bauxite in the Darling Range in the late 1950s and the attempts to get into the iron ore business through Talling Peak in 1961. The Company gained a great deal of experience in dealing with Japan through the negotiations and subsequent contracts in the 1960s and 1970s for the sale of alumina from Alcoa of Australia, iron ore from Koolanooka, nickel concentrate and matte from Kambalda, and talc from Three Springs. In the 1980s Japan became an important customer for Olympic Dam uranium.

WMC was very active since their inception in the Australia-Japan Business Cooperation Committee and its offshoot, Pacific Basin Economic Council, first through Bill Morgan and then through myself and Hugh Morgan. In addition to this, we were also involved in the Australian Government's attempts to define its policy towards Japan.

In July 1972 we made a submission to the Senate Select Committee on Japan chaired by Senator Peter Sim. In addition to the public document, prepared with advice from our representative in Japan, Frank Duval and Ted Weatherstone who then worked for Frank, there was a confidential memorandum and Doug McIntyre and I appeared before the Committee on 27 July. The main issue was that in Japan the government and business worked closely together, which gave them an advantage over Australia.

In 1978 the Ad Hoc Working Committee on Australia Japan Relations, convened by the Australian Government and chaired by Mr Baillieu Myer, submitted its report. One of the recommendations acted upon was the formation in May 1978 of the Consultative Committee on Japan consisting of seven Commonwealth Government permanent heads (comprising the Government's Standing Committee on Japan) and nine private sector representatives. Its mission was to advise the Government (through the Minister for Foreign Affairs) on policy with regard to Japan.

I was appointed to join this Committee, chaired by R G (Gordon) Jackson, in December 1980, became Chairman in February 1982, and retired in 1983.

## **WMC and Nationalism**

As a small Australian company Western Mining was naturally nationally minded, led by Sir Lindesay Clark who was a dedicated patriot in the British mould. One of his closest political confidantes was Sir John ('Black Jack') McEwen, a long time leader of the Country Party and Deputy Prime Minister under Sir Robert Menzies, also a strong patriot. Sir John coined the famous phrase *selling the farm*, implying that Australian business should be owned by Australians.

This did not prevent Western Mining from forming a partnership with the Aluminum Company of America to develop Darling Range bauxite when it was clear that the technical and financial strength and industry experience of a foreign company was essential for the venture. Sir Lindesay, however, could never quite overcome his feeling of frustration at having had to relinquish control of this major development to Alcoa. It is, of course, likely that he would have experienced the same frustration had the company taking over been Australian instead of foreign.

Until the major mineral developments in the 1960s Australia had suffered from a continual balance of payments problem. Investment by foreign companies therefore had to be cautiously welcomed, regardless of any nationalistic leanings.

The Federal Labor Government elected in December 1972 marked a major change in the official attitude towards foreign companies in Australia. It was strongly nationalistic, spurred by the party's natural leanings, the strong current account surpluses following the massive mineral developments in the 1960s, the perception of an imminent world shortage of minerals promoted by the Club of Rome and encouraged by the oil price increases, and the personal beliefs of the Minister for Minerals and Energy, R F X (Rex) Connor (see below).

WMC was at that time the second largest predominantly Australian owned minerals company (after BHP). The nationalistic policies were therefore in the short term favourable to WMC.

On 3 May 1974 I circulated a memorandum to senior executives, defining our policy as follows:

The Company supports policies and measures to encourage greater Australian ownership and control of the mineral industry. The company believes that this should be effected -

- (a) through establishment of rules regarding foreign participation in future projects,
- (b) through encouragement of Australian investors to participate in new ventures, and
- (c) through enlarging the role of the Australian private sector and not through substantial direct public sector involvement.

The nature of the rules for foreign participation in future mineral projects is a matter for the Governments concerned but the Company would support a general requirement that 51% of the equity in future mineral projects should be Australian owned.

The Company does not support the proposal that Australia should purchase over a period of time, small equity interests in existing foreign owned ventures. This would tie up substantial Australian investment funds without either increasing Australian control of the industry or making appreciable difference to the equity held in the industry at an economic cost. The Company believes that it would be much more beneficial to encourage substantial Australian equity in any new ventures.

The view that the Australian private sector should accept a leading role in improving Australian ownership and control of the industry is based on the belief that the private sector is more efficient in mineral exploration and development and is better fitted to operate with the flexibility and to take the risks which are necessary for success in this industry. The Company's view in this regard is also based on the general desirability of the free enterprise system as against a socialist system.

The company does not oppose Government participation in the mineral industry, provided this occurs on fair and equal terms with the private sector.

While the Company supports sensible and rational policies for increasing Australian participation in the development of its mineral resources, it does not support extreme nationalist views as Australia is inevitably a part of the world and cannot exist in isolation. In the same way as the interests of employees, customers, suppliers, shareholders and the community at large must all be taken into account when deciding company policy, the interests of other countries and the world community at large must be taken into account when determining Australia's policies.'

In October 1974 79.4% of WMC shareholders had registered addresses in Australia.

WMC never actively promoted nationalism in the sense of excluding foreign investment as it believed that this was not a tenable policy in the long term. At the same time it was believed that the Company

was obligated in the interests of its shareholders to make use of any advantages arising from the Government's policies.

One such action was to introduce a provision into the Articles of Association to empower the Company to refuse to register share transfers to foreign interests if the foreign ownership increased above a level which would be a disadvantage in its operations.

The Treasurer in the Fraser Government, Phillip Lynch, made a statement on their foreign ownership policy on 1 April 1976. Foreign investment was considered desirable and necessary, while Australian investment and control was to be encouraged. Restricted areas for foreign investment were banking, radio, television, daily newspapers and certain aspects of civil aviation. Proposals outside these areas would be examined by Foreign Investment Review Board (FIRB).

Uranium mining must be 75% owned and controlled by Australians. Mineral exploration could be 100% foreign owned but in minerals other than uranium, agricultural and pastoral projects, and forestry and fishing projects 50% percent Australian ownership and voting strength on the Board would be required.

On 12 March 1976 I sent a submission to the Minister for National Resources, Doug Anthony, the thrust of it being that maintaining and increasing Australian ownership required not just rules for foreign investment but also general economic policies which encouraged Australian investment. I pointed out that 'To date, apart from policy statements, there are no practical examples of such encouragement'.

A copy was sent to Phillip Lynch, who responded on 13 April in agreeable terms, saying 'I shall be discussing some of the matters which you have raised with my colleagues'. Perhaps it did some good?

On 8 June 1978 the Treasurer announced the first liberalisation of the controls on foreign investment. In response to the large number of proposals involving small businesses and small assets, the Government decided that:

- Government approval of foreign investment in new projects and businesses, except in the case of uranium mining or the financial sector, would not be necessary unless it involved an investment of \$5 million or more.
- the Government would not normally intervene in foreign takeovers, except in specially restricted sectors, if the assets of the company being taken over were less than \$2 million, and
- individual real estate acquisitions of less than \$250,000 would no longer require Government approval.

The Government also announced a partial relaxation of its 50% rule for new projects in mining and primary production. Companies (except in the case of uranium mining) which had at least 25% Australian equity, a majority of Australian citizens on its board, and had publicly announced a Government-approved commitment to achieve 51% Australian ownership, would be deemed 'naturalised' companies and would be able to proceed with new projects in their own right or in partnership with Australian companies.

On 10 June 1979 the Treasurer announced a relaxation of restrictions on foreign investment in new uranium mining projects. Because of its desire to see the Yeelirrie uranium project go ahead, the Government amended its guidelines so that uranium mining projects which would generate significant net economic benefits to Australia could proceed if Australian equity was less than 75% but at least 50%, and where Australian interests would have a major role in determining policy on the project, provided it could be satisfactorily demonstrated that 75% Australian equity was unavailable. In such cases the Government stated that, similarly to its naturalisation policy on other mining and primary

production projects, it might require plans from the project operators to increase Australian ownership and participation over time.

Policy guidelines remained unchanged for the next couple of years. Then, as part of the Review of Commonwealth Functions conducted after the 1980 election, the Treasurer announced on 30 April 1981 that the foreign investments review process would be streamlined through exemption from examination of proposals for the takeover of shell and shelf companies and for certain corporate reorganisations, while the minimum threshold for examination of real estate acquisitions by foreigners would be raised to \$350,000. On 20 January 1982 the Treasurer announced the results of the Fraser Government's first full review of its foreign investment policy. Existing policy guidelines were reaffirmed but controls on foreign acquisition of real estate were strengthened in the face of the large volume of foreign capital inflow into that sector then taking place.

As part of its policy response to the Final Report of the Committee of Inquiry into the Australian Financial System, the Treasurer announced on 13 January 1983 that the Fraser Government had decided to allow the entry into Australia of about ten new banks with foreign shareholdings, while no limit would be placed on the number of new bank entrants with solely Australian ownership. The foreign banks were to be required to operate through subsidiaries incorporated in Australia rather than as branches, would be subject to all the usual prudential and financial standards imposed upon domestic banks, and would be required to provide a wide range of bank services and a reasonable branch network. Foreign banks (and foreign non-bank financial intermediaries in other financial markets) would be allowed entry with less than 50% Australian equity if it could be demonstrated that net economic benefits would flow to Australia from such access.

The Hawke Government continued to implement the foreign investment policy guidelines of the Fraser Government while it conducted a review of policy on foreign investment controls. An increase in the rejection rate for proposals in the first few months of the new Government indicated, despite the arguments of FIRB to the contrary, some initial strengthening of resolve to control foreign investment.

On 20 December 1983 the Treasurer announced that the Government would continue the broad thrust of existing foreign investment policy but some necessary policy changes were to be put in place. Greater stress was to be put on expanding opportunities for Australian participation in projects and businesses, with the Government owned Australian Industries' Development Corporation (AIDC) playing a greater role in those cases where private Australian equity seemed unavailable; commercial interests for sale would have to be made available for purchase by Australians. Companies proposing to 'naturalise' under existing guidelines were to be tied to agreed timetables for completion of the process, and controls on foreign acquisition of urban real estate were again tightened. Membership of the Board of FIRB increased from three to five persons (but from 1985 it was reduced to four).

On 10 September 1984 the Treasurer announced that foreign and domestic interests would be invited to apply for a number of new banking licences to be issued for Australia. It was decided to implement the Fraser Government's policy of allowing the entry of foreign banks with less than 50% Australian equity if significant net economic benefits to Australia could be generated by such access. New banks would be required to be subsidiaries incorporated locally, and to provide a wide range of services and a substantial geographical spread of activities. Controls on merchant banking were also temporarily relaxed. In October proposals for five new foreign-controlled or joint-venture merchant banks were approved. In December 1984 controls on stockbroking were liberalised. On 27 February 1985 the Treasurer announced that sixteen proposed foreign-controlled or joint-venture banks had been invited to establish operations in Australia, subject to further discussions and more specific development of their plans.

On 29 October 1985 the Acting Treasurer announced a package of measures to liberalise controls on foreign investment. These entailed:

- the abolition of the need for demonstrating the availability of commercial interests to Australians for sale
- the increase in the threshold for the normal approval of takeovers (except in sensitive sectors) from \$2 million to \$5 million
- the increase in the threshold for Government approval of new foreign businesses and projects from \$5 million to \$10 million
- the increase in the threshold for Government approval of foreign acquisition of real estate from \$250,000 to \$600,000
- the easing of controls on the foreign acquisition of land for development and the transfer of Australian interests between foreign owners (in April 1986 the foreign acquisition of rural land was also made easier), while
- the liberalised policy stance on merchant banks was continued and extended to other non-bank financial intermediaries.

On 28 July 1986 the Treasurer announced another package of liberalisation measures. The most important of these was the abolition of the requirements of Australian equity participation and the demonstration of net economic benefits for proposals in manufacturing, tourism, and parts of the non-bank financial sector; proposals would be automatically approved unless they were judged to be 'contrary to the national interest'. For these sectors, the onus was now put on only restricting those types of foreign investment involving substantial net costs, as compared to the previous policy of putting the onus on only allowing those types of foreign investment with substantial net benefits. However, similar existing controls in other sectors were to remain in place. Controls on urban and rural properties were also eased.

The trend to liberalisation, which began in 1984, continued with another set of reforms to controls announced on 30 April 1987. Up to this time all foreign takeovers required formal Government approval, although this was normally forthcoming for those involving businesses with assets of less than \$5 million. The Government announced that *The Foreign Takeovers Act* would be amended so that takeovers below this threshold could proceed automatically without the need for even notifying the Government. As well, the liberalised controls introduced earlier for the manufacturing, tourist and some non-bank financial sectors were now extended to services, primary industries other than mining, resource processing, insurance and stockbroking, while the freedoms given to companies under the 'naturalisation' provisions were extended.

On the other hand, in 1987 (after residential housing prices began to increase rapidly) extra restrictions were put in place on the foreign acquisition of developed residential real estate. Extra restrictions were also put in place on 'in-house' foreign borrowing by companies operating here from foreign interests owning, or part-owning, those companies. In January 1988 the 50% Australian equity requirement for new oil and gas projects was abolished and replaced with the now widely-used 'national interest' test.

Policy on foreign investment did not change much in the years between 1987 and early 1992. On 1 August 1989 the *Foreign Acquisitions and Takeovers Act* came into force, incorporating many of the policy changes announced in the previous few years and containing strengthened information requirements and higher penalties for violations of its provisions (compared to the previous *Foreign Takeovers Act*). In July 1991 the foreign acquisition of residential real estate within designated integrated tourist resorts was exempted from the need for Government approval. In 1990 and 1991 amendments to the *Broadcasting Act* strengthened the ability of the Federal Government and the courts



to monitor and enforce the longstanding 20% aggregate limit on foreign ownership in free-to-air television broadcasters. This limit was retained in the *Broadcasting Services Act 1992*.

Then, on 26 February 1992 the Prime Minister announced a further package of substantial liberalisations to controls. These entailed:

- issuing additional licences to foreign banks and allowing foreign banks to operate here in wholesale financial markets as branches rather than as locally incorporated subsidiaries, where bank supervision in the home country was sufficiently strong
- increasing the threshold, below which foreign investment proposals are not usually subject to the rigour of full examination, to \$50 million in all non-sensitive sectors (from \$10 million in the case of new projects and businesses, from \$5 million in the case of foreign takeovers, and from \$3 million in the case of rural properties), and
- abolishing the 50% Australian equity requirement for new mines (excluding uranium) and the 'net economic benefits' test for foreign takeovers of existing mines (excluding uranium) in favour of the 'national interest' test.

Liberalisation of controls continued in the following year. In April 1993 controls on foreign investment in real estate were eased somewhat. Exemptions for foreign investment in residential real estate were slightly widened and proposals by foreign interests to acquire developed commercial real estate were no longer required to have 50% Australian equity. In the same month it was announced that the limit on foreign involvement in mass circulation newspapers (MCN) by a single shareholder would be increased from 15% to 25% of equity, while unrelated foreign interests could hold non-portfolio shareholdings of up to 5% of equity. This policy on MCN has been reaffirmed on a number of occasions since then. As well, in September 1995 it was announced that the limit on foreign ownership in provincial and suburban newspapers would be increased from 30% to 50% for controlling (non-portfolio) shareholdings.

In contrast, foreign ownership limits were put in place on the privatisation of many government assets. These limits have usually been enshrined in legislation. Purchases by foreign interests in the sale of the first two tranches of shares in the Commonwealth Bank of Australia in 1991 and 1993 were formally restricted, but such restrictions have been relaxed for the sale of the third and final tranche of shares. However, the provisions of the *Banks (Shareholdings) Act* (which place a normal, *prima facie* limit on individual ownership of bank share capital of 10% but which can be increased by the Treasurer and the Governor General) will continue to restrict foreign ownership in all banks. As well, the *Qantas Sale Act 1992* restricted total foreign ownership to 35% of the issued share capital, and individual foreign ownership was restricted to 25%. In the *Qantas Sale Act 1995* the total foreign ownership limit was increased to 49% of share capital.

This policy direction was again seen in provisions of the proposed legislation on the sale of airport leases. The *Airports Bill 1995* (which was not passed by Parliament) restricted total foreign ownership in an airport lease to 49%. Again, the Howard Government has proposed that foreign ownership be restricted in the sale of one third of Telstra. The *Telstra (Dilution of Public Ownership) Bill 1996* contains provisions to restrict total foreign ownership to 35% of the share capital sold, while individual foreign ownership of the share capital sold would be restricted to 5%.

## **Labor Party and The Minerals Industry**

With the appointment in 1973 of Rex Connor as Minister of Minerals and Energy in the newly elected Federal Labor Government, there began a unique period in the relationships between the Federal Government and the minerals industry. Connor was not anti-mining, but he had a number of strongly

held opinions about the industry.

While in Australia minerals belong to the States, he believed that the Federal Government should be firmly in charge of, and direct mineral developments. He was certain that minerals, and particularly energy, would be in increasingly short supply and that, therefore, the value and strategic importance of minerals would increase rapidly. He visualised a Federal Minerals and Petroleum Authority which would control and have full or part ownership of major projects. Amongst those fully owned would be a national gas pipeline grid, constructed and operated by the National Pipeline Authority. There would be a major industry converting coal (including brown coal) into liquid fuel, a government owned uranium mining and enrichment industry, a refurbishment of Australian ports and railways, and a 'buy-back of the farm' (buying out foreign equity in the industry).

He commissioned a report by a Sydney journalist, Tom Fitzgerald (Financial Editor of The Australian Financial Review), entitled *The Contribution of the Minerals Industry to Australian Welfare*, designed to show the industry in as bad a light as possible. Published in April 1974, this report had a major influence in turning uninformed public opinion against the industry, which it was no doubt designed to do. Having had full government and community support virtually from its inception, the industry was not conditioned nor equipped to fight a public relations battle and was no match to the politically motivated onslaught on it. Various activist groups, mainly extreme environmentalists, seized the opportunity and pursued anti-mining campaigns. *The Fitzgerald Report* marked a change from community support for the industry to opposition and even antagonism, from which the industry has never fully recovered.

Rex Connor was openly contemptuous of the leaders of the industry, particularly the leaders of the foreign companies. On one celebrated occasion he termed them 'hillbillies' for having written long term contracts in US dollars. Following the large minerals developments the Australian dollar had strongly appreciated against the US dollar (it reached the peak of US\$1.49 for A\$1 in 1974) and Connor firmly believed this would continue. His discourtesy towards industry leaders, particularly foreigners, was widely known.

I was never able to assess whether Sir Lenox Hewitt, as the Head of Connor's Department personally believed in his Minister's views and policies, but he faithfully carried them out to the letter. He already had a dreaded reputation as an able but very difficult bureaucrat, playing the power game to the limit. His position as Rex Connor's right hand man did nothing to soften this.

In 1972 I had established a good relationship with L F (Lloyd) Bott, Secretary of the Department of National Development in the previous Government. I informed him at length about our uranium, nickel and iron ore interests and expressed views on business relationships between Australia and Japan, much along the lines of the submission to the Senate Committee. Establishing a close liaison with his successor therefore came naturally.

My first meeting with Sir Lenox was on 5 March 1973 over lunch at the Lakeside Hotel in Canberra, hosted by Sir Alan Westerman, a long term senior public servant whom I knew well. WMC was seeking approval for Urangesellschaft to take up 10% equity in Yeelirrie, which had been agreed by the two companies before the Labor Government came into power. I subsequently saw Sir Lenox about this next morning in his office.

For some reason - perhaps because I was heading an Australian company - both Sir Lenox and Rex Connor, when I later met him, were always perfectly polite towards me. I never experienced the discourteous behaviour some of the other industry representatives talked about. They nevertheless applied their strict policies to WMC; I remember Sir Lenox calculating the foreign ownership of Yeelirrie to the fourth decimal point, to see whether it conformed to the government's requirements.

Following our meeting I suggested to A D (Alfred) Brookes, who knew Sir Lenox well, that it may be useful for Sir Lenox to meet some of the senior people in the minerals industry in an informal and off the record atmosphere. Alfred approached him and, somewhat to my surprise, Sir Lenox readily agreed.

On 15 March 1973 I hosted a dinner in the Hogarth Room at the Melbourne Club, to which I had invited Jim Tyler of BH South, Hugh Morgan of North Broken Hill, Frank Espie of CRA, and Alfred Brookes. This was the first of many dinner meetings which have continued for thirty years to the time of writing (October 2003). In that time, however, the attendance has shrunk to three: Len Hewitt, Hugh Morgan, and myself.

The next dinner on 11 October 1973 was hosted by Frank Espie at CRA's Dial House in Canberra, which was also the location of three dinners in 1974. It was convenient to Sir Lenox and the other participants would usually stay overnight at the house. On one occasion we travelled to and from Melbourne in the CRA aircraft just for the dinner.

In February 1975 there was a dinner in Sydney, but the location then reverted to Melbourne. Initially intended to give the participants an opportunity for free exchange of opinions related to their governmental and corporate duties, with the change in the Federal Government in November 1975 Sir Lenox left the public service and became the Chairman of Qantas. Thereafter the dinners continued because the participants enjoyed each others' company. We took turns to be the host.

Until his retirement from the Department I also had a close official relationship with Len, who wanted to know everything and control everything. He established a system of approvals for all minerals exports, virtually shipload by shipload. Some of WMC's contacts with him are described in the appropriate chapters of this manuscript. His unwillingness or inability to delegate even the simplest decisions created a great bottleneck in his Department, which grew to alarming proportions by the time Labor lost office in November 1975. (There had been a similar situation while he was Secretary of the Prime Minister's Department under John (later Sir John) Gorton from 1968 to 1971.)

Rex Connor's undoing in the end was an attempt to borrow US\$8 billion through a shadowy Middle East intermediary (Mr Khemlani) to finance his dreams. This became a major scandal and Connor was dismissed in October 1975.

In opposition after November 1975, Paul Keating became the Labor Shadow Minister for Minerals and Energy in 1977 and remained in this post until appointed Shadow Treasurer in January 1983. Keating quickly established a wide range of personal contacts in the minerals industry and quietly buried all Connor's policies. In June 1977 he wrote to me, praising one of my speeches and sending me a copy of one of his. We had some telephone conversations from time to time. In May 1986, when he was Treasurer, I sent him a congratulatory and supportive telex following his 'banana republic' statement. However, we never established a close relationship.

Large sections of the Labor Party remained hostile to the industry. To quote Peter Walsh in *Confessions of a Failed Finance Minister*:

'.....a large section of the Party during the Whitlam Opposition period took on board an anti-mining policy, which survives to this day. The rationale for this has changed over the years, but not the policy.

The original rationale rested on a misrepresentation of an article published in 1976 by the ANU economist Bob Gregory. Gregory had attempted to quantify the effect on Australia's balance of payments, and consequently the exchange rate, of the continued rapid growth of mineral exports which had started in the 1960s and the adverse effect of a higher exchange rate on the competitiveness of Australian manufacturing industry. The *Gregory Thesis* as it came to be known, was a respectable piece of academic scholarship. But it was promptly twisted into an

alleged recommendation by Gregory that we stultify mining growth or perhaps kill it off altogether. Australia's emerging economic problem, as perceived by these people, was a chronic current account surplus and an ever rising Australian dollar. What the 1980s in fact delivered was a sequence of acute current account deficits and a falling Australian dollar. By the late 1980s the anti-mining ideologues needed a new rationale for their spleen and prejudice. They found it in "environmentalism".'

The anti-mining attitude of Labor was strongly encouraged by left-wing unions such as the Amalgamated Metal Workers and Shipwrights Union (AMWSU), who issued grossly misleading propaganda pamphlets such as *Australia Uprooted*.

## Uranium Policy

The policy of the various Australian Governments towards uranium is described in *THE GLOW OF URANIUM*.

## The Exchange Rate

The Whitlam Government revalued the Australian dollar in December 1972 and again in February 1973. This was a serious shock to WMC because it drastically reduced our profitability and galvanised us into immediate action.

On 15 February 1973 Sir Lindesay sent a telex to the Federal Treasurer, Frank Crean, with copies to the Prime Minister and Ministers for Overseas Trade and Minerals and Energy:

'Western Mining Corporation Limited wishes to advise you that the new exchange rate of the Australian dollar as announced yesterday will react very seriously against this company. We will submit details at earliest opportunity but meanwhile urge you to reconsider the decision and maintain the previous parity with the UD dollar to avoid serious deterioration in competitive position and loss of key markets'.

There was an immediate response from Rex Connor and I telexed a summary of our nickel position to him the next day. Our revenue had decreased by 18% due to the two upvaluations. However, as might have been expected, there was no action.

Our general view was that the high overseas reserves justifying the revaluation of the dollar which the Government said were due to large export income were actually caused by very large foreign capital inflow, and that this was the problem which had to be tackled.

By September 1973 we decided to approach the Government for compensation, not because we expected to get it, but to further impress on them the seriousness of the exchange rate changes, compounded by adverse changes to mining industry taxation. On 28 September I wrote to the Treasurer, Frank Crean, with copies to Rex Connor and J F (Jim) Cairns, asking for compensation equivalent to the revenue reductions resulting from the revaluations since 2 December 1972, for nickel sold after 1 July 1973 and until the net revenue reductions were fully offset by nickel price increases. I also asked for deferment of the proposed taxation changes until 30 June 1975. The request was backed by a detailed six page argument. Following the letter, I had an interview with Frank Crean on 9 October 1973.

The Treasurer politely declined on 5 February 1974, not refuting our arguments but because the grant of compensation would require an appropriation from the Consolidated Revenue Fund which he was unable to obtain. However, the taxation changes had been deferred for 1973-74 and we were advised to apply to the Department of Overseas Trade for assistance applying to manufacturing industry affected

by the revaluations.

We wrote back, asking for removal of the two year restriction on the repayment of a US\$50 million loan obtained in December 1972, pointing out that this would assist with Government action to limit capital inflows. This is where the matter rested.

Immediately after the 1983 election, Labor devalued the A\$ and adopted a 'moving peg' system, under which at the start of each day the Reserve Bank would announce a minimum price at which it would buy A\$ and the maximum price at which it would sell A\$. For nearly all of the next nine months the dollar was moving up, from a monthly low point of 86.29 US cents in March 1983 to a high point of 91.60 in October.

From about mid-1983 Prime Minister Hawke's principal economic adviser, Ross Garnaut, urged him to float the dollar but Treasurer Keating was advised strongly against it by the Secretary of the Treasury, John Stone.

A special Cabinet meeting on 9 December 1983 decided to float the dollar. For a time after the float the A\$ appreciated against the US dollar, but between January 1984 and January 1985 it fell more than 10%.

The A\$, which had averaged nearly 68 US cents in June 1986, fell to 57.2 cents on 28 July, 26% below the January 1985 price.

## **Environmental Policy**

Peter Walsh recalls:

Even in the late 1970s the high profile "environmental issues" had scant relationship to preservation of natural beauty, clean air, groundwater, streams or oceans. Some activists rationally thought a bit of overkill was not a bad countervailing force to the possible deprivations of unconstrained industry. There certainly were glaring examples (eg Rum Jungle in the NT and Captain's Flat near Canberra) of tailing dumps from abandoned mines causing real pollution problems, the costs of which taxpayers had to pick up. But most anti-mining activists were motivated by xenophobic hatred of the mining industry, or ideological hostility to the capitalist system and market economy, or an addiction to wielding political power as an end in itself, or a secular religious reverence for everything except Man (especially Western Man) and his works, or some combination of the above. Most however were willing beneficiaries of middle class affluence, the foundation of which was the economic system they despised and set out to sabotage. In the 1980s this got much worse.

In 1982, the major parties moved apart somewhat. Labor promised to knock off the Gordon below Franklin Dam, in the High Court if necessary. Fraser tried to knock it off with a \$500 million bribe to the Tasmanian Government. There were valid non-environmental reasons for opposing the dam - the HEC, which regarded itself as the permanent government of Tasmania, had grossly overestimated electricity demand - but these were rarely mentioned. .... In November 1983 Labor proclaimed Kakadu Stage II. .... After Richardson became Environment Minister in July 1987, and more so after he got into Cabinet when John Brown went out, green extremist damage to the economy, employment and Federal Budget intensified through 1988 to 1989. It then flattened out, but rose again with the June 1991 Coronation Hill decision. It reached a new peak of stupidity and culpable disregard for the national interest in August 1984, when the Government banned exploration at Shoalwater Bay.

The worst "environmental" decision during my time in Cabinet was the blocking yet again of Coronation Hill in October 1989, and the consequential phoney RAC study. The project had cleared all the normal hurdles, plus some extra obstacles erected at the insistence of greenmailers. Final approval should have been a mere formality .....

..... the 1989 Coronation Hill decision justified Labor's removal from office. The June 1991 decision was worse. It removed any remaining doubt that the government could not be trusted and that it had no compunction about shifting the goal posts after the ball had been kicked if it thought it was politically expedient to do so.

Every sensible person should be concerned about environmental degradation. Every moral person should be concerned about inter-generational equity. But there is a vast difference between rational concerns about real environmental issues and the secular religious extremism, proselytised by the foreign multinational Greenpeace Inc, activists of which have admitted making judgements between "what is effective and what is true" when compiling their propaganda. This is the language of totalitarianism of the Left or Right variety.'

### **Sir Charles Court AK, KCMG, Kt OBE**

Of all the people in the various governments from 1974 to 1999, Sir Charles Court had the greatest influence on WMC.

Sir Charles was Minister for Industrial Development in Sir David Brand's Liberal-Country Party Government in Western Australia from 1959 to 1971, in opposition during the Labor Government of John Tonkin from 1971 to 1974, and Premier from 1974 to 1983.

He was very active as Minister and Premier in supporting the massive iron ore developments in the Pilbara, the bauxite/alumina developments in the Darling Range, the nickel developments in the Goldfields, the mineral sands developments in the South-West, and the BP Refinery and BHP blast furnace at Kwinana. In 1967 he was a prime mover behind the Ord River Dam in the Kimberleys.

He was involved in enforcing oil exploration rights near sacred Aboriginal lands at Noonkah in 1980, but Aboriginal consent allowed Australia's first diamond mine to be established at Argyle in the Kimberleys.

The following is a presentation read out on my behalf at a conference to review the life and work of Sir Charles Court in Perth on 20-21 September 2001.

'All who were fortunate enough to be involved in the great minerals developments in Western Australia in the 1960s and 1970s know about the important role of Sir Charles Court as Minister for Industrial Development from 1959 to 1971 and Premier from 1974 to 1982 in guiding, nurturing and expediting these developments. Those in senior capacity in the industry would have inevitably come in contact with him, and the most senior people would have worked closely with him.

### **Western Mining's Developments**

I would like to speak about the contribution of Sir Charles to two major new developments in which Western Mining Corporation - now WMC Limited - was involved during that period. These were the proving of the bauxite in the Darling Range in the late 1950s and early 1960s and the subsequent activities of Alcoa of Australia, and the discovery of nickel at Kambalda in 1966 and the establishment in the Eastern Goldfields of this new industry in Australia.

Sir Charles was also very much involved in the early 1960s in progressing Western Mining's iron ore

activities in the Geraldton district, which resulted in a small operation at Koolanooka. While the first commercial shipment of Western Australian iron ore to Japan was made from this deposit, it was overshadowed by the subsequent massive developments in the Pilbara. In the 1970s he was very helpful to the gold mining industry in the Eastern Goldfields, which was then on the point of extinction. Time prevents me from elaborating on these involvements.

Western Mining's relationships with the Western Australian Government were until his retirement in 1975 the responsibility of the Company's Executive Director in Western Australia, Sir Laurence Brodie-Hall. Sir Laurence represented the Company in all matters with Ministers and senior public servants. My personal contacts with Sir Charles on behalf of WMC began after 1975, and on behalf of Alcoa of Australia in 1978 after I had been appointed the Chairman of that company. I was involved in the events I will be describing before those dates, but not at the Sir Charles Court level.

### **A Different World**

It is obvious to members of my generation, but perhaps not so well understood by younger people, that conditions in Australia in the 1950s and 1960s and until the early 1970s were very different from those today. One of the differences was, that at that time the minerals industry, and economic development generally, had the community's wholehearted support and encouragement, which they had enjoyed since the early gold rush days. It may be hard to believe, but there were no activist groups opposing minerals developments and just about everything else, such as there are now. There was little red tape and no black or green tape, no endless studies, procedures, hearings, committees of enquiry and reviews which are now a part of life generally, and certainly in the minerals industry. The major minerals developments in that period which lifted Australia to a new level of prosperity were greatly assisted by this very positive attitude.

It was a unique period which is unlikely to occur again. The spirit of those who were fortunate enough to be a part of it is hard to explain to those who were not involved. The focus was on getting things done instead of concentrating on the process, which now seems to have become more important than the end result. People were motivated largely by the excitement and the personal and professional satisfaction of creating something new which established Australia as a country of world significance, provided jobs, and improved the living standards. The "if you can't guarantee everything, don't do it" and "what is in it for me" attitudes had not yet emerged. Making money was not the major or the sole motivator it appears to be today although the developments, of course, had to be profitable.

Today it is unbelievable how quickly large new industries could be established from a standing start. Sir Roderick Carnegie will no doubt speak about the great iron ore developments in the Pilbara. I will describe examples from my own experience.

### **Bauxite In The Darling Range**

WMC began exploring the aluminium ore bauxite in the Darling Range in 1957. Alcoa of Australia was established and the construction of the first refinery unit at Kwinana to produce alumina began only four years later, in 1961. Today it would probably take that long or longer just to reach the stage of submitting an environmental impact study.

Sir Charles as the Minister for Industrial Development negotiated the agreement and guided the Bill authorising the bauxite leases and the construction of the refinery through Parliament. He was an enthusiastic supporter of the project and one of the few people outside the Company who even at this early stage could visualise that the first refinery unit, a large investment as it then was, was only the beginning of a major new industry. Whether even Sir Charles could predict that it would become by far the largest producer of alumina in the world, today supplying one seventh of the world's requirements, only he can say. I certainly was not able to see that far.

During the debate in Parliament there was little vision by anyone other than Sir Charles, who said that this was a "landmark in the industrial history of Western Australia". Instead of being concerned that the new industry should be encouraged to invest and grow, there was criticism that the State had not extracted enough from the company. Perhaps in the parliamentary system where the opposition feels that it has a duty to criticise whatever the government does it was too much to expect anything else.

In the event, Alcoa of Australia continued to grow beyond what anybody in the Company could visualise at the start. Cash flow from the operations, augmented by rapidly increasing borrowings, was ploughed back year after year to finance the expansion from a capacity of 200,000 tonnes of alumina per annum in 1963 to 4.3 million tonnes per annum in 1982 when Sir Charles retired as the Premier, an increase of 21½ times in 19 years. The shareholders received very little by way of dividends until 1988, 27 years after the establishment of the Company. Since 1982 the growth has continued. Today, 38 years after production started, the capacity is 7.7 million tonnes per annum, just over 38 times the initial capacity.

This growth would not have been possible without the unwavering support of Sir Charles, initially as the Minister of Industrial Development and, subsequently, as Premier. The agreements reached with the State in that period also established the basis for the continued growth after his retirement. The approvals were given against much opposition.

Extremists in the environmental movement gathering momentum in the early 1970s found Alcoa of Australia an ideal project to oppose. The bauxite was covered by jarrah forest and the trees growing over the orebodies had to be removed before mining. Some of the bauxite occurred in the catchment areas of Perth's water supply reservoirs. Although the Darling Range was not densely populated, the mining and transport of the bauxite inconvenienced some inhabitants. It was not difficult to whip up emotion and construe alarming scenarios.

For a long time there was an energetic and skilful publicity campaign opposing bauxite mining. In 1981 the opponents even applied to a court in Pittsburgh, Pennsylvania, to prohibit bauxite mining in Western Australia. This did not win them any friends in Western Australia, or elsewhere in this country. The U.S. court decided that what happened in Australia was for Australians to decide.

Sir Charles had been instrumental in the Company becoming conscious of the environmental aspects of its operations from the early days of the project, well before caring for the environment became a public issue. Mr Joseph C Bates, the American Managing Director of Alcoa of Australia from 1968 to 1971, recalls very clearly Sir Charles pointing out the need to rehabilitate the mined areas, which was not common practice in those days. Joe, with the support of the then Chairman, Sir Lindesay Clark, had to overcome considerable internal resistance and weather criticism from industry colleagues in initiating a rehabilitation and reforestation programme concurrently with mining. The technique was perfected over the years until in 1990 Alcoa of Australia received the distinction of being entered as the only mining company in the world on the Roll Of Honour of the United Nations Environment Program. Since 1989 the Alcoa techniques have also been used for rehabilitating degraded farmland, the greatest environmental problem in Australia.

The opposition to Alcoa gradually disappeared when the Company started inviting people to visit its activities and see for themselves what was happening, following the process through from the earliest stage of removing the trees to inspecting the rehabilitated areas with ten or fifteen years' growth of new forest. A day's outing and a picnic lunch in rehabilitated bauxite mining areas became favourite weekend relaxation for many Perth and Fremantle citizens and their families, some 25 000 people a year. It was not possible to argue any longer that the mining caused damage which could not be made good.



This had not yet been achieved and the opposition and criticism were still at a highly emotional level when Sir Charles on several occasions guided legislation approving the various stages of expansion through Parliament. It was due mainly to his determination that the Company's growth could continue.

Would it be possible in the same circumstances today to get approval to commence the Alcoa of Australia operation? I think not. The project which we now know has been of great value to Australia and which has received many environmental accolades, would be unlikely to proceed. Would the community be better or worse off if approval had not been given in the 1960s? I leave it for you to decide.

I might mention that there was one aspect of the bauxite developments very close to Sir Charles' heart which regrettably has not materialised, namely the establishment of an aluminium smelter to convert some of the alumina produced to aluminium metal in Western Australia. This has been studied in depth on several occasions by Alcoa and by other companies, while Sir Charles was in office and under his successors as Premiers, but it has always foundered on the long term availability and cost of electric power. Today, while there is the possibility of a carbon tax being applied to electricity generated from hydrocarbon sources, the likelihood of such a smelter has receded even further.

### **Nickel at Kambalda**

Let us now turn to nickel.

In January, 1966, a diamond drill hole intersected high grade nickel sulphides at Kambalda. There was a shortage of nickel in the world market, which had been dominated by one large producer in Canada. This was a rare opportunity for a new producer to enter the business, if production could begin before the favourable market conditions changed.

The Board of WMC made a deliberate decision to get into production with maximum speed, disregarding normal planning procedures. Exploration had not yet outlined the first orebody when construction began. Plans were amended progressively, sometimes daily, as more results came in and the scope of the project expanded. The Western Australian Government was very helpful in expediting approval processes. Even then, on one occasion we had completed a powerline from Kalgoorlie to the site before anyone realised that formal permission had not yet been received. We were rapped over the knuckles and told not to do it again!

Surprisingly few mistakes were made in spite of this unorthodox approach, none of them significant.

The first nickel concentrate was shipped to a customer in Canada just 17 months after the first drillhole intersection - not after the first orebody had been proven, but the very first drillhole intersection. The market was still strong. A refinery to produce nickel metal commenced operations three years later, and a smelter two years after that. WMC became one of the largest nickel producers in the world. Other discoveries were made in the Eastern Goldfields, and a major new industry was established.

Sir Charles again negotiated and led legislation through Parliament securing the mining leases and enabling the establishment of the refinery and, subsequently, the smelter. In this case there was no opposition to the project because the developments took place before the environment became an activist issue and, in any case, the Company had adopted high environmental standards from the inception of the project. There was no jarrah forest and no water catchments to be concerned about. It also would have occurred to any would-be opponents that the people in the Goldfields would have taken a dim view of unwarranted opposition to a development which had come as a saviour just at a time when gold mining was in one of its periodical downturns and at a very low ebb.

The Department of Industrial Development became the co-ordinator of all State Government functions

regarding major developments. This greatly simplified and facilitated subsequent co-operation between government instrumentalities and private industry in matters such as, for example, standardisation of the railway lines.

Becoming established in the world markets as a supplier of nickel metal while the market was favourable was of crucial importance. The supportive and no-nonsense approach of Sir Charles and his colleagues was vital in achieving this.

The growth of WMC's nickel production capacity has been similar to Alcoa's. Production started in 1967 at the rate of approximately 4000 tonnes of contained nickel in concentrate per year. When Sir Charles retired as Premier 15 years later, the capacity at 40,000 tonnes per annum was 10 times higher and the products were in the much more valuable form of smelter matte and refined metal. The capacity today, 34 years after production began, is more than 26 times higher at some 105,000 tonnes of contained nickel per year.

Had the Kambalda discovery been made under today's requirements for progressing such a project, the market would have turned down (as it did in the early 1970s) long before all the consultations and studies could have been completed and all the necessary approvals received. The opportunity to develop this new industry in Australia, supplying refined nickel metal to the world just over four years after the first drillhole intersection, would have been delayed for many years. Would this have benefited the community? Again, I leave it to you to decide.

### **The Contribution of Sir Charles**

How would the people in the minerals industry who worked with Sir Charles in those exciting years describe his contribution?

Joe Bates of Alcoa remembers Sir Charles as always striving for "equity for W.A. and fairness for Alcoa." Joe, now well retired in Pittsburgh, has given permission to quote him as saying that Sir Charles is "the greatest, most honourable politician I have ever known. I am delighted to count him as a friend and wish we could clone him for our Congress members. I watched him work for W.A. in a most statesmanlike manner and I think the people are fortunate he was there for them".

I would be very surprised if the assessment of others who were there would be any different.

As I have mentioned, my own personal experience of working with Sir Charles started in the mid-1970s, after many of the important developments had occurred. I did, however, observe him at close quarters during the campaign against Alcoa in the second half of the 1970s and greatly admired his ability to look further than most people could see, as well as his strength to ignore the noise and clamour from the opponents which would have made lesser men wilt.

Most people think of Sir Charles as a conservative. In my view, at least in the years we have been talking about, he was very much a radical, not content with what existed but always aspiring to develop something new and to improve. I remember going to see him during one of the downturns of the nickel industry, to give advance notice that we had to shut down some mines and retrench people. After listening to my tale of woes and asking some penetrating questions, he agreed that we had to go ahead as intended. Now, he said, when things improve, what about the next stage of expansion?

It has been my pleasure to work together with Sir Charles in some other activities since he retired. I have always found him for, rather than against, something, always refreshingly positive in a world where it is fashionable to advocate inaction because the future cannot be guaranteed. As has been pointed out, if farmers had this attitude they would not sow wheat, because they cannot be certain about the weather.

There has never been any question about what Sir Charles believes in and he has never been afraid to say what he thinks is right, rather than what may be popular. I imagine it would not be a good idea to get on the wrong side of him; luckily this has not happened to me.

I find myself in complete agreement with Joe Bates. Sir Charles has been a towering figure in the Western Australian and, indeed, the Australian landscape. We are fortunate to have benefited from his energy, enthusiasm, and leadership. For me personally, it has been a great privilege to know and to work with Sir Charles Court.'



## **COMMUNITY RELATIONS**

### **Pre-1974**

During this period WMC enjoyed good relations with its employees, the communities in which it operated, and the public generally. Criticisms of the Company and opposition to it first came from outside activist groups when the anti-uranium campaign started in the second half of the 1970s.

Pre-1974, financial support for community activities by WMC was focussed on the locations of its operations. The income of the Company had not been sufficient to extend into general philanthropy.

In the operating locations such as Bullfinch and Norseman, the Company provided facilities such as swimming pools and supported community activities in various ways, often by senior staff participating in leadership positions and the operations providing materials and other in-kind support.

Day-to-day support of community activities was within the authority of Managers of Operations, but significant capital commitments had to be approved by Head Office and the Board. These were handled on a case by case basis; there was no corporate policy or staff dedicated to this.

During the establishment of Kambalda in the late 1960s many community facilities were initially built and financed by the Company, but a determined effort was made to turn these over to the Shire or to community organisations as soon as feasible. The aim was twofold - to reduce the Company's financial commitment, and to eliminate to the extent possible the atmosphere and mentality of a 'company town'.

### **Organisation**

From the early days of operational managers dealing with community relations, the first change came in 1967 when Brodie-Hall engaged R (Rex) Tremlett, on a part-time basis, as Editor of the *Westminer* in-house magazine. Rex soon acquired an assistant, Bob Gude, who became the Public Relations Officer in Perth Office and was joined by Mike James.

Rex retired after the Winter 1970 edition of *Westminer* and Bob Gude was appointed Editor. He produced six editions, each of which became larger and more elaborate until 1974 when as a result of belt-tightening, Mike and Bob were retrenched and most of their duties were taken over by the Administrative Officer, W B (Bruce) Gardner. G M (Gilbert) Ralph as Executive Officer - Operations to Brodie-Hall attended to a number of aspects of public affairs in Western Australia.

Other reasons for discontinuing *Westminer* were that its content under Bob Gude drifted from Company events to general subjects such as the history and characteristics of Japan and international travelogues, and that individual operations started to issue their own newsletters dealing with events of interest to their staff.

A number of operations (but not all) appointed Public Relations Officers in the 1970s, such as David Manning at Kambalda and the retired Director of the Kalgoorlie School of Mines, R A 'Hobbie' Hobson at the Kwinana Nickel Refinery.

In Melbourne, the first appointment was J O (John) Reynolds as Manager Corporate Affairs in 1980, with Gilbert Ralph transferred from Perth to become Assistant Manager Corporate Affairs. John was succeeded on retirement in 1988 by D R (Duncan) Bell, responsible to the Managing Director, who built up a small staff including G H (George) White, a long-term WMC geologist who transferred from Corporate Affairs in 1991 to head up WMC's environmental management push, and was replaced by former journalist and Elders Resources' Public Affairs Manager, G D (Gavan) Coltery. This team was

ably supported by a site-appointed Community Relations Manager at Olympic Dam, T F (Terry) Dwyer.

Operating separately from the broad-based Corporate Affairs or Community Relations function, WMC had established the Office of the Group Geographer in 1992 to focus for the most part on Indigenous Peoples' issues under the management of Dr S L (Stephen) Davis, reporting direct to the Managing Director (see *Aboriginal Relations and Native Title*).

In 1994, C B (Chris) Leptos was appointed General Manager Corporate Development, and Corporate Affairs was included in his responsibility area, Duncan Bell reporting to him. (Sadly Duncan Bell died suddenly of a heart attack in 1995.) On Chris leaving WMC in July 1998, the responsibility for Community Relations passed to G J (Greg) Travers as General Manager - Human Resources.

It was at this stage that Sustainable Development became topical, including a wide range of community interactions or 'public licence to operate' issues. As a consequence, the Community Relations function at WMC was separated from Corporate Affairs, with long-term WMC mining engineer and former Stawell Gold Mine Resident Manager, Deming Whitman, appointed to head up Community Relations.

While WMC was one of the first companies, if not the first company, in the world to adopt an Indigenous Peoples Policy in October 1995 (see later), Deming Whitman together with Community Affairs Managers Forum (CAMF) comprising Deming and all managers with functional responsibility for Community Relations, oversaw the development of WMC's broad-based Community Policy which was enacted shortly after my retirement in November 1999. Included in CAMF were D J (David) Griffiths from WA, Richard Yeeles from SA, Ian Clague from Queensland, Jeff Welborn from the Exploration Division office in Denver (USA) and Gavan Collery from Group Projects, based in Melbourne. This group also produced WMC's first Community Report in 1999.

In 2001 David Griffiths took on the whole-of-company role as General Manager Corporate and Community Affairs and appointed R I (Bob) Dalton to manage the Community Relations function. Under David Griffiths the expanded but previously separate roles of land access, aboriginal heritage, community relations and the traditional public or corporate affairs function including government relations were for the first time centralised under one company-wide umbrella.

## **The Trust Funds**

WMC first Annual General Meeting away from Melbourne was held in the Kalgoorlie Town Hall on 30 October 1979. Sir Lindesay Clark and Lady Clark.

At a Board meeting in Perth prior to the meeting in Kalgoorlie it was decided to mark the occasion and Sir Lindesay's unique contribution to the Company by establishing the Western Mining - Sir Lindesay Clark Trust Fund (later renamed the WMC - Sir Lindesay Clark Trust Fund) to support community activities in the Goldfields. The Company contributed \$100 000 to start the fund off and pledged thereafter to make annual contributions equivalent to dividends paid on 1 million WMC shares.

The Fund would be controlled by eight Trustees, four representing the community and four representing the Company. The Company would provide secretarial services (free) and a company representative would be the Chairman, but all trustees would have an equal vote. The Trust would not be therefore controlled by the Company.

During the nearly 20 years, from inauguration until I retired from WMC in April 1999, the Fund was judged by all to be an unqualified success. The two features largely contributing to this were the equal number of community and Company representatives as Trustees and the tying of the funding to dividends paid, i.e. to the prosperity of the Company.

The Trustees themselves set tough standards for qualifications for assistance, the main feature being that anybody looking for a contribution had to show that they had first done something to help themselves. One of the long time community representatives amongst the Trustees, Alf Barwick, had been a union representative and a strong critic of WMC. After he became a Trustee, his main complaint every time I saw him was that the Company did not explain sufficiently what it was doing for the community and was therefore not getting enough credit for this.

Initially limited to the Eastern Goldfields, the Fund's operations were later extended to elsewhere in WA where WMC was active. It is continuing to make a very important contribution to the communities where WMC operates and to WA generally.

By 31 December 1998 WMC had contributed \$2,595,000. Interest earned had enabled the Fund to distribute nearly \$3 million, with accumulated funds of \$712,046 at that date.

The Fund's success was emulated by the announcement at the opening ceremony of the Olympic Dam expansion on 26 March 1999 of the establishment of a similar Fund in South Australia. In this case WMC also contributed an initial \$100,000 and dividends on 1,000,000 shares annually thereafter. I was somewhat embarrassed to be told after I had retired that, unbeknown to me, this Fund had been given my name. Had I been consulted, I would have argued that Sir Lindesay's case was an exception, and that the general policy should be not to name anything after people while they are still alive. As it was, I had to say that I greatly appreciated what I hoped was somewhat premature action by the Company!

In the 2001 Annual Report there was a comment that the implementation of this Fund had been affected by 'uncertainty surrounding the Trust's potential tax status'. As at mid-2002, this issue had still to be resolved.

### **In the 1980s and 1990s**

Examples of WMC's support for community activities in the last ten years of the period under review are:

#### **1988-89**

The 1988-89 Annual Report included for the first time a section on Community (jointly with a section on Environment). It opens with the observation that:

'WMC's major contribution to the community is through operating a profitable business which provided direct jobs for over 6,400 people in Australia, purchased goods and services from a wide range of suppliers and generated export income in excess of \$928 million.

In addition, the Company supports appropriate community activities, mainly in the areas in which it operates and where there is frequently little or no other support available, and occasionally elsewhere.'

Examples of other support in 1988-89 were: funding the establishment of the WMC Conference Centre at the Western Australian School of Mines in Kalgoorlie to serve the students and the wider community for educational, cultural, and recreational purposes. This contribution of \$1.3 million was the largest ever made by the Company.

WMC also contributed \$500,000 to the Australasian Institute of Mining and Metallurgy Education Endowment Fund and awarded a number of scholarships directly. Significant support was also given to the Museum of the Goldfields in Kalgoorlie, the Sovereign Hill Orientation Centre in Ballarat, and the

Geological Museum at The Rocks in Sydney.

### **1989-90**

The Company supported the establishment of a WA Flora exhibit at the Royal Botanic Gardens in Melbourne, the Port Augusta Arid Lands Botanic Park in South Australia, and committed to sponsor the Healesville Wildlife Sanctuary rehabilitation in Victoria over five years, as well as various other activities and scholarships.

### **1990-91**

Support already committed was continued, and contributions made to science and technology centres in Sydney, Melbourne, and Perth.

### **1991-92**

New initiatives were support for Kalgoorlie-Boulder Centenary celebration, WA Country Medical Foundation over five years, and State Opera of South Australia. Two new Royal Flying Doctor Service aircraft in Western Australia, towards which the WMC-Sir Lindesay Clark Foundation contributed \$500,000, were named *WB Blown* and *K F Parry* respectively.

## **Donations Policy**

In April 1992 Duncan Bell drafted a revised Donations Policy and Practice as follows:

Donations Philosophy:

1. WMC's corporate sponsorship philosophy is to support projects or organisations that provide a long term social or economic benefit for the community.
2. In doing so, special consideration is given to sponsorship requests from regions where WMC has its operations.
3. Favourable consideration is also given to sponsorship requests of an educational nature, particularly those that are complementary to the mining industry's long term needs.
4. In applying the above philosophy to sponsorship requests, an evaluation has also to be made as to public recognition afforded to WMC for supporting any project. Although WMC sponsorship activities are not a marketing exercise, there is a need for appropriate public acknowledgment in order that WMC support for such projects contributes to the Company's public standing as a responsible corporate citizen.

Donations Policy:

In line with the above philosophy, the objective of the WMC corporate sponsorship programme is to enhance the public standing of the Company by supporting worthwhile social or economic programmes which comply with certain specified guidelines. Corporate sponsorship will be directed towards:

- Educational - particularly activities which contribute to the development of science and technology, especially amongst young people.
- Environmental - particularly support for programmes that promote the concept of sustainable development.



- Community welfare and development - particularly programmes that provide support for groups in need, to improve the quality of their lives, or programmes that encourage social and community development in areas where the Company has operations.
- Health - support for medical research or support programmes, particularly those which are relative to populations centres where the Company has its operations.
- Youth - support youth development and leadership programmes, particularly those programmes for family members of Company employees focusing on communities where WMC has its operations.
- Social (and sports) - support projects of national significance or projects that provide a specific return in terms of corporate recognition. This extends to local communities in which the Company has substantial operations.

At all times, requests for support will be judged on their individual merit in terms of benefit to the community and whether they comply with WMC's donations policy guidelines. However, organisations receiving funding from WMC may be requested to acknowledge the worthiness of the Company's business value to the Nation and publicly acknowledge the support received in an appropriate manner.

The approvals procedure was:

Funding Approvals:

1. The Managing Director can approve donations up to \$50,000.
2. Donations in excess of \$50,000 to be referred to the Board for approval.
3. The Managing Director will appoint a Donations Committee whose function will be to review sponsorship requests in line with WMC's policy guidelines. This does not involve subscriptions to outside organisations, donations as defined under GPP 216, education grants or scholarships.
4. Donations Committee to approve donations up to \$20,000 within the budget approval for that item. Donations in excess of that amount are to be considered by the Donations Committee and a recommendation made to the Managing Director for consideration.
5. Manager, Corporate Affairs can approve donations up to \$5000 which as a matter of practice should be ratified by the Donations Committee at the next meeting.
6. General Managers may approve donations within their budget allocation up to \$5000. Amounts above that amount require the endorsement of the Managing Director.
7. Resident Managers may approve donations within their budget allocation up to \$1000. Amounts above that need the approval of their General Manager.

## **1992-93**

In its 60th Anniversary year WMC became a founding member of the Anti-Rabbit Research Foundation and established a community support programme in the Philippines in relation to the Tampakan Project.

**1993-94**

Continuing support for a number of activities committed in previous years.

**1994-95**

New initiatives included support for the J Kruttschnitt Mineral Research Centre, Scholarship in Chemical Engineering at the University of Sydney, the Shrine of Remembrance Restoration Appeal in Melbourne, the Philippines Ballet, the Climate Change Science Project of the Academy of Technological Sciences and Engineering, the John Curtin Centre at Murdoch University in WA, Penguin and Migratory Birds Study at Penguin Island, WA, and the Sir Edward 'Weary' Dunlop Memorial Statue Appeal.

**1995-96**

In addition to ongoing support for the Arid Lands Botanic Gardens at Port Augusta, Healesville Sanctuary in Victoria, Penguin Migratory Bird Study, and the community development programme at Tampakan in the Philippines, support was given for King's Park rehabilitation in Perth and the Australian team for the Atlanta Olympic Games.

**1996-97**

A major new activity was the Kalgoorlie Nickel Smelter Community Program, seeking the views of the Kalgoorlie-Boulder community regarding issues affecting them.

**1997-98**

In this year community involvement programs were extended to Roxby Downs and Mount Isa. A contribution was made to the Federal Government's 'Business Against Domestic Violence' program. Donations were made, directly or through the WMC-Sir Lindesay Clark Trust Fund to Kings Park in Perth, the Sir Douglas Mawson project and Eco-system Development in South Australia, Laverton Primary School, Mt Magnet District High, and the Cancer Foundation in Western Australia, and Institute for Child Health Research.

**Indigenous Peoples Policy**

Aboriginal relations in Australia are dealt with in the section *Aboriginal Relations and Native Title*.

In the 1990s the relationships with indigenous peoples became a world-wide issue which was canvassed extensively by various activist groups, in and outside the United Nations. WMC was dealing with indigenous people in its various exploration and project activities. In 1995 the Company formulated its worldwide Indigenous Peoples Policy:

The Company is committed to developing relationships of mutual understanding and respect with the indigenous peoples of the areas in which it operates or proposes to operate. To fulfil this commitment, the Company will:

- Establish and maintain effective, positive and frequent communication with indigenous groups.
- Recognise the desire of indigenous peoples to fulfil their responsibilities within their traditional culture.

- Seek to identify all indigenous interests in the area within which the Company is or intends to operate, define the basis for those interests whether derived from cultural traditions, historical association, occupation, social or economic need, and deal with those interests, in accordance with the relevant government policy.
- Recognise and observe all state, provincial and federal laws relevant to indigenous and cultural matters.
- Formulate and implement for appropriate Company personnel, and indigenous awareness programme pertinent to the local situation, which will engender the appropriate understanding, sensitivity and respect towards the local indigenous peoples.
- Wherever reasonable and appropriate, provide local indigenous groups with the opportunity to participate directly or indirectly in employment opportunities.
- Taking into account local conditions, provide the opportunity for qualified local indigenous businesses to tender for the supply of goods and services necessary for the Company's local activities.'

The immediate application of this policy outside Australia was in the Philippines where information was collected regarding the highland B'laan indigenous groups in the Tampakan Project area and Heads of Agreement were signed with each of the groups. A community development plan involved agricultural programmes, construction of community centres and schools, provision of on-site medical services, and assisting tribal councils in close association with government agencies.

During 1996-97 an indigenous heritage assessment procedure was developed, modified for various countries to comply with their legislative requirements.

### **Subsequent Events**

A company-wide Community Policy was adopted in late 1999.

The definition of 'community' was:

'Our communities are self-defining. They involve all who are interested in, or affected by, our activities. This includes local, regional, national and international communities. Our communities range from those for whom the land we occupy has cultural significance to those concerned about the impacts of our activities and our products.'

The policy states:

'As an integral part of the community, we recognise and act on our responsibilities. We work with communities to develop and nurture positive relationships built on mutual understanding and respect. Building these long-term partnerships is essential for our business success.

To achieve this we:

- value and respect human rights
- engage by listening, considering and responding
- communicate in an open and transparent manner

- respect cultural diversity and protect cultural heritage
- require our behaviour to be consistent with this policy.

As we invest in exploration, development, production and closure we, in consultation with host communities, government authorities and other organisations:

- encourage and support community development
- encourage and support initiatives to enhance social benefits such as environment, health and education
- identify and facilitate opportunities for employment, training and business relationships directly and through our contractors and suppliers.

We monitor, continuously improve and publicly report our activities and our performance.'

The Sustainability Report 2001 says the Company is on a journey towards Sustainable Development, and is committed to report in the context of the Triple Bottom Line - economic, environmental and social performance. In the context of 'social' the Company's commitment remains embedded in its Community Policy. WMC speaks of openness and transparency. It also speaks of moving from a world of 'tell me' to 'show me' to one of 'involve me'. It takes a proactive position to community involvement, engagement and communication.

### **Comment**

Good community relationships are clearly important to the Company's success. As in all similar activities, the question is where to draw the line. Private enterprise should not become a community welfare agency.

In my view, the principle followed by the WMC-Sir Lindesay Clark Trust Fund of supporting activities which could show that they had done something for themselves has a great deal of merit.

# ***ABORIGINAL RELATIONS AND NATIVE TITLE***

## **THE ABORIGINES**

### **The Aboriginal People**

Today it is usual to speak of the Aborigines and Torres Strait Islanders (ATSI) as a group. The term Aborigines, however, does not include Torres Strait Islanders. In 1994 there were some 303,000 Aboriginal people, approximately 1.7% of the Australian population. In 2001 the number was 427,000 about 2.2% of the population.

There are vast differences between the Aboriginal people and Torres Strait Islanders and differences between Aborigines from different regions. Urban Aborigines often call themselves *Muri* in Queensland, *Koori* in New South Wales and Victoria, *Palawa* in Tasmania, *Nungah* in South Australia and *Noongah* in Western Australia. A further important distinction is between tribal and non-tribal Aborigines.

It is estimated that prior to European settlement of Australia there were between 500 and 700 different tribes, related to particular territories. More than 200 different languages were spoken. Each tribe had its own laws and customs, although there were many similarities. There was no consciousness of national identity.

The Aborigines were hunter-gatherers who grew no crops and did not domesticate animals (apart from the dingo). Although nomadic, they had a strong sense of attachment to the territory where most of their gathering and hunting was done.

The Aboriginal world view was based on 'dreaming', a complex concept embodying the past from the dawn of time, the present, and the future.

## **ABORIGINAL POLICY**

### **The European Settlement**

The European settlement in 1778 resulted in clashes between the Europeans and the Aborigines, who were driven into the bush and overwhelmed by force of arms. Losses in armed conflicts and introduced diseases took a heavy toll. Over the next century and a half traditional Aboriginal life ceased to exist over much of Australia.

### **1778 to 1950s**

Aboriginal Reserves were established in the late 1920s and early 1930s. In the 1960s the last nomadic groups from the Great Sandy Desert moved into settlements.

### **Developments Since 1950s**

The appointment of Paul Hasluck as Minister of Territories in 1951 marked a change from the policy of segregation to assimilation of Aboriginal people, which was seen as a solution to the social and economic problem. The Native Welfare Conference in that year defined the aims and objectives of this approach as follows:

'Assimilation means in practical terms, that in the course of time it is expected that all persons of Aboriginal blood or mixed blood in Australia, will live like white Australians do.'

In February 1958 a number of State bodies formed the Federal Council for Aboriginal Advancement (FCAA) which called for repeal of all legislation discriminating against Aborigines, improvements in housing, pay, education, and ration scales, retention of all reserves, and amendment of the Constitution to give the Federal Government the power to legislate in Aboriginal matters. During late 1950s and early 1960s Torres Strait Islanders joined FCAA, which became FCAATSI.

A Referendum in 1967 gave by over a 90% majority Federal Government the power to legislate in Aboriginal matters, and agreed that Aborigines should be included in the Census.

The Federal Government established a Council and Office of Aboriginal Affairs, headed by H C (Nugget) Coombs. In 1968 W C Wentworth was appointed as the first Minister of Aboriginal Affairs.

In 1970 the first legislation to protect Aboriginal relics was passed by the New South Wales Parliament.

In 1971 the Northern Territory Supreme Court ruled that the British claim to sovereignty extinguished all Aboriginal claims to property.

In 1972 Prime Minister William McMahon on Australia Day announced a policy to make a new style of land leases available to Aborigines in the Northern Territory. This resulted in an Aboriginal 'tent embassy' being erected on the lawn of Parliament House, demanding

- establishment of the Northern Territory as a State
- the parliament of Northern Territory to be predominantly Aboriginal with title and mining rights to all land within the Territory
- legal title and mining rights to all other existing reserve lands and settlements throughout Australia
- preservation of all sacred sites
- legal title and mining rights to areas in and around all Australian capital cities, and
- compensation of six billion dollars for all land not returnable, and an annual percentage of the gross national product.

This predicably produced anti-Aboriginal sentiments in the Australian society which, however, were overshadowed by the election of a Labor Government in Canberra after 23 years of Coalition Government. Labor had made many promises to the Aboriginal movement during the election campaign; among other things their leader Gough Whitlam had ostentatiously visited the 'tent embassy'.

One of the first steps of the Whitlam Government was to turn the Council for Aboriginal Affairs into a government department. The Minister for Aboriginal Affairs, Gordon Bryant,

- announced the intention to grant a considerable area of Northern Territory to the Gurindji people
- banned mining on Aboriginal reserves without Aboriginal approval
- established the Aboriginal Land Rights Commission under Mr Justice Woodward.

The Commission's Report resulted in the establishment of Aboriginal Land Fund, regional Aboriginal Land Councils, and the National Aboriginal Consultative Committee. A number of programs for Aboriginal people were also established, which were to be managed by Aboriginal people under a so-called self-determination policy.

## **NATIVE TITLE**

In 1788 Captain Phillip raised the British flag at Sydney Cove and claimed Crown sovereignty and

ownership of all the land. Before this the land was seen as *terra nullius*, not belonging to anyone. In USA, Canada and New Zealand the indigenous people had been recognised as having had prior possession of the land, and similar recognition was increasingly agitated for in Australia. However, in 1971 Mr Justice Blackburn held that Aboriginal title to land had not survived British settlement of the continent.

## **Land Rights**

The Woodward Royal Commission in 1973 and the Commonwealth Racial Discrimination Act 1975 laid the basis for land rights legislation in Northern Territory, passed by the Fraser Government in 1976. This was the Commonwealth's first foray into land rights and a dramatic change from the Coalition's pre-1972 policy.

## **The Mabo Claim**

Henry Reynolds, historian and political activist, was the brains behind the eventually successful claim, pursued by Eddie Mabo and four other islanders from Murray Island for legal recognition of their native title rights to the island. In 1988 the High Court decided in what is known as the Mabo No 1 decision that Queensland legislation seeking to extinguish any native title rights in the Murray Islands was invalid because it was inconsistent with the Racial Discrimination Act.

In 1992 the High Court gave its Mabo No 2 decision. In a six to one decision the Court decided that the inhabitants of three small islands in the Torres Strait were entitled to possession, occupation, use and enjoyment of their traditional ancestral home in the Murray Islands. These rights were given the name *native title*. The Court expressly stated that the principles established in the Mabo case also applied to mainland Australia. The Court found that a native title to land existed in 1788 and may continue to exist provided it has not been extinguished by subsequent acts of Government and provided Aboriginal groups (tribes) continue to observe their traditional laws and customs.

The effect of it was that common law was now to be regarded as always having recognised the rights in relation to land which were exercised by the Aborigines at the time of the European settlement. The nature and extent of those rights depend on proof of traditional Aboriginal laws and customs. As no written records exist, the result was the introduction of great uncertainty and the prospect of many years of testing individual cases in courts. Public company directors were confronted by the dilemma of how to handle the question of titles held, the validity of which may now be in doubt.

## **The Native Title Act**

### **Federal Government Action**

The Federal Government established a committee of senior ministers headed by the Prime Minister to consult with State Governments, Aboriginal groups and the resource and pastoral industries regarding the effects of the Mabo decision, with the intention that a report be issued by September 1993. Initially it was thought that the Government preferred not to legislate but would provide financial support for strategic test cases in the courts, in the hope that the courts will clarify the uncertainties.

Politics, however, intervened. Peter Walsh in his *Confessions of a Failed Finance Minister* says:

In all the time I was in Cabinet, Keating, unlike Hawke, showed no interest in aboriginal issues. Nor was there any indication of a strong interest as Prime Minister until he delivered the Redfern Park speech on 10 December 1992. That speech, Watson (Keating's speechwriter Don Watson) later revealed, was written by him and dropped in The Lodge night box at 1 am on the day of delivery. Its content delighted the guilt industry, especially the following passage:

"We took away the traditional lands and smashed the traditional way of life.  
 We brought the disease. The alcohol.  
 We committed the murders.  
 We took the children from their mothers.  
 We practiced discrimination and exclusion.  
 It was our ignorance and our prejudice."

Watson later said the speech was an "ambit claim", and admitted to surprise later that day on hearing it come verbatim from Keating's mouth.

..... these rhetorical excesses are the foundation of the Government's Mabo legislation.'

### **Native Title Act 1993**

The Commonwealth *Native Title Act 1993* gave statutory recognition to Mabo No 2 decision. It set up a National Native Title Tribunal, established an Indigenous Land Fund, and established the Right To Negotiate - the requirement to consult native title holders before governments grant rights on land under native title to other parties. The Act came into force on 1 January 1994.

### **The Wik Judgement in 1996**

In December 1996 the High Court in its *Wik* judgement decided that native title can coexist with other rights on land held under a pastoral lease. The granting of a pastoral lease did not necessarily extinguish native title rights.

### **1998 Amendments to Native Title Act**

In 1997 the Federal Government proposed amendments to the Act which were intended to make the legislation clearer and more practical. I became involved in some controversy regarding these amendments.

In my Chairman's speech at the Annual General Meeting on 20 November 1997 I had made a comment on uncertainty and confusion about exploration and mining titles in Australia because of native title issues having a long term effect on mineral production. The comment said, in part:

'Australia should be now discovering the orebodies which will be the main producers 20 to 30 years from now. This is not happening.'

'Establishing a clear and practical regime for access to prospective land for exploration and mining purposes and security of titles is important to the industry, but it is even more important to Australia. The legislation now before the Federal parliament would, if passed, meet the majority of these concerns.'

The Federal Government is to be commended for addressing this very difficult issue.'

The full comment was published as a full page advertisement in *The Weekend Australian* of 22-23 November, alongside a full size photo of me. I had agreed to the comment being advertised, but had not seen the rather dramatic way in which it was presented and was therefore somewhat surprised by a telephone call from a reporter on Saturday morning, advising me of Aboriginal activist Noel Pearson's comments labelling the advertisement 'the height of swinish capitalism' and saying that 'Western Mining are the puppeteers behind Prime Minister John Howard's stance on native title'. Sadly, such comments were and continue to be typical of the level of discussion by many Aboriginal activists.



Over the next week or so I had a half a dozen or so critical letters from our 111,000 shareholders, some abusive and others polite. No-one took issue with the validity of my comment - the complaint was about making the comment! There were also one or two supportive letters.

As far as I am aware, mine was the only public comment by anyone in the industry. So much for free speech and democracy!

In 1998 the *Native Title Act 1993* was amended, empowering the States and Territories to legislate their own native title regimes and provides for:

- confirmation of extinguishment and validation of grants made between the *Native Title Act* coming into force and the *Wik* judgement
- the States and Territories devising their own Right to Negotiate regimes for pastoral lease land subject to Commonwealth approval
- the setting up of State-Territory based claims mediation bodies, replacing the National Native Title Tribunal.

## **WMC AND THE ABORIGINES BEFORE NATIVE TITLE**

Western Mining had little interaction with Aborigines in its early days. The earliest substantial contact of which I am aware was in the mid-1960s through copper exploration and the Tommy Sims Project on Warburton Aboriginal Reserve in eastern Western Australia.

Roy Woodall negotiated the access to the Aboriginal reserve with John Harman of the WA Department of Aboriginal Affairs. Both Roy and John were concerned that the project should also benefit the Aborigines, and a number of them were employed on both exploration and in the mining of very high grade (35% Cu) copper ore from the Tommy Sims Mine near the Warburton Range Mission. Maurice Brown's report in 1972 quotes favourable outside comment on WMC's relationships with the Aborigines.

WMC also made a deliberate effort to employ Aborigines in mining at GMK and Kambalda, but with limited success. The main problem was the Aboriginal tendency to go 'walkabout' for extended periods without any notice. In the 1980s WMC was exploring for oil in the Canning Basin in Western Australia. There were numerous full blood nomadic Aborigines of two tribes in the project area and the WMC people got on very well with them. The Elders frequently visited the camp and the project people drilled many water holes for them over a very large area. When the project was abandoned, the Aborigines took over the camp.

Also in the 1980s there were numerous problems with Aboriginal activists during the development of the Olympic Dam project, which are described in Book Two, *THE BURNISH OF COPPER*. After the Mabo No 2 judgement in 1992 the Company experienced the general uncertainty regarding the effect of native title on exploration and mining titles.

During the 1980s Hugh Morgan made a number of high profile speeches strongly critical of Aboriginal activism and, as a result, came under considerable criticism by the activists and their supporters. There was also some criticism from shareholders and from staff.

My view was that the issues Hugh raised were real and that he was entitled to express his views, but that the confrontationist language (the speeches were drafted by Ray Evans) was unwise and unnecessary. I thought that calm and moderate presentations would have had a better effect. Hugh did moderate his language after the Ernest Henry debacle in 1993, but realistically he had also started to search for a practical arrangement with the Aborigines well before then.

## GROUP GEOGRAPHER'S OFFICE

In December 1991 Hugh Morgan held a conference with senior staff in the Orchid Hotel in Perth, during which the setting up of a WMC office with expertise in indigenous matters was discussed. One of the speakers at the conference was Dr S L (Stephen) Davis.

Stephen, a graduate in Arts and a PhD in Political Geography from the University of Melbourne was an Associate Academic at the University's Geography Department. He had spent a number of years in the bush, researching Aboriginal culture and interviewing Aboriginal elders.

Stephen Davis was engaged by WMC as Group Geographer responsible for 'all anthropological and political geography matters' on 1 July 1992. His initial task was an audit of indigenous matters with all WMC projects and operations in Australia. Stephen initially worked out of his former garage of his home in Kalamunda, assisted by Andrew Huxtable on computer database and information system. The High Court Mabo No 2 decision enlarged the scope of Stephen's work.

In the third quarter of 1992 the Group Geographer's Office (GGO) was established at 177 Great Eastern Highway, Belmont. Allen Dobra joined the team.

The first major task after the audits of existing projects was the planning of the 1430 km Goldfields Gas Transmission pipeline (GGT) from the Aboriginal relationships point of view. (Stephen had been earlier involved in the Amadeus to Darwin pipeline under contract to CMPS, the contractor for GGT).

The Dieri and Kokutha consultative agreements in South Australia, signed in 1992 by Hugh Morgan personally at a meeting with the tribal elders in the bush, were followed by similar agreements with the Gabun people of Western Australia and the Anmatjere people of Northern Territory. The Group Geographer's Office initiated Aboriginal awareness courses, subsequently continued through consultants. During 1994 a computer based system for correlating information on topography, drainage, vegetation, Aboriginal territories, Aboriginal sites and WMC tenements was initiated, which was later developed into three dimensional modelling.

An Indigenous Peoples Policy was developed, which was approved by the Board in 1995.

Also in 1995, in cooperation with the Exploration Division, the Group Geographer's Office embarked on the development of Exploration Guidelines to record all the legal steps necessary in respect of Aboriginal heritage for each State, and the procedures to gain the goodwill of the Aboriginal communities. By 1997 these had been produced as a computer programme, available for use by exploration people in remote locations for on-site decisions.

In 1995 the Group Geographer became involved in the development of the Tampakan Copper Project. Following Heads of Agreement with the various indigenous B'laan groups, a complex ethnographic and archaeological study was completed in 1996.

Stephen Davis, as could have been expected, came under attack by some anthropologists. The profession had become highly politicised and there were those who argued that their responsibility was to act in the interests of 'the clients' - the Aborigines. There was no such thing as objective truth; the end justified the means. Academic jealousies were, no doubt, a contributing cause.

By 1996 a complete Aboriginal ethnographic and archaeological survey had been completed for every operation, thus concluding the cultural audit commenced in 1992.

In 1996 The Indigenous Peoples Policy was broadened following increasing involvement of the

Company in overseas locations. The following extract from a Board presentation in June 1996 describes the rationale:

The past decade has seen massive expansion in the activity of non-governmental organisations (NGOs) focusing on environmental and indigenous people's issues. These groups create a highly charged and emotive atmosphere within which resource companies are forced to operate. It is not possible to ignore the political pressure which such organisations can muster when aroused. Nor can they be avoided by moving to more remote locations. The communications revolution has resulted in NGOs which have local branches in most parts of the world, being able to collect and feed vast amounts of information into the internet. This is then available for use by support groups which crop up for any people or place which appears under threat. The World Council of Indigenous Peoples is well organised for lobbying at the United Nations and interactions between indigenous peoples' groups in the industrialised nations and those in the developing world are becoming more common. An illustration of the effectiveness of NGO networks is WMC's own Tampakan Project, where the indigenous B'laan people had not been subjected to study nor politicised before the Company moved into their area, but are now involved with a multitude of local NGOs with international connections.'

On 24 April 1996 WMC had interests in 1076 mineral properties (including applications, grants, and licences) which were subject to registered Native Title Claims. Of these, 100 were subject to the Right to Negotiate process of the Native Title Act, representing 42 claims made by 34 different Native Title parties.

The estimate of Native Title expenditure for 1995-96 was \$4,754,635.

In 1995 the Group Geographer's Office appointed a Manager for Land Access and Community Relations, and in 1996 a Manager for Native Title Negotiations.

In 1997 the key functions of the Group Geographer's Office were listed as:

- i) land access and community relations
- ii) 'right to negotiate' provisions of the Native Title Act
- iii) Native Title and indigenous land claims
- iv) Aboriginal heritage and archaeological surveys.

Managers for each of the above areas had been appointed. Further, an International Adviser, Social and Cultural, had been appointed to compile profiles on each country in which WMC had an interest and attendant risk identification profiles.

Research was undertaken and discussions held with international agencies such as the World Bank, the United Nations, and peak non-government organisations representing indigenous and cultural minorities. The Group Geographer's Office had responsibility for international representation on social and cultural matters. The office also had oversight and conducted social and cultural baseline studies for the Tampakan and Meliadine Projects and for Olympic Dam expansion.

There was concern that Stephen Davis' extensive records of his interviews and meetings with Aboriginal elders over many years prior to his joining WMC may be confiscated, as had apparently happened to other similar information. The records were therefore purchased by WMC and deposited in safe keeping in Canada.

As might have been expected, the activities of the Group Geographer's Office caused conflicts with line management, who felt that their authority was being usurped. The good personal relationships which were necessary for such a specialist office with a wide brief to work in harmony with line management

did not always exist, and in 1997 Stephen's role was redefined and his title changed to Group Consultant Geographer. He continued to be directly responsible to Hugh Morgan for international policy issues and relationships, with Business Units assuming responsibility for heritage assessments, community relations, and the Native Title process. Deming Whitman was appointed Group Manager - Cultural and Community Development, responsible (in cooperation with Business Units) for development of corporate policy, standards, and guidelines.

A list of WMC interests in 1998 potentially affected by Native Title determination is appended to this section.

On 2 July 1999 the Group Geographer's Office was closed and the staff became redundant. Stephen Davis established a private consultancy, continuing to represent WMC with bodies such as the World Bank, United Nations, and other international bodies.

Stephen undoubtedly made a very substantial contribution to WMC in making the Company acutely aware of the importance of indigenous issues and in contributing his extensive knowledge and expertise to establishing methods for dealing with such matters. It is to Hugh Morgan's credit that he could foresee the importance these issues would have to the Company in the future and decided in effect to apply shock treatment to the system. It was, however, inevitable that the responsibility for indigenous matters should be eventually included in the responsibilities of line managers.

I would conclude that both the establishment and the subsequent discontinuance of the Group Geographer's Office were appropriate actions in the circumstances.

### **Supporting Aboriginal Business**

In 1998 WMC proposed to the Chamber of Mines and Energy in Western Australia the formation of a Mining Industry and Aboriginal Business Network, which was adopted. The purpose was to focus on creating opportunities for Aboriginal business and employment in the industry. As an example, a joint venture was formed in September 1998 between an Aboriginal business - Carey Mining - and the mining contractor at Mt Keith - Roche Bros - to supply heavy haulage services and equipment for five years.

### **Genocide Claim**

In early 1999 an Aboriginal activist Mr Kevin Buzzacott, a lawyer, initiated Supreme Court action in South Australia against WMC and Hugh Morgan, claiming WMC's activities at Olympic Dam had caused genocide. Mr Buzzacott claimed to speak for the Arabunna community. WMC had regular meetings with the Arabunna and six other Aboriginal groups in the area north of Port Augusta and east of Marree who claimed an interest in Olympic Dam. None of these groups recognised Mr Buzzacott.

Interestingly, Mr Buzzacott was the half-brother of Reg Dodd and his brother Arthur Dodd, both of whom led one of the two Arabunna groups. He had a long history of political activism. In the early eighties he had been involved in issues with the Northern Territory Government, Alice Springs Town Council, the DAA (Dept of Aboriginal Affairs) - subsequently ATSIC and the Australian Tax Office over the requirement for Aboriginal associations to comply with funding guidelines and taxation laws.

He had been at the centre of the Tent Embassy protests, appearing on TV. He was once depicted spearing the Australian flag. As a result WMC was advised that a 'wati kulpa' has been appointed and authorised by a group of elders from various parts of the north of South Australia to restrain his activities. A 'wati kulpa' can be defined in this particular situation as a senior elder and traditional lawman who has been authorised by a group to counsel and/or chastise a person who has stepped out of line.

In March 1999 a camp was established on WMC's pastoral lease about 100 km north of Olympic Dam by 'The Keepers of Lake Eyre' group, associated with Buzzacott (see *THE BURNISH OF COPPER, Olympic Dam*). The group, agitating against WMC's use of water from the Great Artesian Basin, consisted mainly of professional protesters from outside South Australia, including anti-uranium activists.

Mr Buzzacott attended the Annual General Meeting on 15 April 1999 and endeavoured to air his grievances. I pointed out to him that, because of the court action he had initiated, any such discussion could be in contempt of court.

### **Subsequent Events**

The camp was re-established in March 2000 and the occupants interfered with water monitoring equipment, attacked a pump station and security personnel, blockaded the main road between the Olympic Dam Mine and the Roxby Downs township for three days, and smashed the rear window and lights of a WMC vehicle patrolling the pastoral lease. The group of activists also invaded WMC's offices in the IBM Tower, intimidating staff. It must have been galling to the organisers that WMC managed to handle all this with a minimum of media publicity.

In August 2000 the court action was dismissed. However, protests were again staged outside WMC's office in Melbourne later in the year.

### **Aboriginal Sovereignty**

In 1978 Dr H C Coombs initiated a movement towards a treaty with the Aborigines. His book, entitled *Aboriginal Autonomy*, was published in 1994. Henry Reynolds wrote the book *Aboriginal Sovereignty*, published in 1996. Both proposed an ultimate separate Aboriginal State, with its own government, economy, and laws.

Coombs was a scathing critic of both the Aboriginal and Torres Islander Commission (ATSIC) and the Mabo decision. In his view ATSIC, established by the Hawke Government in 1991, served white interests rather than those of the Aborigines. He regarded the Mabo decision as denying indigenous people title to land 'that has always been theirs'. It was never formally ceded to British colonists and the title can therefore not be extinguished by them but only by the Aborigines themselves. He argued that Aboriginal demands would not cease until they won back the continent and then themselves decided whether and how much land, and on what terms, they would legally surrender to the European occupiers.

On the territory they would retain Coombs argued that, instead of a democracy, the Aborigines would want 'bottom-up federalism': the elders of tribes would decide their own method of government, the economy 'must be compatible' with Aboriginal concepts of just relationships between people and their choice of lifestyle, a separate Aboriginal legal system would have its own law, community courts, customary punishments, and prominent roles for elders and women. There would be a separate 'two-way' education system that incorporated aspects of Western education within a traditional Aboriginal framework and under Aboriginal control.

Coombs' proposal, however, did not involve secession from the Australian Commonwealth. While he wanted the Aborigines to return to their pre-European settlement lifestyle and live in a separate society, retaining only some of the trappings of Western civilisation, the Aboriginal State would be similar to the existing Australian States. The Aboriginal education system would be a part of the State education systems and draw on their resources; non-Aboriginal police could take action under certain circumstances.

A refusal to accept these demands 'could well be seen as justifying violent resistance by Aborigines to their dispossession'.

Coombs appeared to have been fired by European romantic notions of primitive people living in harmony with a benevolent nature, as preached in the 17th century by the English poet John Dryden who coined the term *noble savage*, and in the 18th century by Jean Jacques Rousseau and Johann Gottfried von Herder. He appeared to want the cake while eating it, too, as was apparent from the notion that the Aboriginal State is separate and rejects its economy, but continues to draw on white Australia's resources.

Coombs seemed oblivious that his violent criticism of white Australians forcing their notions on the Aborigines clashed with the fact that he was a white Australian himself. His notions certainly did not originate within the Aboriginal community, nor is there any evidence that, put to a vote, the indigenous population at large would support them.

Henry Reynolds also started from European romanticism. He starts his arguments with the notion of John Stuart Mills and others that members of the same nationality are entitled to govern themselves, disregarding that there never has been an Australian Aboriginal nation. He, however, in the end backs off the notion of 'government apart' and supports self-government similar to the six States, under the umbrella of the Commonwealth and 'bottom-up federalism'. Reynolds argues that, in the end, Australia has no choice in the matter.

In 1990 a number of prominent Aboriginal activists, including Bob Wetherall, Michael Mansell, Kevin Gilbert, Jack Davis, and Geoff Clark formed the Aboriginal Provisional Government, which operated out of the office of its National Secretary, Michael Mansell, in Hobart. It was not based on romantic notions; in 1994 it calculated that taxation and royalties and lease payments from mining companies, graziers, and others on its territory would provide revenues of at least \$6 billion a year. Subtracting the then \$2 billion annual Commonwealth Aboriginal welfare payments would leave them \$4 billion a year better off and they would thus 'no longer (be) the poorest people in the country but probably would be, by comparison with Australians, the richest'.

While the Provisional Government has not provided a map of the territory it claims, Keith Windschuttle has estimated that 'the initial borders would encompass most of the Northern Territory, much of the north of Western Australia and large tracts of South Australia'.

Geoff Clark, appointed Chairman of ATSIC in 2000, was one of the main movers behind the notion of a *Treaty* with Australia. It has been suggested that, to him, a *Treaty* would be just a step on the road to an Aboriginal State. The push for this was strongest just before the Federation year 2001, but by August 2002 the public campaign for a *Treaty* had virtually disappeared. An indication of the change in public sentiment was that there was no publicity when power to the 'tent embassy' was permanently switched off for safety reasons after a stove caused a tent to catch fire.

## Reconciliation

In 1991 the Commonwealth Parliament established the Council for Aboriginal Reconciliation, with the aim of bringing about reconciliation by the Centenary of Federation in 2001. The Council pursued a public awareness and consultation programme during the next ten years. A number of publicity events culminated in Corroboree 2000 at which reconciliation documents were presented to national leaders at the Sydney Opera House and, according to reports, some 250,000 people joined in Walk for Reconciliation across Sydney Harbour Bridge.

The Council's work concluded in December 2000 after presenting its final report, including recommendations, to the Prime Minister and the Commonwealth Parliament.

The Council was followed by Reconciliation Australia, a body established to 'provide a continuing national focus for reconciliation'.

### **Subsequent Events**

In March 2002 the Full Bench of the Federal Court gave a judgement in the Miriuwung-Gajerrong native title claim. In August 2002 the High Court in a majority decision overturned substantial parts of the judgment and sent the matter back to the Federal Court for further hearings. A commentary concluded:

The High Court majority did make some firm decisions. There is no native title right to minerals or petroleum (at least in Western Australia). There is no general native title right to preserve and protect cultural knowledge, as this is not an interest in land as such. There is no native title right to exclusive fishing. Some special leases and some acts of resumption or vesting of land extinguished native title.

However, in relation to the key issues of pastoral and mining leases and their effect on native title the judgment has really just returned us to the uncertainty first made apparent in the *Wik* decision. The majority have affirmed the notion that native title can be usefully understood as a "bundle of rights". One of these rights - the right to control access to and use of land - is extinguished by the grant of a pastoral or mining lease over that land. However, other rights making up the "bundle" will survive if they are compatible with the legal rights given to the lessee under a pastoral or mining lease.' ... ..

The task given to the Full Court in its rehearing of this case - and by implication to all other Courts hearing native title cases - is to carry out a precisely detailed assessment of the various rights in connection with specific areas of land under traditional laws and customs. Then the Court must establish in the light of specific statutes, and grants of land or interests in land under those statutes, what conflict there is between the native title rights and the statutory rights. Only then can the Court determine what native title rights have survived.'

### **Mabo 10 Years Later**

The 10th anniversary of Mabo on 3 June 2002 was the occasion for considerable comment in the media. While activists praised the principle, there was also the view that the legislation was not working. One of the interesting statistics quoted was that in 10 years 30 determinations of native title had been made, while some 580 claims remained undecided. Only one determination had been made in NSW. Aboriginal activist Mick Dodson went as far as saying that the native title legislation may have been a 'whitey' plot!

### **The Ward Case**

On 8 August 2002 the High Court handed down its decision in the Western Australia vs Ward case. The following are extracts from an article by Alison Vivian in the *AusIMM Bulletin* of Sept/Oct 2002:

The Ward Case concerned the native title claim of the Miriuwung and Gajerrong people over some 7,900 square kilometres, encompassing the town of Kununurra, the Ord River Irrigation area, the Glen Hill pastoral lease, Lake Argyle and the Keep River National Park.

The Court was asked to clarify the extent to which reserves, pastoral leases, mining leases, the Argyle diamond mining lease and general purpose leases extinguish native title.

The main native title rights and interests claimed were:

- the right to exclusive possession, occupation, use and enjoyment of land and waters;
- the right of some members to "speak for the land";
- the right to use and enjoyment of "resources" of the area; and
- the right to protect "cultural knowledge".

..... One clear principle that emerged from the decision was that any native title rights that may have existed in minerals or petroleum had been extinguished by the Western Australia *Mining Act*. An important implication was that negotiations with native title holders in WA need not involve discussions of royalties or compensation for mineral and petroleum rights.

The position in the rest of Australia is not so clear as the Court confined itself to the case in hand.

The Court decided that native title rights can be described as a "bundle of rights", which may be extinguished one by one. Rather than being an all encompassing property right, something akin to freehold, native title is a collection of individual rights such as the right to control access to particular land, the right to enter land to hunt or fish, or the right to visit for ceremonial purposes.

Turning its attention to mining leases, the Court held that they do not automatically extinguish all native title rights and interests. Because a grant for mining purposes is to prevent others from using the land for mining, it doesn't prevent use of that same parcel of land for other non-mining purposes. In *Ward* the extent of the co-existence was sent back to the Federal Court to determine. A similar finding was made in relation to the general purpose lease under consideration. The approach to determining what native title rights remain and what rights are extinguished is a two-step process. First the native title claimants have to prove which particular native title rights exist on the claimed area. Secondly, this inventory of rights is compared to the rights granted under the mining lease. Where those two sets of rights can't coexist, native title rights are extinguished. For example, the Court held that the right of native title holders to control access to areas on which mining leases have been granted cannot coexist with the mining lease.

The Court said it wasn't able to determine which other rights and interests have been extinguished by the individual mining leases in this case because which native title rights exist, if any, wasn't determined. Again, this has been sent back to the Federal Court for determination. One interesting finding by the court was that native title claimants don't have to prove a recent physical presence on the land to prove a "connection" with the land or waters in question.

..... Startlingly, the High Court also determined that the historical vesting of land for public purposes in WA extinguished native title. The historical tenure of land proposed for mining leases should therefore be checked in WA because negotiation will not be necessary where the land has previously been vested for public purposes. *Ward* has not decided whether analogous vesting extinguishes native title in other states, but a determination consistent with the findings in WA may follow.

This had major implications for the Argyle mining lease in this case. The Court held that the lease itself was not necessarily inconsistent with all native title, but because the mining lease was granted over a reserve, native title rights had been extinguished before the mining lease had been granted.



..... An important concern for industry is the speed with which mining leases are granted and the resulting backlog of applications. The case will have virtually no impact on the granting of mining leases by State governments or the right to negotiate process. Nor will the decision impact on the Statewide ILUA that the Queensland Government continues to negotiate.

.... It is obvious that comparing the various rights in a mining lease with the various types of native title rights claimed will be a complex task, and will not noticeably speed up the process of resolving native title claims. In summary, enterprises who can successfully negotiate agreements with native title claimants may well find that they can develop their projects faster and more efficiently than those who choose to wait for further clarification from the courts.'

### **Tent Embassy**

In October 2002 the Aboriginal Tent Embassy in front of the Old Parliament House in Canberra, established on Australia Day 1972 and made a permanent feature in 1992, was dismantled. Scuffles broke out when the Ngunnawal elders put out the ceremonial fire and tore down the tents and flimsy huts.

Ngunnawal spokeswoman Matilda House said her people wanted the site cleaned up and accused the camp's floating population of showing disrespect to the traditional owners.

'It's lost its way because of the people who've been coming here all the time,' she said.

'It's up to us, the traditional owners of this country, to make sure we bring it back into the perspective of what is was in the first place.'



## ***SAFETY AND HEALTH***

### **Before 1974**

In keeping with the principle of decentralisation, employee safety and health were the responsibility of the operating management. There were no specific appointments as Safety Officers; the shift bosses, foremen, and managers were responsible for safe working conditions and practices. There was a Ventilation Officer at every operation who checked the ventilation arrangements, took dust samples and prescribed corrective actions if necessary. Employees were periodically checked by the Mines Department laboratory for silicosis. The Registered Mine Manager was legally responsible for all aspects of the operation, including health and safety matters. There was a degree of competition between the operations regarding their safety record. All operations had 'Safety Boards' showing current days since last lost time injury and fatality - some had red and green lights to highlight the current status. The Operations Office in Kalgoorlie and subsequently in Perth received accident reports and convened meetings of managers to review trends and discuss safety issues. Fatalities were reported to Melbourne Office promptly in accordance with Standing Instructions and periodic reports were prepared.

### **1974 to 1989**

This practice continued until the late 1980s.

When Paul O'Neill became the Chairman and Chief Executive of Alcoa US in 1987, one of the changes he introduced was to highlight safety and health issues. He insisted on a completely accident free workplace. At every meeting of managers, and at Board and Annual General meetings, safety was the first item on the agenda: those attending were advised what to do in case an evacuation was necessary during the meeting. When evaluating managers and deciding on promotions, their safety performance was an important consideration. The company's interest in employees' health and safety was extended from the workplace to their private lives and families.

This safety and health consciousness was, of course, also transmitted to Alcoa of Australia's operations. WMC became well aware of it through the membership of H M (Hugh) Morgan and myself on the Alcoa of Australia Board, and my membership of the Aluminum Company of America Board. Hugh Morgan as Managing Director started to bring about improved safety consciousness in WMC.

### **1989 to 1995**

A WMC corporate occupational health and safety (OH&S) group was established following the tragedy at the EMU Mine in 1989 when six employees, including the Mine Manager, drowned when stormwater flooded underground workings below the bottom of an opencut. In addition, there were three other fatalities during 1988-89. A safety review recommended increased emphasis on safety training, on workplace safety meetings between supervisors and employees, improved data collection and review, and improved health and safety auditing. Specific targets were set for all operations.

According to the Safety and Health Report issued to shareholders in 2000 (the first such report), little progress was made in introducing uniform policies or systems during the five years after 1989. This did not prevent a major reduction in the frequency of lost time injuries from 23 per million hours worked in 1990 to 13 in 1995. The frequency of 23 in 1990 was already a great improvement; it had been 119 in 1977-78, 76 in 1982-83 and 27 in 1987-88.

The WMC safety performance from 1990 to 1995 improved in parallel with the metalliferous mining sector in Australia, where the frequency was reduced from 29 to 16 over the same period. It appears that the whole industry had become more safety conscious, although WMC performance was substantially

better than the average.

In addition to lost time injuries (LTIs), WMC was also monitoring and improving its record of lost time and medically treated (LT+MTs).

### **The Health and Safety Industry**

Inevitably, and in keeping with developments in the community generally, the concern with health and safety gave rise to a very considerable new industry, both departments within corporations and outside advisers and consultants. Governments and the legal profession naturally showed increased interest.

A typical prescription by a consultant was:

- Risk assessment
- Draw up risk register
- Prioritise the risks
- Set goals and action plans
- Set Key Performance Indicators
- Monitor performance

The important ingredients for improvement were listed as:

- Commitment by management
- Communication
- Rewards
- Punishment
- Visibility
- Training
- Critical Task Analysis (CTA)
- Hazard Reporting
- Reminders
- Job Safety Observations (JSOs)

### **The Nickel Industry**

Mainly at the instigation of various non-government organisations, there was great pressure on governments and world organisations to impose regulations and even ban the use of nickel in certain applications.

This was joined by the European Union, mainly through the influence of Scandinavian countries which, for some reason, were in the forefront of environmental extremism. A summary of European regulatory developments regarding nickel in 1997 is enclosed as an example.

In an attempt to bring reality into the situation the world nickel industry established Nickel Producers Environmental Research Association (NIPERA), based in Toronto, to commission research on relevant matters (refer attachment *European Developments in Nickel*). WMC was an active member of NIPERA and was represented for a long time by Ned Williams who was, for two periods, the Chairman.

Another world industry organisation, dealing with more general issues, was the Nickel Producers Development Institute at which Ned also represented WMC, also serving a period as Chairman.

## OH&S in WMC

A corporate department, headed by M (Mark) Sonter as Group Manager - Occupational Health and Safety was established in March 1990. (Mark had been the Radiation and Safety Superintendent at Olympic Dam since 1981.) K R (Keith) Hulley took a major role in establishing the Occupational Health and Safety organisation throughout WMC after he joined the Company in 1991.

A presentation to the Board in May 1994 listed the 'Vision' for WMC Corporate OH&S Department as:

- \* eliminate all fatalities and permanent disabilities
- \* minimise the incidence of all injuries (not just lost time injuries)
- \* minimise the consequences of any injuries
- \* achieve the highest level of professionalism of OH&S personnel, recognised as industry leaders
- \* develop management systems that automatically self-check and strengthen themselves

The number employed on OH&S matters throughout WMC in 1994 was 125 people, ranging from 46 at Olympic Dam and 30 at Kambalda Nickel Operations to nil at Westmin Talc. The operating cost was \$16 million per annum.

The 'major management OH&S initiatives' were reported as:

- \* improvement of initial and ongoing safety training programmes
- \* increased and more formalised management-worker safety consultation
- \* training of supervisors and OH&S representatives
- \* computerisation and analysis of accident statistics
- \* improved inspection and audit programmes
- \* emergency response planning and drills
- \* increased workplace contamination monitoring and dose calculation
- \* improved chemicals control
- \* improved contractor safety auditing
- \* design OH&S reviews

The growing importance of legal issues is well shown in the presentation. There were three parts:

1. The Prescriptive (Mines Regulation Act, Mines and Works Inspection Act)
2. The 'Duty of Care' approach (OHS & W Act)
3. The 'Approved Codes of Practice' and the reversal of the onus of proof in case of accidents.

A good example of the problems was given under the 'Duty of Care' heading:

The Employer **needs** to be able to demonstrate that he is complying with the requirement to provide a "Duty of Care" to employees

- How does one do it?
- How can you make sure you're legal"
- What **is** reasonably achievable?

What management systems and documentary mechanisms can be put in place to

- (a) Ensure all foreseeable hazards are identified and responded to?

- (b) Provide evidence that "duty of care" is being complied with?
- (c) Ensure all actions "reasonable practicable" are being taken?

Is it **possible to prove** compliance?'

S (Stephen) Klyen was appointed Group Manager Occupational Health and Safety in June 1995. Stephen relocated his department from Melbourne to Perth 'to better service the needs of the majority of line management and employee/contractors'. In a presentation to the Board in June 1996 he commented that 'although a great deal of work had already been undertaken and positive improvement achieved .... there was not a systematic approach to safety and .... business units were looking at different options'. He explained at length how this was to be corrected. Auditing was to be an important element in this. The S A F E - Safety Auditing For Excellence - using the International Safety Rating System audited 20 elements of a site's management systems against a standard set of 600 questions covering such topics as Management Leadership, Training, Job Analysis, Rules and Permits, Accident analysis, Communications, and even Off The Job Safety. Twenty WMC staff were being trained as auditors to accompany independent auditors.

### **Elimination of Fatalities Task Force**

In 1995 the International Safety Rating System, a packaged audit system, was introduced at all sites. The lost time accident frequency continued to improve, but in the two calendar years 1995 and 1996 there were eight fatalities. This led to the formation of the Elimination of Fatalities Task Force which was given a blank cheque to identify major hazards and develop standards to control these. Implementation began in 1997 and was continuing at April 1999.

In 1997 the Safety, Training and Observation Program, already in use at some locations, was extended to all sites.

### **Executive Health**

In 1995 it was reported that, compared with BHP, Newcrest, Alcoa, Mobil, CRA and Mt Isa, WMC had the most comprehensive Executive Health program in the industry. The WMC program covered the top 60 executives. Tests were conducted every two years for people under 50 years of age and annually for people over 50, including for bowel and prostate cancer. Consideration was given to extending it to the top 200 employees.

### **Employee Welfare**

In June 1996 the Board was advised that 'Employee welfare is being addressed by the Employee Assistance program .... to assist anyone with any sort of personal problem on a confidential basis. This program is accessed initially by phone and provides counselling on a range of issues from family, financial, stress and health concerns'.

### **Fitness For Work**

In 1997 a program focussing on alcohol and drug issues was initiated a matter of safety at operating sites. According to the 2000 Safety and Health Report to shareholders,

'Broader issues soon emerged, including physical and emotional well-being, stress and fatigue. When finally endorsed, the program included reference to all of these issues and an intensive education and awareness drive. Team-fit activities are now a feature at some of our workplaces. We also run health programs such as QUIT, skin cancer awareness and inoculations for winter

flu ..... We provide an independent 24 hour counselling service to all our employees, and their families.'

I did, and still have, concerns about the Company intruding into employees' private lives. A part of this is probably due to my experiences under the Soviet system where the State owned everything and directed everything; people were in effect regarded as belonging to the State. The great advantage of a free country is that people are free to make their own decisions and run their own lives, including making their own mistakes. The Company is entitled to ensure that people are not drunk, drugged, or ill while at work, but I do not think that the Company should behave as if it owned their employees.

At the same time I understand that people today think and behave differently and that perhaps they enjoy Big Brother watching over them. If so, one of the privileges of a member of a free society is that they are entitled to give up some of their freedoms. It would not suit me, but then I am not being asked to do so.

I also cannot get used to people depending on 'counselling' whenever something unusual happens. It is difficult for someone who had to deal at close quarters with World War II and its aftermath to understand that people today are much less self-reliant and that often their first reaction is to lean on somebody else (and to blame somebody else when something goes wrong).

## **External Review**

In 1998 an External Safety Review was commissioned, led by Professor Dennis Else, Professor of Occupational Health and Safety at the University of Ballarat. One of my last acts as Chairman was to meet Professor Else and the incoming WMC Chairman, Ian Burgess, to discuss how the conclusions should be presented to the Board.

After visiting 12 sites and interviewing 700 people, the Review identified issues which impaired WMC's safety performance as:

- conflict between production pressures and safety requirements
- high people turnover
- lack of clear guidelines on contractor management
- remuneration structures that may increase risk taking
- deficiencies in risk management at some operations

All review recommendations were to be implemented.

## **Injuries Frequency 1995-1999**

The lost time injuries frequency of WMC decreased from 13 in 1995 to 4.3 in 1998 and 3 in 1999, a very impressive performance. The accident frequency in the Australian metalliferous mining sector in the same period decreased from 16 to 8, paralleling the improvement at WMC but WMC increasing its lead compared with the average for the industry.

## **Fatalities**

While the general safety record unquestionably improved greatly, fatalities continued to be a problem.

From its establishment of WMC in 1933 to the end of 1998 there were 175 fatalities, of which 28 occurred after January 1990 when the new safety consciousness era can be said to have begun. The average for the first 57 years was therefore 2.58 per year which included the extraordinary year 1988 -89 with 11 fatalities. The average for the last nine years was considerably higher at 3.11 per year.

Such comparisons are, of course, not straightforward because of the changes in the numbers and the kind of people employed on the one hand and the improvements in technology on the other hand. A miner operating a computerised drilling jumbo under rockbolted backs is in a much safer situation compared with the old time miner working in bad ground. On the other hand, the jumbo operator of today is unlikely to be as street-smart as the old-timer with many years of experience of looking after himself. The addition of refining and smelting and opencut mining to underground mining and ore dressing further changed the nature of the Company's activities. Also, the later numbers include fatalities outside working hours, while earlier statistics did not. However, with all these qualifications, it is surprising that the great success in reducing lost time accidents was not accompanied by a reduction in the fatality rate.

### **Subsequent Events**

There was a significant improvement in fatalities in 1999 (one) and 2000 (nil). There were, however, two in 2001 and two in 2002.



## ***ENVIRONMENTAL CARE***

### **Pre-1974**

Care of the environment did not become an issue until the late 1960s and early 1970s. Its emergence in Australia followed the beginnings of the environmental movement overseas and was given an additional impetus by the great minerals developments of the late 1960s which created the impression that the prosperity of the Australian community was ensured and that the only question now was how to distribute the wealth.

This attitude was reinforced by the Australian dollar appreciating strongly, the 'Gregory Thesis' which argued that the strong dollar would react adversely against sections of the Australian economy and the election of the Whitlam Government in December 1972. One of his Ministers has been reported many years later as saying: 'Gough had explained to us that modern society had solved all problems of wealth creation'.

During the development of Kambalda in the late 1960s strong emphasis was placed on preserving the natural bush environment, particularly in the two townships, as described in Book Two, *THE SHINE OF NICKEL, Kambalda: Where It Started*. This was just ahead of environmental care becoming a public issue, and drew praise from experts and visitors. The corporate office had no involvement in this; environmental decisions were, in keeping with the decentralised organisation, the responsibility of individual managers. The Resident Manager, J B (John) Oliver, was the initiator and moving force at Kambalda. In Perth Office L C (later Sir Laurence) Brodie-Hall took great interest in environmental aspects of Kambalda, but this was because of his personal interest in gardening and landscaping and not because of Company policy.

In fact, at Central Norseman at about that time the Resident Manager, R (Bob) Sainsbury decided that pumping tailings to the top of the high residue dump, which had accumulated since 1935, required too much electricity and decided to establish a new tailings disposal facility. He chose a large flat area right next to company housing (including his own) and simply let the slurry run out without any constraints. This was not only unsightly and the area affected unnecessarily large, but would in due course create a dust problem to the people in the houses.

It was within his authority to do this and he did not discuss it with anyone beforehand. By the time I saw it on a visit to Norseman it was too late to do anything about it. It was not a good example of environmental care.

### **Post-1974**

The discovery of uranium at Yeelirrie in 1972 and at Olympic Dam in 1975 directed the attention of anti-uranium protesters to WMC (see *THE GLOW OF URANIUM* and *THE BURNISH OF COPPER*). Also, environmental extremists, who soon appeared on the scene, targeted the minerals industry generally for heavy criticism.

In the 1970s WMC people were active in environmental activities. Brodie-Hall was on the WA Environmental Protection Council. G M (Gilbert) Ralph was on the WA Air Pollution Control Council (APCC) and a member of the National Environmental Committee of the Institution of Engineers Australia. C J D (Ned) Williams followed Gilbert on the APCC.

Brodie also used his position as President of the WA Chamber of Mines to speak out on the 'environment'. WMC published a booklet 'Mining and the Environment' in the 1970s.

Governments reacted to the pressures. In 1974 the *Environmental Protection Act* was introduced requiring extensive Environmental Impact Statements for all new developments, to be available for public comment before approval.

From mid 1970s onwards the Company was increasingly involved in environmental issues. Apart from Olympic Dam, WMC's environmental consciousness was also encouraged by events at Alcoa of Australia whose bauxite mining in the Darling Range, necessitating the removal of the unique jarrah forest, was strenuously opposed by environmental activists. Reforestation of the mined areas had commenced, against considerable resistance within Alcoa in Pittsburgh and criticism from minerals industry colleagues, in the late 1960s. In 1981 the environmentalist opponents even applied to a Court in Pittsburgh, Pennsylvania, to prohibit bauxite mining in Western Australia. The US Court decided that what happened in Australia was for Australians to decide.

WMC's Annual Report in 1989 included for the first time a section on The Environment, informing shareholders that 'Care is taken to avoid unnecessary disturbance at mine and plant sites. Progressive rehabilitation and restoration of disturbed areas is carried out as appropriate'. In the 1992 Annual Report WMC's policy was described as to:

- minimise the effect of its activities on the environment
- rehabilitate affected areas to the maximum extent possible
- protect the health of employees and citizens in the communities concerned
- be a leader in environmental standards.

In 1993 it was reported that WMC had 'implemented an Environmental Management Plan, incorporating a formal management structure and an operational system based on the corporate environment policy'. Environmental audits were carried out at many locations.

In 1995 a new environmental policy was adopted as follows:

The Company is committed to achieving compatibility between economic development and the maintenance of the environment. It therefore seeks to ensure that, throughout all phases of its activities, WMC personnel and contractors give proper consideration to the care of the flora, fauna, air, land and water, and to the community health and heritage which may be affected by those activities. To fulfil this commitment, the Company will observe all environmental laws and, consistent with the principles of sustainable development will:

- Progressively establish and maintain company-wide environmental standards for our operations throughout the world.
- Integrate environmental factors into planning and operating decisions and processes.
- Assess the potential environmental effects of our activities and regularly monitor and audit our environmental performance.
- Continually improve our environmental performance, including reducing the effect of emissions, developing opportunities for recycling, and more efficiently using energy, water and other resources.
- Rehabilitate the environment affected by our activities.
- Conserve important populations of flora and fauna that may be affected by our activities.
- Promote environmental awareness among Company personnel and contractors to increase understanding of environmental matters.'

As a major environmental investment, a \$145 million acid plant was approved at the Kalgoorlie Nickel Smelter.

The first separate Environment Progress Report (for the 1994-95 year) was issued in May 1996, largely on the instigation of C B (Chris) Leptos, General Manager - Corporate Development. It was sent to all employees and shareholders and made generally available. A total of 110,000 copies were printed. The Report gave a detailed account of the WMC environmental management system, water and energy consumption, and carbon dioxide and sulphur dioxide emissions. Non-compliance incidents were graded into five categories and fully reported.

There had been considerable internal concern, especially by lawyers, about making all this information public, but the reaction was generally favourable and no disadvantages resulted.

Separate Environment Progress reports were published annually thereafter. Targets for 'eco-efficiency' - reduction of power and water consumption and carbon dioxide and sulphur dioxide emissions per tonne - were established and reported against. The performance of individual operations began to be reported.

In a presentation to the Board in June 1996 Chris Leptos summarised the situation as follows:

- The minerals industry was faced with a complex public policy agenda, due to poor issues management by the industry and the depth of community sentiment.
- WMC was contributing through domestic and international industry associations to campaigns against unreasonable restraint on trade and unnecessary regulation.
- Such issues included the greenhouse challenge, the Basel Convention against transport of 'hazardous materials, and threats to 'heavy metals'.
- The task was made more difficult because of particular incidents in developing countries publicised by high profile activist groups and lawyers, such as:
  - landowners action against BHP on tailings and community issues at OK Tedi in PNG
  - tailings spillage at Marcopper in the Philippines
  - tailings disposal and toxicity issue at Porgera in PNG
  - tailings disposal proposal for Lihir Gold in PNG
  - tailings and community relations problems at Freeport in Indonesia
  - community relations and environmental issues at Shell in Nigeria

In Australia, a highly publicised incident of birds dying from residual cyanide solution at a North Limited tailings dam at Northparkes gold and copper mine in New South Wales led to banning a proposed gold mine at Lake Cowal. NSW Premier Bob Carr said: 'No-one could guarantee that if this mine went ahead that there would not be an ever present threat to the environment'.

The first non-government organisation (NGO) in Australia focused on the minerals sector, The Mineral Policy Institute, had been established, financed by a number of charitable and environmental organisations and the Uniting Church and headed by a former Greenpeace campaigner. It established links with international NGOs through the internet.

WMC employed in May 1996 forty-eight people as environment officers, including 32 qualified professionals.

## Environmental Issues

A number of environmental issues became popular during the 1990s, each of which requires a book to explain in detail. Here can be only a brief mention.

A major campaign to ban 'ecotoxic' heavy metals started, mainly in Europe (particularly Scandinavia),

but also in the United States.

*The Natural Step* campaign, initiated in Sweden in 1989, drafted a document 'to define a set of system conditions for a sustainable society which are based on the laws of thermodynamics and natural cycles'. It was supported by the King of Sweden and a number of corporations and spread to the United States in 1995.

Neither of these campaigns took hold in Australia.

Acid drainage of waste rock and acid rain were relatively minor issues in Australia.

Global warming - the 'greenhouse' issue - became a major study by the UN-sponsored International Panel for Climate Change (IPCC) which issued a series of major reports, progressively expressing more confidence in the thesis that the global warming detected since the mid-1970s had been caused mainly by human activities, such as increasing emissions of carbon dioxide from fossil fuels. The *Kyoto Protocol* in 1997 proposed an international regime to limit carbon dioxide emissions by developed countries. As emissions by developing countries, rapidly overtaking those to be limited by the *Kyoto Protocol*, were not subject to restrictions, the proposal could not make an appreciable difference to greenhouse gas concentrations and appeared mainly an ideological and perhaps political effort. The main proponents, the European Union (EU), would not suffer because the starting point for measuring emissions was 1990. The conversion from coal to natural gas in Britain, to nuclear energy in France, and the shutting down of the brown coal power stations in East Germany had all occurred after that date and in effect gave the EU a free ride.

In 1996 WMC, along with 30 other companies, in a response coordinated by the Business Council and Minerals Council of Australia, entered into voluntary agreement with the Commonwealth Government to reduce greenhouse gas emissions (per unit of production). Hugh Morgan noted at the time that

This is an example of how an early and positive response to an issue (where the science is still relatively ambiguous) can prevent inappropriate regulation. The issue we face is not whether we think government action is justified, but rather the avoidance of inappropriate imposts or regulation demanding immediate response and imposing huge costs.'

## **Subsequent Events**

In 1999 the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) was introduced into the Federal Parliament. It became law on 16 July 2000.

The Act triggers Commonwealth environmental assessment and approval whenever an action has, or is likely to have, a significant impact on a matter of national environmental significance (NES matters). These are defined as:

- World heritage properties
- Ramsar wetlands of international importance
- Listed threatened species and communities
- Migratory species protected under international agreements
- Nuclear actions (including uranium mining), and
- Commonwealth marine environment

A referral mechanism is provided for seeking the advice of the Commonwealth Minister for the Environment about whether a particular action comes under the Act. A referral decision is required to be made within 20 business days.

As of October 2003 USA and Australia had declined to ratify the *Kyoto Protocol* because it would cause a major economic disruption in both countries, without offsetting benefits. However, both in USA and Australia, governments in partnership with industry pursued economically acceptable actions to reduce greenhouse gas emissions.

### **Australian Minerals Industry's Response**

The Australian Minerals Council adopted a Code for Environmental Management, to which WMC became a signatory. The Code covered:

- Sustainable Development
- Continual Improvement
- Risk Management
- Environmentally Responsible culture
- Rehabilitation and Decommissioning
- Integrated Environmental Management
- Community Partnership
- Performance Targets
- Reporting

### **The World Minerals Industry's Response**

The world minerals industry's response to the broad issue of sustainable development is described in *Global Issues*.

### **Sustainability Index**

WMC was in 2002 included for the third consecutive year in the Dow Jones Sustainability Index and was rated as the sustainability leader in the Basic Materials sector amongst more than 300 companies. WMC was the only Australian company in the top 50 rated companies.



## **TECHNOLOGY**

### **Before 1974**

One of the reasons for founding Western Mining Corporation in 1933 was the belief that application of the best available exploration technology would help discover new gold deposits. Engagement of eminent American geologists from Harvard University and the then very unusual aerial survey of the Eastern Goldfields of Western Australia were early expressions of this belief.

The underlaying philosophy was that WMC's future depended on success in exploration. It intended to be a world leader in this area. The Company saw itself as in the forefront of using the best available technology in other areas, but not as a developer of new technology.

R (Roy) Woodall was a strong believer in excellence, including technological excellence, and pursued this within Exploration Division. L C (Laurence) Brodie-Hall who was an enthusiastic supporter of science and technology, supported Roy and encouraged the application of new methods in mining and metallurgy. However, in keeping with the policy of having minimal corporate staff and authority throughout the Company being decentralised as much as possible in Managers (called Superintendents) of operations, technological improvements and application of new methods were left to the initiative of the Superintendents or their operating departments. It was their responsibility to assess the need for innovation and research and arrange it, either internally or with outside bodies as appropriate.

There were some exceptions. The Mt Charlotte Gold Mine was brought into operation in 1963 as a large scale mechanised mining operation, using diesel-powered equipment underground. This was the first such application in Western Australia, and its introduction required changes in the Mines Regulation Act. Brodie-Hall, with the aid of J B (John) Oliver, was instrumental in getting the agreement of the government and the unions to these changes.

Sir Lindesay Clark and Brodie-Hall, then the General Superintendent of WMC in Western Australia, the senior officer of the Company in that State, were the main movers in deciding to bring Mt Charlotte into operation and thus introducing this technology to the WMC group, very much against the wishes of the General Superintendent of the operating company, Gold Mines of Kalgoorlie, of which the Mt Charlotte operation was a part. The Superintendent thought that the grade was too low and that the project would be an economic failure.

Another corporate initiative was the introduction of computing. In 1969 WMC was the first in the minerals industry in Western Australia and the second in Australia to acquire a computer. An IBM 1130 unit was installed in Perth Office and took up a large proportion of the ground floor. Initially intended for technical applications, a mining engineer with a mathematical bent, K E (Ken) Denham, was put in charge. It was virtually continually upgraded and was subsequently used more and more in accounting and administrative applications. Technical computing was increasingly handled by more powerful outside computers.

When Maurice Brown submitted his report on WMC in 1972, he commented on the policy of technological decisions being left to line managers and wondered 'whether there is really the time and single-mindedness for this to happen'. He suggested a small group of people be made responsible for overseeing research throughout the Company.

The reluctance to have central direction of research because of the policy to give the operating managers a great deal of autonomy was reinforced by an unfortunate experience early in the establishment of the nickel operations.

W M (Bill) Morgan, visiting Sherritt Gordon when a WMC nickel refinery was being contemplated, was impressed by their research laboratory in Fort Saskatchewan. When it was decided to build a Sherritt Gordon type refinery at Kwinana, he felt that WMC should have a similar research unit and engaged a Sherritt research metallurgist, Basil Meddings, to establish and head this. Unfortunately, Bill did not give any detailed thought to how this unit would function or what it should do, and overlooked telling anybody in WMC about it.

When Meddings arrived in Australia, this was a complete surprise to everyone. I tried my best to sort it out, but failed. Basil's perceptions were that he would be the Director of a major new metallurgical research laboratory while the WMC view was that our immediate priority was to establish and commission the refinery, that for some time any necessary research input should be contracted from Sherritt, and that we would not be able to assess for some years what, if any, research should or could be usefully done in house.

After some six months or so a formula was found for Basil to return to Sherritt. The episode, however, strengthened the view against central direction of research.

### **Technology 1974-1995**

During this period the previous policy continued.

As a member of Australian Mineral Industries Research Association (AMIRA) WMC participated in a number of research projects together with other companies, and in some cases initiated the work. Some research work was initiated both inside WMC and by outside bodies (Universities, CSIRO, etc), by WMC Chief Metallurgists Colin Kleemann and, later, Ron Blanks.

A metallurgical research laboratory was built behind the WMC Belmont Office in mid-1960s. The initial justification for the laboratory was to handle the iron ore work related to the Koolanooka Operation. Subsequently work on nickel and other minerals was carried out at Belmont.

Exploration Division was the most active in pursuing new technology, including endeavours to be the leader in new technological developments. C J D (Ned) Williams, the first Manager of Kalgoorlie Nickel Smelter from its establishment until 1979, introduced a number of design and operational innovations which were a substantial advance on the Outokumpu flash smelting technology. Subsequently, as Deputy General Manager of the Nickel Division, Ned encouraged metallurgical innovation throughout the Division. He also had an input as an adviser into the establishment of the smelter at Olympic Dam, although his attempts to include further innovations there were frustrated because of the conservative attitude of the line management.

The general philosophy was that the emphasis should be on improving and adopting existing technology. Development of new technology was seen to be outside the scope of the Company, WMC being a 'fast follower' - quick to take advantage of new technology developed by others, and purchased under licence if necessary. Research continued to be carried out as decided by the operating managers, either internally or in partnership or by contracting with outside bodies.

### **Central Technology Group**

In the early 1990s a technology strategy forum was held in Perth and A D Little Consulting Group was engaged to undertake a comprehensive technology review within WMC. In 1995, following the establishment of Business Units, K R (Keith) Hulley formed Group Projects and Technology in Melbourne and appointed I R (Ian) Lawrence as Group Technology Manager, to follow up the *Little* study. Ian also had the oversight of WMC venture capital activities.



The corporate technology role was initially not well accepted by the business units.

After Keith Hulley left WMC in 1996, Group Projects and Technology was split into Group Projects (responsible to R P [Ross] McCann) and Group Technology (responsible to A G [Andrew] Michelmore).

Ian Lawrence left WMC in 1997. His achievements have been listed as:

- establishment of a Technology Steering Committee (first discussed in March 1995)
- assessing WMC's relative technological position
- reducing 600 identified technological projects to 60
- developing a methodology for assessing the risk adjusted NPV of a project and introducing value chain analysis
- involving business units in technology strategy development
- formulating the policy of no or limited internal R&D laboratories (this would have been actually confirmation of existing policy)
- beginning the development of a Technology Plan

Ian was followed by Dr R (Rob) La Nauze, previously Chief of CSIRO Division of Minerals as Group Manager (later General Manager) Technology. Group Projects and Group Technology were again brought under one manager, the Executive General Manager Projects (Ross McCann).

Rob La Nauze brought with him substantial experience from the research providers' perspective and this, coupled with the gradual breaking down of business unit silos, provided the fillip for technology. The following is based on his notes:

Rob La Nauze commenced to build a portfolio of projects which were largely out-sourced to CSIRO and Universities, often through the industry's research broker, AMIRA. During this period:

- the Company moved progressively from 'fast follower' to 'fast innovative user' to 'first-to-be-first' in areas of critical importance.
- a strong cross-company Technology Lead Team was established, involving representatives of Business Units and Business Development group.
- An annual Technology Plan was instituted and a quarterly newsletter commenced.
- Government initiatives in relation to concessional taxation treatment for R&D projects received greater attention and rigour, though this was never the driving force for undertaking developmental work.

Amongst the projects pursued were:

- A project under the direction of Ivor Bryan started on developing laser guided LHDs for remote bogging and tramming. A contract was let to a small technical company, Lateral Dynamics, and trials commenced in Port Melbourne in 1998. Subsequent development including inputs from developments by CSIRO, have led to the commercial exploitation of this technology from which WMC will receive royalties.

- A detailed evaluation was undertaken of the proposed WA laterite processes. Much debate on technical and economic aspects of these processes resulted in WMC holding back from entering these projects - a decision which has so far held good.
- Work was undertaken to support the Phosphate Hill fertiliser project involving pilot plant trials in Florida, USA, to define process parameters and product properties to allow modelling of the granulation process.
- Ore sorting activities, which had previously been evaluated for sorting talc, phosphate rock and nickel ores, were re-invigorated. A demonstration plant was built and successfully tested on nickel mullock from the Kambalda region. The facility was subsequently moved to LNO in 2001 where it has been used to sort high-talc nickel ores.

By 2001, Group Technology had an established project portfolio covering exploration equipment development, mining technologies and process developments. It was also tackling sustainability issues associated with energy and water usage. Independent evaluations valued the potential of these to return \$1.2 billion to the Company. Similar figures were obtained from the portfolio of projects managed by the Nickel Division within the Mineral Processing Group (MPG) at WMC's Belmont laboratories.

Nickel, through the drive of its technical manager, Rick Watsford, had recognised the need for innovative approach to nickel recovery improvements at MKO and LNO. Key recruitments, based around the engagement of Geoff Senior from CSIRO, developed novel approaches which delivered significant immediate improvements. Detailed studies of the processing response of the nickel ores at our Mt Keith operation led to significant recovery and concentrate quality improvements. From 1999 to 2002, recovery was raised by 9.5%, from 60% to 69.5% and the dilution of nickel concentrates by magnesium minerals was halved, greatly improving the smelting behaviour of the concentrates. A parallel program of nickel recovery improvements was implemented at the Leinster operation. Several of these processes were novel and have been patented.

#### Technical Delivery

A decision was taken in April 2002 to strengthen the delivery of technical solutions to operations through the formation of a new company-wide technical group brought about by merging Group Technology with the MPG. The Technical Delivery Group allowed WMC to share value across the total business in an integrated and efficient way. By bringing an increased focus on technical outcomes, WMC recognised the importance of the application of technology to the future of our business. An outcome of the new structure has been additional assistance to operations on key mineral processing, smelting and gas handling equipment. In August 2002, a comprehensive WMC technical plan was presented to the Executive and forwarded to the Board. This outlined the potential value of \$4.8 billion in the projects, covering in an integrated manner both the short term and high risk activities.

## Technical Developments in WMC (compiled by G M Ralph)

Aerial Survey of the Eastern Goldfields in 1933.

Geophysical survey at the Emu Mine in the mid-1930s.

Hydraulic fill was used at Triton Gold Mines in 1941.

Gig rising was initiated at Great Western's Bullfinch Mine in the 1950s. (See Sir Laurence Brodie-Hall's memoirs *Brodie*.)

Large scale opencut gold mining using a Rapier 430, 2½ cu yd electric shovel and four Foden 12 ton capacity tip trucks was in operation by about 1952.

Deep diamond drilling by Kalgoorlie Southern Gold Mine between 1951 and 1968. (Hole SE13 reached 2670 m - the deepest in Australia.)

The 'Clappison Wedge' invented by Reg Clappison greatly improved the ability to deflect and control the direction of diamond drill holes in 1950s.

A 100 ton capacity Road Train consisting of a Mack prime-mover, semi-trailer and a trailer, was built at Bullfinch in 1956 to cart ore from Nevorla Mine 50 miles to the Bullfinch Mill.

An Eimco loader was adapted to work in a 45 degree underlay shaft at Bullfinch in about 1958. It was L C (later Sir Laurence) Brodie-Hall's idea but the design was done by Ken Denham and it was modified at Great Western in Bernie Smith's workshop.

Early application of Induced Polarisation techniques at Moonta in 1962.

Percy Beacher electronic wedge orientation device for diamond drilling in mid-1960s.

Ted McInerney hydraulic wedge orientation device for diamond drilling in mid-1960s.

Sanford Day diesel powered LHD units were first introduced into WA at Gold Mines of Kalgoorlie's Mt Charlotte Mine in the large cut and fill stopes in 1964. Brodie-Hall convinced the WA Government to change the Mining Act in 1964 to allow the use of diesel equipment underground. Trackless mining was subsequently employed throughout the Group.

An automatic skip loading station was in use at the Reward Shaft at Mt Charlotte when it first began operating in 1964.

John Oliver introduced stringent controls on clearing of native flora at Kalbalda and set environmental standards at KNO in 1966

Decline developments began in the late 1960s with the internal decline at Mt Charlotte. I think the first Decline access from the surface was the Otter Decline at Kalbalda which began in June 1969.

Automation of X-Ray Diffraction at ExDiv in 1969.

Colin Kleemann introduced NIRO Spray driers (of the type previously used to powder milk) to dry nickel concentrates at KNO in 1970.

Nickel flotation with talc depressant and other ore dressing improvements at KNO in 1970s

Semi-autogenous and autogenous grinding at KNO in 1970s.

Identification of nickel gossan textures by Richard Mazzuchelli in 1970s.

Introduction of Russian TEM techniques into Australia and subsequent improvements to result in SIROTEM in 1970s (in association with CSIRO).

Slim hole stratigraphic drilling for oil in the onshore Canning Basin in WA in 1970s.

Raise Drilling was first used at Kambalda in March 1970.

Reclamation from sewage effluent at KNO introduced in 1970.

Innovative water conservation and recovery measures by Bert Barnes at Kambalda in mid-1970s.

Artificial aquifer technique at KNS in late 1970s.

Improvements by Ned Williams to Outokumpu flash smelting furnace to incorporate slag cleaning within the flash furnace in 1978.

Development of methods of replacing cooling elements on the flash furnace at KNS without interruption to production.

Discovery of the Olympic Dam orebody overlain with 350 m sediments by multi-disciplinary team in 1975.

Hydraulic back-hoes were used for selective mining in WMC Group opencut operations from about 1982, among others at Great Boulder, Central Norseman, Theil Well, Lady Bountiful, Victory and Defiance.

WMC's first CIP gold treatment plant was at Kambalda. It had a capacity of 500,000 tpa and was commissioned in October 1981 to treat ore from the Victory Mine. KNO metallurgists devised an improved screen which improved the process. Others, mostly CIL plants, followed at Hill 50, St Ives, Agnew, Norseman, Windarra, Stawell, Goodall etc.

The Cassidy Shaft at Mt Charlotte was the first in WA to be fitted with a ground mounted Koepe friction winder in 1984.

Diamond drilling on Lake Cowan became practicable in 1991 when Central Norseman mounted a drill rig on a Hagglunds all-terrain vehicle leading to the discovery of the Harlequin deposit.

Artificial pillars using gypsum from Lake Cowan were developed at Central Norseman in 1987 to allow the recovery of the original pillars in some worked-out high grade areas of the Crown Reef. Hydraulic sluicing was employed to clean out old stopes.

Development of a complex extraction process for Cu-U-Ag ore at Olympic Dam to refined product in the early 1980s.

I remember the surveyors setting up laser beams in the drives at Norseman in 1988 to provide a working line for the development miners.

Introduction of horizontal drilling in offshore oil production wells in WA in 1986.

Introduction of Alimak rising at Kambalda in 1990s.

In 1993 WMC experimented with a Voest-Alpine Roadheader at the Otter-Juan and Foster mines.

### **Subsequent Events**

1999-2002	Novel nickel recovery processes introduced to MKO raising recovery by 9.5%
1997-2001	Demonstration, then commercial operation of dry ore sorting for mullock and high talc nickel ores
1998-2002	Demonstration at LNO and ODO of the fully autonomous underground LHD
2002	Application of mm-wave radar for stope and ore pass monitoring

In March 2002 C (Charles) McHugh was working on a history of WMC mining technology. When available, this should cover this particular area of application of technology in WMC in much greater detail.



## ***VENTURE CAPITAL***

### **BACKGROUND**

In April 1987 the WMC Board discussed a recommendation by H M (Hugh) Morgan to invest initially US\$8 million over three years in two venture capital management funds in USA. The reasons for considering such an investment were:

- to provide a 'window' on promising new technologies of interest to WMC
- to transfer some of these promising ideas into WMC
- to provide an opportunity for WMC staff to gain innovative commercial skills.

WMC was already involved in technical developments and new technologies through a number of other organisations and alliances such as AMIRA, Universities, on-site and outside research programs, equipment suppliers, etc, but it was thought that participation in a venture capital fund would uniquely add to these. It was expected that the investment would be profitable, but profit was not the main purpose.

It was decided to proceed as recommended.

Hugh Morgan made contact with Advent International, based in Boston but with a global network of branch and affiliated offices. He was encouraged to do so by Alcoa's successful relationship with Advent. It was the only such organisation offering an industrial venture capital program which allowed participants to focus their investments on areas of technology of particular interest to them. Other companies working with Advent in their Corporate Program at that time besides Alcoa were RJR Nabisco, ABB Asea Brown Boveri, BHP, and Hoffman-La Roche. Subsequently, in addition to WMC, Lend Lease, Monsanto, Nippon Steel, Apple Computer, and Nippon Telegraph and Telephone joined.

It was subsequently concluded that the minimum sensible investment for WMC was US\$15 million in Advest No.1 Fund. An existing subsidiary of Western Mining Corporation (USA) was renamed Western Venture Inc on 17 August 1988 to make and manage this investment.

### **WESTERN VENTURE INC**

The corporate structure was a partnership, with Advent the General Partner and WMC Advest the Limited Partner, to protect it from major product liability claims. The focus of the investments was to be in:

- new high tech materials
- separation processes
- computer software and hardware
- environmental
- energy

The WMC US\$15 million was to be provided progressively. Advent received a management fee and a bonus on superior returns, in accordance with a formula.

A WMC Venture Capital Manager was located in Boston to work with Advent International, learn about the venture capital industry and be able to assess the relevance of the various opportunities to WMC.

The successive Managers were Clint Walker, an engineering MBA with Treasury experience, and senior geologists Dr Frank Reid and Dr Megan Clark. They reported variously to I J (Ian) Duncan, C W D (Bill) Blandy, I R (Ian) Lawrence, and Dr R D (Robert) La Nauze in Melbourne Office. In April 1999 Ian Scott, reporting to Robert La Nauze, became responsible for overseeing the venture capital involvement.

Bill Blandy, who was given the responsibility on appointment as Group Manager - Business Development in June 1991, recalls that in 1992-93 it became apparent that the performance of the WMC Venture Capital Fund was not living up to expectations. The Fund was under-invested, there were few high quality potential investments in the mining and minerals processing area and exiting the investments after 3 - 5 years as intended was very difficult. On the other hand, the relationship with Advent was valuable in being informed of developments around the world and also as a training opportunity.

In 1993-94 Frank Reid and the Business Development team in Melbourne, with inputs from D M (Don) Morley and Hugh Morgan, formulated a revised strategy to maintain access to all Advent deal flow and to invest in the best opportunities, regardless of industry. This was approved by the Board.

By 1994 the US\$15 million Series A five year fund was fully invested, in more than 40 different activities.

A review in December 1994 concluded that the involvement had resulted in new technology and ideas being introduced to WMC in hydrometallurgy, materials handling, maintenance, mining, geoscience and exploration, communications, human resources, and process development. WMC Business Units considered that the involvement should be continued. The investment had been modestly profitable. Recommendations were made regarding the organisation and staffing of future involvement.

Western Venture extended its agreement with Advent to reinvest 75% of the proceeds from Adwest A Fund in Adwest B five year fund. The objectives were:

- To establish one partnership or acquisition of strategic importance to WMC by 2000
- To establish alliances with five value-adding portfolio companies by 1988
- To alert WMC technology managers to 20 potentially applicable technologies per year
- To achieve a return on funds at least equal to the cost of capital.

Megan Clark replaced Frank Reid in Boston in May 1995 and at about the same time Ian Lawrence took over the oversight of the Fund from Bill Blandy who, however, remained accountable until the appointment of Robert La Nauze as Group Manager Technology in August 1997. Robert has contributed the following account of subsequent events:

In May 1998 Drs. La Nauze and Clark examined the issues surrounding WMC's Venture Capital operations in the light of the recommendations of the Corporate Review to reduce the corporate technology function and changes to the importance of venture capital activities to WMC's core business. At the time WMC was committed to a limited partnership with Advent until the current Series B fund was fully invested with 75% of the proceeds of the \$15 million Series A fund. This was estimated to occur between 2001-2002 with the bulk of the divestment and return of capital completed by 2005. In order to maximise the strategic benefit that could still be derived from the necessary on-going commitment to Series B investment it was proposed and agreed that:

- The Venture Capital Operations would be managed out of Melbourne where the manager would have more intimate interaction with the emerging technological needs of the company.



- Financial reporting of Adwest Limited partnership and Western Venture would be continued by the Manager-Commercial-Toronto.
- Quarterly reviews of the deal flow and investment opportunities would be undertaken by the new Group Technology team.
- A decision whether to continue or withdraw from the partnership would be made when Series B is fully committed.
- Capital from Series B divestments were to be returned to WMC Limited.

These recommendations were put into effect by November 1998 and Megan Clark relocated to Melbourne to a new position of Manager New Business Technologies.

The key issues associated with the decision were:

- Mining technology companies were not traditionally funded through venture capital unlike companies in the biotechnology, IT, medical and industrial technology sectors. This limits the ability of Advent to produce a large flow of high quality, strategic deals. The level of strategic investments in the WMC portfolio had been achieved through the active involvement of WMC in the process of identifying, structuring and managing strategic investments.
- Emerging technology for the mining industry was often best practice technology in other sectors and hence the capture of relevant technologies into WMC involved the adoption and development of technology, a process not suited to venture capital.
- The growth of the funds under management by WMC's joint venture partner, Advent, was accompanied by a move away from the smaller, high technology investments of less than \$US5 million to investments in the US\$20-250 million range. These investments were in established companies where the investment strategy was driven by debt/equity structuring, company re-organisation and growth through acquisition, rather than a competitive technology.
- The only Advent fund with significant strategic overlap with WMC was the Envirotech fund which was focused on greenhouse gas reduction, environmental technologies and improved energy efficiency. An important area, but only part of the technological requirement of the Company.
- It was felt that technology search and intelligence needed to be part of the role of all the Group Technology Managers and focused on, and linked to the Business Unit strategic planning and technology activities.

The operations achieved both the strategic and financial objectives set in 1995. Between 1995 and 1998 the program looked at 453 opportunities, highlighted 53 opportunities to WMC technology managers, implemented four technologies and formed two strategic relationships with portfolio companies. The estimated value of technologies implemented or under trial was A\$34.2 million. The current IRR of the Series B portfolio at that time was 24% to the partnership and 10% after all costs.

This was a significant improvement on the Series A portfolio which had an IRR of 4% to the partnership and -4% after all costs.

On returning to Melbourne, Megan Clark continued to review selected deal flow and manage the WMC investments. In the end Series B was, until the NASDAQ crash of late 2000, a spectacular success. Even in the more subdued climate post the "new economy" boom, the fund has performed well. '

As outlined in the audited 30 June 2002 Adwest Limited Partnership accounts:

- The Adwest Class A pool had invested a total of US\$15.3 million in 51 companies for a realised profit of US\$1.4 million or ROI 9.2%. Advent had been working diligently to realise the remaining investments in the Adwest Class A fund. As of June 30, 2000 there was only one investment remaining in the unrealised portfolio, Telcon Limited, which was valued at US\$0.046 million with a cost base of US\$0.265 million as of the end of June.
- Class B had invested \$9.1 million in 20 companies with a year-end valuation of remaining investments of US\$7.9 million with a cost base of US\$4.5 million, or potential future ROI of 76%. Total life to date realised profit from divestitures of the Class B fund was currently US\$15.2 million with an initial cost base of US\$4.7 million or ROI of 323%. The Class B fund was considered fully invested, with little additional follow-on investing expected.
- Although the coming months were expected to be quite challenging, it was believed that there was the potential for additional appreciation in the Class B portfolio.
- Total life to date returns from Fund A and B divestitures after operating expenses were currently US\$30.6 million from a cost base of divestitures of US\$19.7 million or ROI of 55% post operating expenses.

### Subsequent Events

Rob La Nauze contributed in November 2001 the following summary:

Megan Clarke left WMC in December 1999 to become the fund manager for a proposed venture capital fund to be known as the Rothschild e-Funds, arranged by Arrow Private Equity Management. WMC's interests in venture capital were assumed by Ian Scott.

The e-fund was intended to invest in opportunities based on the convergence of the Information Technology, Multimedia, Telecommunications and Internet businesses in Australia and southern Asia. Apart from earning the traditional venture capital returns (20-30%), Group Technology argued that this initiative represents a cost effective means of expanding WMC technology development activities. Traditional industries, such as mining were being falsely labelled as the "old economy" and were under pressure to demonstrate their "new economy" credentials. Mining companies, Rob La Nauze argued, were increasingly seeking to capture innovative technologies from sources outside their traditional suppliers and to get to such resources first was a challenge. This proposal was based on the premise that (1) venture capital and "electronic" revolution were key incubating ingredients for technologically innovative companies, and, (2) that focussing some effort on these rather than on more traditional sources of mining technology, would place WMC ahead of the mining industry in its ability to identify developments of competitive importance. To play the role of *enabler*, WMC needed to be undertaking contract R&D and purchasing high technology solutions and seeking out such opportunities at the earliest possible stage.

Group Technology identified three key objectives which would be satisfied through Cornerstone Investor participation in the investment committee and gaining access to the deals flow:

1. Learn about new technologies and identify early application opportunities within WMC either as a customer of, or partnering with, the investees,

2. Learn about opportunities and strategies from other Cornerstone Investors who are major, global companies, and
3. Import and improve start-up deal shaping skills within Group Technology.

The proposal received Hugh Morgan's support and Board approval in late 2000 and WMC became a cornerstone investor along with Cable Wireless and Optus, Nortel and Toll, with a commitment to contribute A\$7.5 million.'



## ***WMC REPRESENTATION IN JAPAN***

WMC's initial adviser in Japan at the time of the Koolanooka iron ore negotiations was Roy Duncan, an Australian who owned Alliance Industries and Shipping in Tokyo. It is not known how Bill Morgan established contact with him, but it is believed that Alliance was acting on behalf of NSW coal exporters in their dealings with the Japanese Steel Mills and hence had experience relevant to WMC.

Subsequently, Doug McIntyre thinks in 1969 or 1970, a relationship was established with Frank (later Sir Frank) Duval, another Australian who had established himself in Tokyo after the War as Duval & Co and Dubar Trading Company. It is likely that Bill Morgan met him through the Australia-Japan Business Cooperation Committee in which they were both active (Bill as Vice President). Duval was Chairman, part owner of the iron ore mine at Francis Creek in Northern Territory and also engaged in various trading activities.

Doug McIntyre thinks that, as Duval was involved in supplying Peko copper concentrates to Sumitomo, he may have been appointed to offer advice on Sumitomo's reaction to the possible sale of nickel concentrates to Shimura and to closing their nickel smelter to take WMC nickel feed in the form of matte.

E W (Ted) Weatherstone joined Dubar Trading as a Director in 1969. Ted had studied Japanese at Canberra High School and served from 1943 to 1947 as a translator with the Royal Australian Air Force, attached to the Allied Translation & Interpreter Service (ATIS). He was an interpreter at the surrender by the Japanese Army in Timor. During a visit to Portuguese Timor with External Affairs Officers he was invited to join the Department of Foreign Affairs in 1947 and was appointed in 1948 to the Australian Mission in Tokyo as Consular Officer. He attended meetings of the Allied Council for Japan where Australia represented the British Commonwealth, the other members being USA, Soviet Union and China. The Council advised General MacArthur.

After the signing of the Peace Treaty in 1951 the Mission became the Australian Embassy accredited to the Japanese Government. Ted became Third Secretary.

From 1957 to 1963 Ted was closely associated with Sir John McEwen, Australia's Deputy Prime Minister and Minister for Trade. The 1957 Trade Agreement between Australia and Japan was largely the result of the personal relationships between Sir John McEwen and the late Mr E Sato, then Prime Minister of Japan. The conclusion and implementation of the Agreement was achieved against considerable criticism in Australia.

The embargo on the export of Australian iron ore was lifted in November 1960. In 1964 Ted was invited by Sir John to join his Department and appointed Trade Commissioner and Second Secretary in Tokyo. In this capacity he worked closely with Frank Duval in opening up Australia's iron ore trade with Japan.

In 1973 Ted, with the agreement of Frank Duval, established his own company, Australasia Market Research and Advisory Service Pty Ltd (AMRAS). The Company was registered in Melbourne on 30 March 1973, but operated from its 'Liaison Office' on the mezzanine floor of the Imperial Hotel in Tokyo. Again with the agreement of Duval, whose other trading interests may have created a conflict with WMC, AMRAS became the WMC representative in Japan on 22 May 1973 and also acted for Alcoa of Australia and a number of other companies. The first Japanese speaking Australian employee of AMRAS was Jane Chidgey, who later returned to Australia and acted for a time as secretary to me and to Hugh Morgan.

Subsequently the AMRAS office was moved from the mezzanine to the Imperial Annexe. In either location it was very convenient for WMC staff, who usually stayed at the Imperial when visiting Japan.

Ted became very well connected in Japan. He joined the most exclusive Tokyo Club in 1951, became a Committee member, and in 1974 Honorary Secretary. In 1972 he organised the Australian Chamber of Commerce in Japan and became its Chairman. He was made a Member of the Order of Australia in 1982 and was awarded the Japan Order of Sacred Treasure, Third Class, in 1985.

Ted Weatherstone and his Japanese wife Taeko retired to Canberra in 1994. Ted sold AMRAS, which continued to represent WMC, to Mike Rowe.

Throughout the years when I was involved AMRAS served WMC extremely well. We had nothing but cooperation and excellent advice and support in all our dealings with Japan.

# **BOOK TWO**

***WMC 1974 - 1999***

**VOLUME EIGHT**

***PART D. EPILOGUE & INDEX***

# ***EPILOGUE & INDEX***

## **CONTENTS**

	<b>Page</b>
<b>Looking Back</b>	<b>753</b>
<b>Minerals and the Future</b>	<b>759</b>
<b>Difficulties of Historical Comparisons</b>	<b>769</b>
<b>The Recording of History</b>	<b>771</b>
<b>WMC Historical Records</b>	<b>773</b>
<b>Index (to come)</b>	<b>775</b>



## **LOOKING BACK**

### **WMC 1933 – 1999**

When I set out to write these recollections, WMC was expected to continue indefinitely.

During its history of 66 years the Company had grown from a gold miner to a diversified minerals enterprise with interests in gold, aluminium, nickel, copper, uranium and talc and was about to become a fertilizer producer. For a time it had also produced iron ore, oil and gas, and some mineral sands and lead and zinc. The expectation was that existing operations may be expanded and new discoveries would be made from time to time, some of which may be large. Diversity would be added and the Company would continue growing.

Overwhelmingly, the activities the Company had been determined by its own exploration successes, to which acquisitions had added. There were, however, two businesses which had been founded on acquisitions: talc and fertilisers.

The history of acquisitions, which had been particularly successful in adding Leinster and Mt Keith to the nickel operations in 1988 and 1991 respectively, had been marred by the disastrous takeovers in North America in 1987.

Some operations had been sold: gold interests in Kalgoorlie in 1987, Stawell in 1992 and Lady Bountiful in 1993. The Ernest Henry copper discovery made in 1993 had been lost and additional penalties incurred as a result of a court case. The Lady Bountiful sale had subsequently resulted in being nearly involved in a court case which, coming immediately after the Seabright and Ernest Henry fiascos, could have been disastrous for the Company.

Towards the end of the 1990s WMC sold a number of further interests: Hill 50 gold, Petroleum, Nifty copper and the equity in the Goldfields gas pipeline. These disposals were made primarily to part finance the Olympic Dam expansion, the cost of which had blown out well above the initial estimates. There had, however, in the second half of the 1990s also been adopted the view that WMC should restrict itself to developing and producing from large, world scale, long life orebodies, supporting businesses yielding annual revenues of \$500 million per annum or more.

These were severely limiting criteria. There are only a few such large orebodies. Strictly speaking, none of the existing WMC operations met the specifications. Alumina and nickel met the revenue specification, but the individual orebodies were not 'world scale' (although, together, they were). The Olympic Dam orebody was very large, but the price of copper would have to be high for even the expanded operation to meet the revenue requirement. The fertilizer and gold operations were well below the specified size. Revenue at a given time would, of course, depend on the A\$ : US\$ exchange rate.

The WMC in 1999 when I retired as Chairman was quite different from the WMC in 1990 when I had retired as an executive. It had become a formalised and even a bureaucratic organisation, with a growing Head Office.

In this it was responding to changes in community perceptions and the business environment and following the trend of the times. A different mode of operation was necessary in a now litigious world, with many critics. The corporate memory was shortening. Many new staff members from varying backgrounds, including in senior management, had been with the Company for a short time and would not necessarily stay long.

The North American fiasco and the loss of Ernest Henry had given added impetus to more formality; senior executives had to try to avoid further misadventures and, also, protect themselves. Change was clearly necessary; what can be questioned is whether the changes went too far in the opposite direction, and whether something valuable was lost in the process. I think so, but I am not necessarily an independent witness.

### **Successes and Failures 1974 - 1999**

In all enterprises there are from time to time successes and failures, but mostly not of a magnitude which would call particular attention to them. Occasionally, however, there are outstanding successes or significant failures. In WMC between 1974 and 1999 such events were:

#### **Successes**

- takeover of BH South
- exploration and development of St Ives gold operations
- acquisition of Leinster
- acquisition of Mt Keith
- expansion of nickel operations to 100,000 tpa plus Ni
- discovery and development of Olympic Dam to 200,000 tpa Cu
- initiation of, and participation in Goldfields Gas Transmission Pipeline
- increase of shareholding in Alcoa of Australia from 20% to 48.25%
- acquisition of a 40% interest in Alcoa World Alumina and Chemicals
- development of Queensland Fertilizer Operation into production

#### **Failures**

- the mineral sands operation at Jurien Bay
- the North American gold acquisitions
- the move into talc processing in Europe
- the loss of the Ernest Henry copper discovery
- the major capital cost overruns at Olympic Dam
- the lack of success in overseas minerals exploration
- the significant delay (extending well beyond 1999) in Queensland Fertilizer Operation achieving design capacity

On the whole the successes outweighed the failures and the market value of the Company increased from \$174 million (\$899 million corrected for inflation to 31 March 1998) in June 1974 to an average in 1998 of \$6.55 billion.

### **Subsequent Events**

Sale of assets continued: in 2001 the Company sold all its gold interests except Meliadine, which was sold in 2003. An important reason for this must have been the need to reduce debt, which had increased because of the much lower than expected cash flow from the enlarged Olympic Dam due to low copper prices and the depreciation of the \$A against \$US, in which the debt was denominated. An additional reason could have been that the gold operations were not seen to be world scale. Unstated, but probably relevant, was the consideration that these assets would fetch better prices when sold separately than as a part of a general takeover, to which WMC was vulnerable.

The takeover situation came to a head through an informal offer by Alcoa Inc. in late 2001, which the Board declined to recommend to shareholders, because they considered the price (A\$10.20 per share) insufficient. To improve the market value through making it easier for analysts to value the components and to encourage competition if there was a formal bid, it was decided to demerge into two separate companies: the AWAC holding (Alumina Limited) and the rest (WMC Resources Limited). The demerger was approved by shareholders on 30 November 2002 and took effect in December 2002. In December 2003 the combined market value of the shares in the two companies reached A\$11.50, confirming the Board's judgement that the offer of A\$10.20 was too low.

Towards the end of 2001 WMC also apparently gave up its belief in exploration being an essential part of its future. Greenfields exploration expenditure was reduced by 50% and Exploration Division became a part of the Business Strategy and Development Department, which now had responsibility for 'strategy, exploration, projects, technology, marketing, mergers and acquisitions, information systems and supply functions'. An activity which had for 68 years had the direct attention of the Board was downgraded to a much lower status. It was probably relevant that there was no longer anybody on the Board with a mining or exploration background.

It is difficult to be critical of this because the Company's greenfields exploration had not turned up a new discovery of any significance, other than Ernest Henry, for more than 25 years, while the annual expenditure had grown too large. (St. Ives gold was not a greenfields discovery). The experience throughout the world minerals industry is, that small companies have a much better record of significant discoveries than large corporations; the WMC defining successes of Darling Ranges bauxite, Kambalda nickel and Olympic Dam copper-uranium came when the Company was much smaller. Why was this? One possible explanation is that the formal management practices and procedures in large companies seem to be more suited to further defining and adding to known ore positions. Perhaps the less formal environment in smaller companies attracts the less conformist explorationists?

Also, it could be questioned whether the financial returns to shareholders had been adequate to justify continuing with an exploration-based policy. Capital costs had increased greatly and long periods of oversupply in the minerals markets had depressed average prices. Compared with the high profitability in some other industries, the whole minerals industry could be argued not to have been an attractive investment for some time. On the other hand, with long term economic growth averaging perhaps 3% p.a. and a low rate of inflation, it was unlikely that 20% plus per annum returns in any industry could be sustained for long. The (often unfounded) expectations in boom times and the profitability of merchant bankers are not necessarily appropriate criteria. The minerals industry looks much better against a target of a 10% long term annual return.

### **Reflections in 2003**

In its now 70 years of existence WMC has made money out of gold, aluminium and nickel. Talc was very profitable in terms of return on investment until the move into Europe. The Company finished up roughly square in petroleum.

It will be a long time before the investment (and accumulated interest) in copper and fertilizers is returned, let alone exceeded. The policy of pursuing only large 'world scale' operations can be questioned. It can be argued that, with a different management approach, the nearly \$5 billion invested in copper and fertilizers may have produced better value to shareholders.

The new owners of the smaller interests sold by WMC have, virtually without exception, done very well (Hill 50 Gold was five years later re-sold for 13 times the price paid to WMC). Normandy Mining and Newcrest Mining are two examples of a portfolio of small operations adding up to very considerable

value. Also, as already noted, the individual WMC nickel operations are not large, but together they make up the third largest nickel business in the world.

It is well to remember, however, that it took 27 years before Alcoa of Australia paid a substantial dividend and yet four years later (in 1992) the d.c.f return (allowing for inflation, but not for accumulated interest) was 11%. It must be much greater now. History may well repeat itself with WMC's copper and fertilizers, especially as both can be expanded further.

Over the years the Company has spent more than \$1 billion in grassroots minerals exploration. Most of it has been unsuccessful, but the successes have created a large part of the aggregated value of more than \$12 billion of WMC's two successor companies in 2003.

### **WMC 70<sup>th</sup> Birthday Toast Melbourne, 5 March 2003**

At the 70<sup>th</sup> Anniversary lunch of ex-WMC staff in Melbourne in March 2003, organised by Gilbert Ralph, I tried to summarise it all in a lighthearted manner. Here are my speaking notes:

- \* WMC is 70
- \* Respectable age, looks pretty young to some here, including myself
- \* Born in London of Australian father into mineral exploration family
- \* Not sure who mother was, but fed with English and South African milk when young
- \* Brought up on diet of scientific exploration and expected to be a child prodigy
- \* Did not fulfil early promise and struggled through adolescence, but always enterprising and unorthodox
- \* Home London until 16; then migrated to Australia and became naturalised
- \* Made immediately one expensive mistake - gold mine which lost a lot of money (GWC - Denham, myself can tell you all about it)
- \* In poor health for a while - fairly common ailment of youth: insufficient cash flow, but another very successful gold mine (CNGC) helped make ends meet
- \* At age 25 moved out into wider world of minerals and was quickly successful, although first success - Alcoa of Australia - took nearly 30 years to really reward shareholders
- \* At age 33 made the Kambalda discovery which changed her life and made her known throughout the world
- \* Further major discoveries and diversification followed; highlight Olympic Dam at age 42
- \* At age 55 had an unfortunate affair in North America which ended in losses and discriminations
- \* At 60 was involved in and came out second best in a brawl in Queensland

- \* At about the same time went in search of adventure from the Amazon to the Gobi desert and from Mali to French Guiana
- \* Socialised with well known capitalists Fidel Castro in Cuba and President Karimov of Uzbekistan
- \* Lot of technical but no commercial success
- \* At home, however, continued to build up and develop solid businesses
- \* Led eventful and active life in a changing world which made many new demands on her, loved by some journalists and lectured by others
- \* Remarkable how all those who know how to run the country are too busy cutting hair and driving taxis and all those who know how to run a business have no time to do so because they are financial reporters
- \* On the whole her successes outweighed the failures and she accumulated valuable assets, including some real jewels
- \* This attracted a suitor, more for her dowry than for her beauty
- \* Remained unconventional; declined marriage proposal and went through a twinning process at age 69, aided by a change in marital law
- \* This is where we are today
- \* Throughout the 70 years many tens of thousands of people have made the Company what it was, and is
- \* Gil and I - rough calculation - perhaps 50,000 people
- \* Certainly meet many wherever I go
- \* A part of the lives of all here - some for many tens of years, others less
- \* We all think back fondly enough to want to be here today
- \* Thank Gil for organising
- \* All wish the Company - the 2 Companies - well on their birthday
- \* Best of success in future
- \* Follow their fortunes with great interest
- \* Combine - Toast to "WMC": many happy returns



## ***MINERALS AND THE FUTURE***

The following address may be of interest. If the world population peaks in the next 50 years or so as is now predicted, this will have profound consequences for the world economy and for the minerals industry. Both will be no longer dominated by considerations of growth.

### **ORATION**

**AUSTRALIAN ACADEMY OF TECHNOLOGICAL SCIENCES AND  
ENGINEERING**

#### ***“MINERALS AND THE FUTURE”***

Melbourne, 16 Nov 2003

**by**

**Arvi Parbo**

#### **The Uncertain Future**

The other day I came across the following quotation:

"The world has grown old and lost its former vigour. Winter no longer gives rain enough to swell the seed nor summer sun enough to toast the harvest. The mountains are gutted and give less marble; the mines are exhausted and give less silver and gold. The fields lack farmers, the seas sailors, the encampments soldiers, there is no longer any justice in judgements, competence in trades, disciplines in daily life."

An extract from today's popular press? Well, not really. It was written by Cyprian, the Bishop of Carthage, 1700 years ago.

It seems to be a part of human nature for many of us to take a dismal view of things; for every optimist there appear to be numerous pessimists. There are not many happy religions; Christianity says that we are all sinners and need to be saved from ourselves. The historian Hans Morgenthau wrote in 1946:

"The intellectual and moral history of mankind is the story of insecurity, of the anticipation of impending doom, of metaphysical uncertainties".

Or, as the Russian writer Anton Chekhov put it:

"Someone with a hammer should stand behind the door of each happy and satisfied person (and by constantly knocking) remind him that misfortune exists and that, however happy he may be, sooner or later life will show him its claws".

The end of the world has been prophesied probably ever since humans appeared and certainly throughout recorded history, from Prophet Elias onwards, sometimes specifying the date and even the time. Several such predictions are current. These are not all by people one might describe as odd: Britain's Astronomer Royal, Professor Sir Martin Rees recently said he thought there was only a 50:50 chance that our present civilisation would survive to the end of this century. His likely causes of doom are eruptions of dormant supervolcanoes, machines produced by nanotechnology running out of control, and large asteroids hitting the Earth.

Tonight I would like to reflect on just one aspect of the fears about the future: namely, the concern that the world will run out of minerals. This is not recent; already Bishop Cyprian worried about mines being exhausted of silver and gold and mountains being gutted of marble. It became more widespread when industrialisation in the 18<sup>th</sup> century began to use increasing amounts of minerals.

Let me enter a caveat: I do not claim expertise in forecasting the future. A lifetime in the minerals industry does, however, qualify me as an observer of the minerals scene. I will try to present the arguments and the facts for you to make your own judgements.

The underlying issue has been the increasing population of the world, so first we need to consider this.

### **Growth of World Population**

In Cyprian's time there would have been perhaps 300 million people in the whole world, not many more than in Indonesia alone today. The population had been growing very slowly over the millennia. Life was a struggle just for physical survival, not only harsh but short and uncertain. The numbers were held down by bad harvests followed by famines, wars, natural disasters, plagues and epidemics. Poor sanitation and lack of hygiene caused many deaths. Smallpox, typhus, malaria, diarrhoea and other illnesses were widespread. There was an upturn in population during the Medieval Warm Period from the 10<sup>th</sup> to the 13<sup>th</sup> centuries, but in the 14<sup>th</sup> century bubonic plague, "the black death", killed between a third and a half of the people in Europe. In the years which followed only half of all babies survived their first year and the toll in palaces was as heavy as in cottages. In the 17<sup>th</sup> century the population of Europe again declined, mainly because of pestilence. Nevertheless, for the world, the numbers were gradually increasing.

Professor Geoffrey Blainey in his book *The Great Seesaw*<sup>5)</sup> has traced the perceptions about the future from 1750 onwards.

By the year 1798 the world population was approaching one billion when the Anglican clergyman and economist Rev. Thomas Malthus in his *Essay on the Principle of Population as it Affects the Future Improvement of Society* postulated that, while the population would increase geometrically, food supply would increase arithmetically. If the population growth continued, food production could not keep up and global starvation would follow.

Starting at about the time when Thomas Malthus made his assessment, science and technology began to invalidate his conclusion. The population did increase at an accelerating rate, but production of food and people's living standards increased even faster.

The Malthusian pessimism began to be questioned. In 1863 the Professor of History, Literature and Political Economy at Melbourne University, William Hearn, in his book *Plutology*, concluded that the population crisis, if it ever came, would lie far in the future. Mankind could solve this and the many other problems.<sup>5)</sup>



But the pessimism continued. Here are some snapshots:

In the 1890s an eminent scientist, Sir William Crookes, concluded that "England and all civilised nations stand in deadly peril of not having enough to eat".<sup>5)</sup>

By the year 1900 there were 1.7 billion people in the world

In the 1950s serious scientists argued that the world could not support the then estimated 3 billion inhabitants by the year 2000 "at any but coolie standards for most of them". The terms "population bomb" and "population explosion" were first used in a pamphlet published in 1954. As it happened, the population of 3 billion was reached already by 1960.

In 1968 Paul Ehrlich, Professor of Biology at Stanford University, in his book *The Population Bomb*<sup>1)</sup> predicted that the calamity forecast by Thomas Malthus was about to happen. I quote:

"The battle to feed all humanity is over. The famines of the 1970s are upon us – and hundreds of millions of more people are going to starve to death before the decade is out. At this late date nothing can prevent a substantial increase in the world death rate.....The birth rate must be brought into balance with the death rate or mankind will breed itself into oblivion."

Professor Ehrlich became an instant celebrity and appeared 25 times on Johnny Carson's *The Tonight Show* on US television.

In 1972 a report by a research group at Massachusetts Institute of Technology commissioned by the Club of Rome, led by Dr. Dennis L. Meadows, using the then novel technique of computer modelling, concluded that if exponential growth continued, the world would soon run out of all kinds of resources. This report, *The Limits to Growth*<sup>2)</sup>, also received extensive publicity and sold 12 million copies in 37 languages.

The extreme view which began to be put forward was that humans had become vermin: US biologist David Graber is on record as saying: "We have become a serious plague upon ourselves and upon the Earth .... some of us can only hope for the right virus to come along". The environmentalist William Aikin argued: "Massive human diebacks would be good. It is our duty to cause them. It is our species' duty, relative to the whole, to eliminate 90% of our numbers".

Let us rest here for a moment while we trace the parallel perceptions about the availability of minerals.

### **Availability of Minerals**

Metals such as gold, silver, copper, tin and subsequently iron were well known and used in antiquity; pre-historical periods have been named after bronze and iron. Some of the mineral products essential to us today are, however, quite recent.

Thus the first commercial oil well was drilled in Pennsylvania in 1859.

Aluminium, the second most widely used metal today, first identified as a scientific curiosity in 1807, was initially more expensive than gold. Finely crafted aluminium eating utensils adorned the banquet tables at the Court of France in the 1850s and aluminium jewellery became fashionable. After the Civil War in America, a grateful US Congress awarded an aluminium medal to General Grant. A commercial process for producing aluminium metal was introduced in 1886.

Nickel was called "Nick's metal" because it was a devilish nuisance in copper ores until commercial production began just over 100 years ago. Titanium, magnesium and silicon, not to mention uranium, gallium, tantalum and so on, have become useful metals even more recently.

The Industrial Revolution depended on energy from coal. In 1865 Stanley Jevons, a respected economist, was worried that England's coal reserves would run out and its industry would grind to a halt.<sup>10)</sup>

In the 1890s Sir William Crookes estimated that the world supply of nitrates, essential for increased food production, would last for less than fifty years if the rate of mining was increased.<sup>5)</sup>

In 1905 the Professor of Geology at Harvard, Nathaniel Shaler, warned that if the leading nations were not careful, they would exhaust their best deposits of coal and iron.<sup>5)</sup>

In 1919 there were calls in the US Senate to change the US Navy from oil back to coal because the Director of the US Bureau of Mines had warned that the known American oil reserves would be exhausted in exactly 9 years and 3 months.

In 1938 the Australian Government prohibited export of iron ore after the Government Geological Adviser reported that, unless the known resources were conserved, Australia would become an importer of iron ore in less than a generation.<sup>4)</sup>

In 1950 concern about the availability of minerals led President Truman to establish a Commission of the most eminent experts of the day to review the supply and demand for 25 years ahead. (They did not get it right).

The Club of Rome report in 1972 compared the known world reserves of minerals with the projected rates of consumption and calculated that for many metals these would be exhausted before the end of the century. It then assumed that further discoveries would increase the reserves five times and came to the not surprising conclusion that, with consumption growing exponentially, the time to exhaustion would be extended much less than five times, to mostly less than 100 years.

## The Two Models

By the mid-1970s the opposing views of the future were clearly expressed in two publications.

The Club of Rome 1972 report represented what has been termed **the pessimistic model**, where population and resource consumption were projected to grow exponentially while the availability of resources was taken as essentially fixed. This approach assumed that what will happen in the future can be expressed in numbers and simulated by computer modelling. It concluded that there would be a catastrophic collapse of the economic system within less than 100 years if growth of population and resource consumption were not stopped before then. According to this view the future is constrained by circumstances beyond our control.

In 1976 the opposite view, which may be called **the optimistic model**, was summarised by Herman Kahn and his colleagues at the Hudson Institute in the book *The Next 200 Years*.<sup>3)</sup> It employed scenario planning, pioneered by Kahn at the RAND Corporation in the 1950s. Much more qualitative than the computer simulations of the pessimistic model, this technique develops plausible scenarios and tests these for validity of the assumptions and internal consistency.

Kahn and his colleagues predicted that the past exponential population growth would steadily decline of

its own accord and would stop in 200 years' time (i.e. by 2176). The world population would then be 15 billion, four times that in 1976, with a much higher standard of living. Resources would not be a restriction because technology would either find ways of increasing the availability of these, or develop substitutes. According to this view the future is not constrained, because human ingenuity knows no limits.

### Continuing Debate

Since the 1970s concerns about the future have spread across a wide spectrum of issues, well beyond the availability of resources. Ideologies, politics, vested interests, personal ambitions and power struggles of various kinds have intruded in this broader debate on all sides. In media reports exaggerations, sweeping statements based on little or no evidence and dramatic predictions have been commonplace, as they are in all aspects of life today.

Calm and dispassionate assessment of the issues has been the exception. Some of this is explained by the inability of the media to resist a good story, but a statement by American anthropologist Matt Cartmill shows that some of it is deliberate:

"Anybody who claims to have objective knowledge about anything is trying to control and dominate the rest of us ..... There are no objective facts. All supposed "facts" are contaminated with theories, and all theories are infested with moral and political doctrines.... Therefore when some guy in a lab coat tells you that such and such is an objective fact .... he must have a political agenda up his starched white sleeve".

Mr. Cartmill is just one of a considerable number of people not concerned with the truth.

Most deplorable, however, are attempts to prevent different views from being heard or to dismiss such views out of hand. There have been and continue to be personal attacks on those expressing non-conforming views, verging on intimidation. This practice is frequent in politics to disguise the paucity of one's arguments; one suspects the same motive here.

The aims of this Academy include providing a forum for debate on important and controversial issues within its competence. There is a real need today for a forum where all views are heard and considered on their merits. I hope that the Academy will pursue this important aspect of its charter.

Returning to resources, the pessimistic view was modified in 1992, when the authors of *The Limits of Growth* issued a further report, *Beyond the Limits* <sup>8)</sup>. Instead of a sudden catastrophe, the new scenario visualised that food and other resources would increasingly become harder and more expensive to obtain and that production of these would gradually drain capital from other essential areas. Finally the population would begin to decrease because of the increasing death rate due to lack of food and inadequate health services.

Apocalyptic visions, however, still continue to be put forward. I am told that the World Wildlife Fund recently predicted that we will be forced within the next 50 years into interplanetary travel to escape starvation and resource exhaustion.

The optimistic view was restated in 1998 by the Danish Professor of Statistics Bjorn Lomborg in the Danish language original of his book *The Sceptical Environmentalist* <sup>10)</sup>. Having been for a long time a member of Greenpeace, he says he was converted into an optimist while looking for statistical evidence to support the pessimistic view.

So what has happened since the 1970s?

### **Population**

Today, 30-odd years after the two scenarios were painted, the population of the world is more than 6 billion. The rate of growth is slowing down; interestingly, it began to do so in the mid-1960s, just as Professor Ehrlich stated that the battle to feed humanity was lost because of the increasing numbers. In quite a few countries the population has been actually decreasing.

It has taken a long time for this to be understood. In 1989 The United Nations Population Fund still predicted a world population of 14.2 billion by the year 2100. The latest United Nations estimates, released in February this year, are that the world population will peak at somewhere between 9 and 10 billion some time after 2050 and is then likely to start diminishing.

The reason is that, without exception, rapid population growth occurs in poor countries. As the standard of living and the standard of education pass a certain level, the fertility rate falls below the replacement rate and continues falling. Many women will not have children and those who do have smaller families. This is not an assumption; it is happening today in Europe and Japan, where the populations are expected by some observers to decrease by as much as 20% over the next 50 years.

In a number of Asian countries and in South America and Africa the population will continue to grow for some time. In those areas also, however, the growth rates are declining as living standards and the level of education improve.

As seen today, both the pessimistic and the optimistic models overstated the future population growth. It is not continuing exponentially, and it is likely to level off at well below the four times 1976 population well before the year 2176.

### **Minerals**

As regards minerals, the conclusions of the Club of Rome report in 1972 appeared to be confirmed by the fivefold increase in the price of oil in 1973 and 1974. This was widely taken as meaning that the world was running out of not just oil, but energy of all kinds – remember the “energy crisis”? Economists predicted that the price of oil would quickly increase to US\$100 per barrel (about US\$400 per barrel in today’s dollars), and that developing shortages of other minerals would cause similar increases in their prices. None of this has happened.

The supply and demand of minerals have been in balance for roughly half of the last 30 years. During the other half, periods of oversupply have been longer than periods of shortages. Both have been due to imperfections of the market mechanism.

Prices have fluctuated widely, but the clear trend over the last 100 years has been for metal prices to decrease between 1% and 2% per annum in real terms. This has continued. The price of oil in real terms has recently been back at about the 1974 level. To support the price, the OPEC cartel appealed a month or so ago for production cuts by countries outside the cartel.

The consumption of all minerals has increased substantially since the 1970s. The known reserves today are higher than in the 1970s, for some minerals considerably so.

## **In The Long Term**

Well, you might say, this is as it may be, but what about the long term? Isn't it true that ultimately there is a finite amount of minerals in the Earth's crust? Does this not mean that we will eventually run out of minerals, perhaps not in a hundred years but at some future time?

Let us consider the availability and demand before trying to answer this. I will try not to bore you with technical details, but some of it cannot be avoided.

### **Availability of Minerals**

By availability of minerals I am discussing physical availability. Man-made obstructions to the supply or use of these – perhaps political conditions or regulations in a particular country, or decisions to exclude certain areas from mining, or decisions not to use certain products, are choices for the society to make, and outside the scope of tonight's considerations.

First, let us be clear about what "known reserves" means.

### **Known Reserves**

Known reserves of minerals are not a measure of what is ultimately available.

In the minerals industry "reserves" means mineralisation which is economic and the quantity and mineral content of which have been determined in accordance with certain standards. The work to establish this is costly. Companies cannot afford to explore too far ahead of their planning and production requirements; reserves have been likened to a working inventory.<sup>9)</sup> For example, a gold mine I was associated with in Western Australia, Central Norseman Gold Corporation, has been in uninterrupted production now for 68 years, yet it has never had a known ore reserve for more than five years during this time. It is still going strong. The higher production rate of minerals in the last 30 years has resulted in increased reserves because a higher inventory is necessary and justified.

On a mining lease there is usually both economic and uneconomic mineralisation beyond known reserves. Companies generally endeavour to prove at least enough new ore to replace the tonnage mined during the year, keeping the reserves (the inventory) reasonably constant. The reserve boundaries are determined by economics – the so-called "cut-off grade".

Because there is no justification for spending money on defining uneconomic mineralisation, we do not know accurately how much of it there is. It is, of course, possible to make guesses based on various assumptions but this is all they are – guesses.

However, we do know that during the last 100 years improvements in technology have made large quantities of previously uneconomic mineralisation economic, even as the price of the minerals or metals has been decreasing in real terms. Some research has suggested that as the grade decreases arithmetically, the volume increases geometrically. Whatever the relationship, we know from experience that vast quantities of lower grade material exist.

### **Further Discoveries**

There is also great potential for further discoveries.

Large parts of the Earth's surface remain to be thoroughly explored, even by today's technology which,

until recently, has been limited to detecting outcropping or near-surface occurrences. As exploration technology improves, we are increasingly able to look deeper into the crust and discover hidden deposits. The Olympic Dam copper-uranium orebody in South Australia was found under 330 metres of barren rock. In due course, with still better technology, areas already explored can be tested again for deeper ore if this is economically attractive.

Advances in ore dressing and metallurgy are improving recoveries of the valuable mineral, which is equivalent to increasing reserves. Mining technology also is improving, enabling production from otherwise uneconomic or inaccessible deposits. In situ solution mining, dissolving the valuable mineral where it occurs without underground openings or workforce and pumping it to the surface, is already widely employed for uranium and is being extended to other minerals. Robot mining, with no people working underground, is under development.

In addition to the large land areas prospective for further mineral finds, extensive deposits of iron-manganese nodules containing metals such as nickel, copper and cobalt, are known to occur on the ocean floor. Following the 1972 Club of Rome report predicting a scarcity of minerals, the United Nations started to develop rules for mining these nodules exclusively by an international body. One of the initiators of this was the Maltese Ambassador to the UN, Arvid Pardo. I had to spend considerable time and effort in denying that Arvid Pardo was related to Arvi Parbo.

A convention was signed in 1982. To my knowledge there has been no commercial production of the nodules and I venture to predict that there won't be for a long time. The reason is that there is no shortage of minerals, and it does not make sense to dredge nodules from five kilometres of water if similar land-based material is available at a lower cost. However, should the need arise, large quantities of these metals occur on the ocean bottom.

## **Recycling**

Recycling is already an important factor for many materials, including mineral products. In 2001 old scrap accounted for 12% of the copper, 20% of the aluminium and 61% of the lead consumed in the United States.<sup>5)</sup> Environmental consciousness and forethought at the product design stage are steadily driving these percentages higher.

Metals in most applications can be recycled indefinitely; they are in effect renewable. The degree of recycling is clearly a function of the value of the material. Virtually all the gold ever mined – some 100,000 tonnes – still exists in one form or another. As the price of a metal increases, there is a growing economic inducement to recycle, even if costly processes have to be used. As technology progresses, better and cheaper recycling methods will become available.

## **Energy Minerals**

In energy minerals, a number of current assessments have concluded that about a half of the world's conventional oil resources have been used to date.<sup>6)</sup> Past estimates of future availability of minerals have always been grossly understated, but let us assume that these are right. Natural gas resources are much larger and there are vast coal resources available throughout the world.

If conventional oil becomes scarce, according to one estimate oil shales, which occur in many parts of the world, contain 242 times more oil than the estimated conventional petroleum resources.<sup>10)</sup> Whether this is right or not, the resource is very large. Production of oil from shales has been minor to date because the price has been too low to make it financially attractive, except in special circumstances.

If we are concerned about the generation of carbon dioxide from fossil fuels, research on sequestration of the gas in underground depositories is well advanced. And, if we are concerned beyond that, nuclear power generation can be readily expanded. It is already providing 75% of the electricity in France, more than 60% in Belgium, 50% in Sweden, and more than 20% in Switzerland, Finland, Spain, England, Japan, South Korea and USA. In the longer term, nuclear fusion represents a potentially unlimited source of energy.

Beyond energy from minerals, improvements in technology will undoubtedly enable increased use of renewable energy in its various forms, but this is outside my terms of reference.

## **Demand**

On the demand side, the intensity of use of minerals depends on the stage reached in economic development. Initially low, the intensity increases as development proceeds and per capita incomes increase. China is presently going through this phase. Once industrial and community infrastructure has been constructed and the incomes increase further, communities become more service-oriented and the materials (and minerals) intensity decreases. The intensity will also decrease through ongoing technological developments: improved materials, material saving, and substitution.

The most important factor determining demand is, however, the number of people. With the world population now expected to stabilise in the foreseeable future, the outlook for demand growth is very different from when the population was thought to continue growing exponentially forever.

## **Conclusion**

I recently saw a poster which said:

*People who think they know everything infuriate those of us who do.*

A lifetime of experience has convinced me that I know very little, my ability to predict the future is minimal, and that virtually nothing is impossible. It has also taught me to view any projections, predictions and forecasts with a great deal of caution. The views of many eminent people who were careless enough to go on record in the past make extremely amusing reading today.

Experts are by no means immune against this. In 1899 Charles H. Duell, Director of US Patent Office, urged President McKinley to abolish the office because "Everything that can be invented has been invented." In addition to being a very rash statement, this is probably the only known instance in history where a senior government official has proposed the abolition of his office.

The record shows that projections for any length of time ahead are not likely to be accurate, except by chance. There will be influences we cannot foresee which will alter the outcome, often to a very significant extent. The further we try to look into the future the less likely we are to be right.

For the uninitiated, and this is the majority of people, computer simulations have an aura of infallibility. But the ability of computers to do a fantastic number of calculations per second does not improve the accuracy of the assumptions on which the results depend. The assumptions are still man-made.

Keeping all these qualifications in mind, even the pessimists today no longer maintain that the world will come to a sudden stop because we have emptied the minerals cellar, as it were. If we approach difficulties ahead there will be warning signals, such as increasing prices. The expectation of a stabilised world population not far ahead and the potential for recycling add confidence that there will be ample supplies of minerals far into the future. This does not mean that we should be complacent. It

makes good sense and is good for our souls to continuously strive to improve efficiencies, eliminate waste, and develop better technologies – use less to achieve more.

Confidence about the future also relies on the ability of science and technology to find solutions to what may seem problems to us today, and to future problems we do not even know about. This has certainly happened in the past. The question is, will it continue in the future?

Fellows of the Academy are well placed to make judgements about the potential of science and technology in their own areas; I leave it to you to do so. As far as I am concerned, if I may borrow from Sir Winston Churchill, I believe that we are perhaps not even at the end of the beginning, let alone the beginning of the end. Whether or not human ingenuity knows no limits as the optimists believe, we have to be a very long way from the limit if there is one.

The Earth is finite and the mineral resources in the Earth's crust are therefore also ultimately finite. But this does not mean that these resources cannot meet humankind's needs indefinitely. On the contrary, I agree with Philip Crowson that, for all practical purposes, mineral resources are "infinitely finite".<sup>7)</sup>

... ..

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## ***DIFFICULTIES OF HISTORICAL COMPARISONS***

The difficulty of comparing what happened many years ago with more recent events will be familiar to all who have tried to do so. The world changes, and with it the perceptions of what is desirable, acceptable, and praiseworthy. Money values change; the comparison of numerical amounts in currency units becomes meaningless. Comparisons in particular currencies can be improved by correcting for inflation, but changes in currency parities can be very significant when the activities produce income and/or costs in a number of currencies. Companies, operations, industries, and the overall economy tend to grow. A valid assessment must include not only a comparison of the same company over a period but also a comparison with other companies and the general conditions at particular times.

For example, the cost of the first Alcoa of Australia development – refinery at Kwinana, smelter and fabricating plant at Point Henry and the coal mine and power plant at Anglesea, announced on 14 June 1961, was A£45 million. Even corrected for inflation this appears a very modest investment today, but at the time it was the biggest minerals industry project ever in Australia. The equity contribution of A£14.375 million by the three Australian shareholders, Western Mining, Broken Hill South and North Broken Hill, was very substantial, compared to their market value.

While I do not know of any simple way to make valid comparisons, the following may be of assistance:

### **Inflation Index**

At 31 March 1974: Australia 100, USA 100

At 31 March 1998: Australia 516, USA 339 (See Book Three, *Appendix XXVII* for details)

### **Price of Nickel**

In 1966, when Kambalda was discovered, US\$ 0.79/lb

In 1995, US\$ 3.83 per lb. The price declined in 1998 to US\$2.09 in an oversupplied market; the 1995 price is a better indication of prices in a balanced market at that time. (See Book Three, *Appendix XVIII* for details).

### **US\$/A\$ Exchange Rate**

This influenced the price received by WMC. The ratio was 1.311 in November 1974 and 0.642 in April 1999. (See Book Three, *Appendix XVII* for details).

### **Property Market Index (in Australia)**

In December 1974:	1.41	In June 1999:	17.28
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### **Average Weekly Wage Index (in Australia)**

In 1974:	125.8	In 1998:	716.3
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### **Australian Stock Market Index / all ordinaries**

In June 1974:	410	In June 1998:	2608
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## ***THE RECORDING OF HISTORY***

During the writing of this manuscript I have had occasion to reflect on the recording of history and would like to offer some thoughts which may be helpful.

WMC has extensive files, but these have not been organised with recording the history in mind. Apart from Quarterly, Half-Yearly, and Annual Reports and the occasional report for particular purposes, for example share issues, the information has not been drawn together into a coherent story. Even the exploration people, who are among the more record-minded in the Company have, quite surprisingly, much detailed information about their exploration projects but almost no narrative of how the projects were conceived, how they progressed, and what finally happened and why.

My experience has been that it is almost impossible to fully reconstruct the story in retrospect unless the writer participated in the events, or at least has a good understanding of the environment in which the events occurred. With most of the employees with long service now having retired or left the Company and current employees tending to turn over after much shorter periods of service than in the past, the pool of historical knowledge has been rapidly depleted.

This leads to the conclusion that, as time goes on, much of the history of any activity is likely to be irretrievably lost in spite of voluminous files of the detail, unless it is recognised that the best time to record history is as it happens.

The thought is, that it should be standard practice for major operations and corporate departments to keep a log or a diary, much as military units keep war diaries and ships keep a logbook. These should record a narrative of what is done, and why, and the results of these actions. The detailed files will then provide further meaningful information for historians wishing to compile a more comprehensive or more analytical story.

There is also a need to keep a good record of mines and plants for operational purposes. The thinking changes, modifications are made and expansions take place. Much of the knowledge of what has happened, and why, is in the minds of managers and technical experts but the time comes when people move on or retire and the history is no longer remembered. Unless a thorough and easy-to-follow record is kept, the lessons may have to be learnt all over again.



## **WMC HISTORICAL RECORDS**

The reader with an interest in WMC historical records and future researchers will find the following notes (reproduced in this section) by Gilbert M Ralph valuable:

1.     **Group Historical Information Collection (GH1) - Introduction** (January 2003)
2.     **Guide to Group Historical Photographic Collection (GHPC)** (January 2003)
3.     **WMC Group Archives** (A review in August 2002, including extracts from Report P104 by G M Ralph *A Report On The Nature And Extent of Historical Records Within WMC, Their Use and Preservation*. Dated 19 May 1980, this is a thorough review of the issues and challenges at that time.)
4.     **Recommendation Regarding Ultimate Disposition of GHI** (December 2002)
5.     **List of Entities For Which Significant Histories Have Been Written** (September 2003)



# **INDEX**

**To be compiled at later date**

# **BOOK THREE**

## ***APPENDICES***

### **VOLUME ONE**

- Appendix I: A Bibliography of Works on WMC Group History  
(Published and Unpublished)
- Appendix II: Directors, Alternate Directors, Secretaries, and Assistant Secretaries  
of WMC, WMCH, and WMC Limited 1933 to 1999
- Appendix III: WMC Capital
- Appendix IV: WMC Market Value and Share Price 1933 to 1998
- Appendix V: WMC Production 1933 to 2001
- Appendix VI: WMC Financial Results 1934 to 1998
- Appendix VII: WMC Exploration Expenditure and Discoveries
- Appendix VIII: WMC Group Employees and Contractors 1981 to 2000
- Appendix IX: WMC Acronyms
- Appendix X: WMC Organisation and Management
- Appendix XI: WMC Safety and Health Chronology of Major Corporate Activities
- Appendix XII: WMC Group Historical Corporate Structure (Simplified)



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## GROUP HISTORICAL INFORMATION

<b>Name:</b>	WMC Limited	<b>Ref :</b>	WMC - 73 <sup>1</sup>
<b>Compiled by:</b>	G M Ralph	<b>Date:</b>	25.06.98
<b>Source:</b>	Various	<b>Page:</b>	1 of 5
<b>Subject:</b>	References Sources to WMC Group Historical Material		

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## REFERENCE SOURCES TO WMC GROUP HISTORICAL MATERIAL

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<sup>1</sup> Updated February 2002

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|---------------------|--|
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| McIntyre, Douglas P | <b>WMC's Nickel History - The Commercial Aspects</b><br>Confidential to WMC Limited                |
| Ralph, Gilbert M    | <b>The Making of WMC</b><br>An unpublished MS, 1995  |

**OTHER SOURCES**

- |                   |   |
|-------------------|---|
| WMC Resources Ltd | In addition to the items mentioned above there is a vast collection of primary reference material contained in the <b>WMC Group Historical Information Collection (GHI)</b> which is housed in WMC's Melbourne Office. It has internal and external publications and information on all companies, operations, joint ventures, divisions and activities. The GHI also contains references, biographical information (and recorded interviews) on hundreds of WMC employees arranged alphabetically. |
|-------------------|---|

There is also the **WMC Group Historical Photographic Collection** which is housed in WMC's Melbourne Office. This contains a large range of illustrations in the form of B&W and color prints, 35mm slides and larger format transparencies up to 1995. (Later photos are cared for by the Corporate Affairs Department.)

The WMC Melbourne Office Library has a complete set of most WMC publications, Annual Reports, Public Announcements, Press Releases and a long run of paper cuttings relating to WMC Group activities

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|---------------------------|--|
| Melb. University Archives | <b>The Melbourne University Archives (MUA)</b> in Dawson Street, Brunswick, has a collection of WMC Group records dating from 1930 to 1980. These are accessible to bona-fide students and researchers under certain conditions by application to the Archivist at the MUA. The records are mainly of discontinued operations and related companies. |
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## GROUP HISTORICAL INFORMATION

**Name:** WMC Limited **Ref No.** WMC - 10  
**Compiled by:** G. M. Ralph **Date:** 01.09.94  
**Source:** Company Minute Book>Returns **Page:** 1 of 3  
**Subject:** Directors of the Company – WMC, WMCH, WMC & WMCR

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Name (1)	Positions Held	Date Appointment	Date Resigned, Retired, Died
1. Sir Colin F. Fraser	Chairman (1st)	05.04.33	11.03.44 (D)
2. Sir Arthur Robinson	Director	05.04.33	30.09.35
3. William Sydney Robinson	Managing Director (1st)	05.04.33	09.04.37
4. Marshal L. Baillieu	Director	05.04.33	08.04.37
5. Sir Lindesay Clark	Tech. Managing Director Managing Director (2nd) Chairman (3rd) Director	05.04.33 24.11.52 24.11.52 17.10.74	24.11.52 31.01.62 17.10.74 02.11.78
6. Sir Walter Massy-Greene	Director Chairman (2nd)	14.06.34 11.03.44	11.03.44 16.11.52 (D)
7. Arthur F. Evans	Director	23.05.44	01.04.47
8. Frank F. Espie	Executive Director Dep. Managing Director	26.02.47 24.11.52	24.11.52 09.05.62
9. Sir Wilfred D. Brookes	Director	01.04.47	02.04.82
10. Sir Stanley Murray	Director	22.12.49	09.12.65
11. J. Chester Guest	Director	22.11.50	19.01.70 (D)
12. Sir Norman Mighell	Director	22.11.50	30.11.53
13. Sir Samuel R. Burston	Director	24.11.52	21.08.60 (D)
14. Leslie Edwards	Director & Secretary	Dec 1954	29.11.60 (D)
15. Sir Laurence Brodie-Hall	Executive Director, WA Director	31.01.62 10.06.75	10.06.75 05.11.82
16. William M. Morgan	Managing Director (3rd)	31.01.62	09.11.71
17. J. Donald Campbell	Director of Exploration (1st)	31.01.62	25.09.67
18. Hugh O. Clark	Director Corporate Affairs	25.09.67	09.11.81
19. Sir James A. Forrest	Director	20.02.70	01.12.77



Name (1)	Positions Held	Date Appointment	Date Resigned, Retired, Died
20. Sir Arvi Parbo	Executive Director	18.09.70	21.05.71
	Dep. Managing Director	21.05.71	09.11.71
	Managing Director (4 <sup>th</sup> )	09.11.71	09.06.86
	Executive Vice Chairman	29.04.74	17.10.74
	Executive Chairman (4 <sup>th</sup> )	17.10.74	28.12.90
	Chairman (Non Exec)	28.12.90	15.04.99
21. Sir Kenneth Townsing	Director	01.09.75	04.10.87
22. Keith F. G. Parry	Director of Operations (1st)	28.06.76	10.05.86 (D)
23. Hugh M. Morgan	Executive Director	01.09.76	09.06.86
	Managing Director (5 <sup>th</sup> )	09.06.86	01.01.03
24. Roy Woodall	Director of Exploration (2nd)	20.06.78	03.11.95
	Director (Non-Executive)	04.11.95	11.04.01
25. John L. Greig	Director	06.09.78	04.10.87
26. Sir Geoffrey Badger	Director	04.12.79	03.11.88
27. Sir Harold Knight	Director	30.09.82	07.11.91
28. Donald M. Morley	Director Finance and Admin	31.03.83	18.06.02
29. Dame Leonie Kramer	Director	20.09.84	15.11.96
30. David J. Brydon	Director	14.08.87	04.10.01
31. John C. Anderson	Director	05.10.87	15.04.99
32. Donald H. Aitken	Director	24.10.87	20.11.97
33. Donald H. Laidlaw	Director	03.11.88	16.11.95
34. Keith R. Hulley	Director of Operations (2nd)	06.02.91	30.09.96
35. Ian G.R. Burgess	Director	28.07.93	15.04.99
	Chairman	15.04.99	02.05.03
36. Adrienne E. Clarke	Director	08.07.96	
37. M. John Phillips	Director	08.07.96	18.06.02
38. Ian E. Webber	Director	10.06.97	
39. Peter J. Knight	Director	13.08.97	
40. Roger A.G. Vines	Director	08.02.99	02.05.03
41. Tommie C-E Bergman	Director	01.01.01	02.05.03
	Chairman	02.05.03	
42. John Miekellohn	Director	19.04.02	
43 Andrew G Michelmores	Director	13.08.02	01.01.03
	CEO and Managing Director (6 <sup>th</sup> )	01.01.03	
44 Alan K Dundas	Director	12.03.03	
45 Graeme W McGregor	Director	01.12.03	

Name (1)	Positions Held	Date Appointment	Date Resigned, Retired, Died
46 G J (John) Pizzey	Director	01.12.03	

**Notes**

- (1) For Honours (other than Sir) see individual files of Directors  
(D) Died while in office

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## GROUP HISTORICAL INFORMATION

**Name:** Western Mining Corporation      **Ref No.** WMC - 11(a)  
**Compiled by:** G.M. Ralph      **Date:** 1.9.94  
**Source:** Company Returns      **Page:** 1 of 2  
**Subject:** Alternate Directors WMC & WMCH

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Name	Alternate To	Appointed	Cancelled, Lapsed/Died
Aubrey J.C. Bult	Sir Colin Fraser	02.12.37	25.02.39
Arthur F. Evans	Sir Colin Fraser	27.02.39	
John S. Teulon	W. Massy-Greene	09.10.40	21.03.46
Aubrey J.C. Bult	W. Massy-Greene	24.05.44	16.11.52
Peter R. Fitzgerald	G. L. Clark	09.10.47	22.03.54
Roy V. Wilson	F. F. Espie	09.01.50	22.02.60
Victor T. Boldeman	G. L. Clark	24.04.50	25.01.60
Peter R Fitzgerald	W. D. Brookes	c 1950	22.03.54
Aubrey J. C. Bult	J. S. Murray	24.04.53	16.09.59 (D)
Leslie Edwards	W. D. Brookes	22.03.54	31.12.54
Richard A. Walmsley	W. D. Brookes	30.01.62	01.06.78
Arvi H. Parbo	W. M. Morgan	13.08.64	29.09.64
Ernest W. Weate	G. L. Clark	13.08.64	02.11.78
Sackville Kidman	J. C. Guest	10.05.65	26.05.69
A. Ken Forbes	L. C. Brodie-Hall	26.11.62	22.07.68
Arvi H. Parbo	W. M. Morgan	29.04.69	18.09.70
Harold S. Amos	H. O. Clark	14.08.69	09.11.81
Douglas P. McIntyre	A. H. Parbo	22.12.72	19.06.75
John L. Greig	W. D. Brookes	01.06.78	06.09.78
Harold S. Amos	K. F. Parry	06.03.79	10.05.86
Donald M. Morley	H. M. Morgan	08.07.80	c 1981
Donald M. Morley	H. M. Morgan	22.03.82	31.03.83

Name	Alternate To	Appointed	Cancelled, Lapsed/Died
Harold S. Amos	H. M. Morgan	12.05.86	15.10.93

(a) 2.7.97 - Bult and Evans added; dates amended



## GROUP HISTORICAL INFORMATION

**Name:** WMC Limited **Ref No.** WMC - 12 (a)  
**Compiled by:** G.M. Ralph **Date:** 01.09.94  
**Source:** Company Returns **Page:** 1 of 1  
**Subject:** Secretaries and Assistant Secretaries of WMC & WMCH

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Name	Position	Appointed	Resigned/ Retired
Hugh G. Brain	Secretary	05.04.33	01.07.37
Roy V. Wilson	Assistant Secretary	05.04.33	?
Leslie Edwards	Secretary	01.07.37	31.12.54
J. Morris Davis	Acting Secretary	07.04.38 *	07.09.39 *
Frederick R. Morgan	Secretary	01.01.55	30.01.62
J. Morris Davis	Secretary	31.01.62	01.01.63
S. Kevin Larsen	Secretary	02.01.63	18.03.83
A. H. K. Wray	Assistant Secretary	02.01.63	
Louis T. N. Jacobs	Assistant Secretary	01.04.69	28.09.77
John W. Winterbotton	Assistant Secretary	16.11.77	12.09.86
Grahme S. Dixon	Secretary	31.03.83	15.12.89
Keith H. Allen	Assistant Secretary	03.10.85	30.09.86
Gilbert M. Ralph	Assistant Secretary	12.09.86	16.05.94
Frederick S. Grimwade	Secretary	15.12.89	01.01.96
Ross E. Mallett	Assistant Secretary	07.02.90	
Alan R. Knights	Secretary	01.01.96	

\* Attended Board Meetings as Acting Secretary during this period.

(a) 2.7.97 - Wray added; dates amended





## GROUP HISTORICAL INFORMATION

<b>Name:</b>	WMC Limited	<b>Ref:</b> WMC-70 (a)
<b>Compiled by:</b>	G. M. Ralph	<b>Date:</b> 1 April, 1998
<b>Source:</b>	Annual Reports	<b>Page:</b> 1 of 6
<b>Subject:</b>	Growth of Capital of WMC from 1933-1992	

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The capital of the company grew slowly until the discovery of Kambalda in 1966 after which there was a steady growth in capital and a significant rise in share premiums, unappropriated profits and reserves (which are not included in this tabulation).

The attached tabulation has been compiled from a variety of sources - mainly Annual Reports of WMC and WMCH. This tabulation concludes at 1992. (From that time on a similar table has been collated by the Company Secretary's Department).

Note that from 1933 to 1966 the monetary unit used was the Australian pound (£) which was equivalent to two dollars (\$2).

In some cases the exact date of a particular event could not be found, in which case "00" has been used in the Date column. Note also that the financial year end changed from March to June in 1966 and that from 1974 to 1987 a 52 week "year" of 13 four weekly periods constituted a financial year giving rise to a variable year end date in June. This required an occasional 54 week period to correct the irregularity it caused.

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(a) 8.7.98 Minor corrections and amendments made.



**WESTERN MINING CORPORATION LTD  
WESTERN MINING CORPORATION HOLDINGS LTD  
WMC LIMITED**

**GROWTH OF CAPITAL 1933-1992 (Amended 8.7.98)**

Date Issued (1)	No FP Shares	No PP Shares	Issued Capt £ (2)(3)	Notes
02.03.33				WMC incorporated on 2.3.33 with Auth. Capt. of £500,000 in 1,000,000 shares of 10/- each
05.04.33		2,505	250	Issue to Directors. Paid 2/- on application
07.04.33		67,495	6,750	Issue to BHS, ZC, MIPL. Paid 2/- on application
20.04.33		10,000	1,000	Issue to NBH. Paid 2/- on application
18.05.33		138,000	13,800	Issue to London Co's. Paid 2/- on application
29.06.33		103,333	10,333	Issue to London interests. Paid 2/- on application
09.10.33		-	64,267	Call of 4/- per share
12.10.33		7,500	2,250	Issue to WA Comm. Paid 2/- application plus 4/- call
04.12.33	328,833	(328,833)	65,766	Final call 4/- per share. Now FP with options
31.03.34	328,833		164,416	Balance
00.08.34	500		250	Issue of FP shares to option holders
00.08.34		320,333	16,017	Issue of PP shares to option holders. Paid to 1/-
31.03.35	329,333	320,333	180,683	Balance
1935-36	320,333	(320,333)	144,150	Call of 9/- per share. Now FP
31.03.36	649,666		324,833	Balance
31.03.37	649,666		324,833	Balance
31.03.38	649,666		324,833	Balance
31.03.39	649,666		324,833	Balance
31.03.40	649,666		324,833	Balance
31.03.41	649,666		324,833	Balance
31.03.42	649,666		324,833	Balance
31.03.43	649,666		324,833	Balance
31.03.44	649,666		324,833	Balance
31.03.45	649,666		324,833	Balance
31.03.46	649,666		324,833	Balance
31.03.47	649,666		324,833	Balance
31.03.48	649,666		324,833	Balance
28.07.48	1,299,332		324,833	Restructure of Auth. Capt. 10/- shares split to 5/-
31.03.49	1,299,332		324,833	Balance
1949-50				Auth. Capt. increased to £1,000,000 divided into 4,000,000 shares of 5/-
29.11.49	1,476,618		369,155	Issued to Liquidator of Gold Exploration and Finance Co. of Australia Ltd (GEFCA) on takeover by WMC.
29.11.49	18,400		4,600	1 for 2 rts issue to shareholders, other than GEFCA
31.03.50	2,794,350		698,588	Balance
31.03.51	2,794,350		698,588	Balance
31.03.52	2,794,350		698,588	Balance

Date Issued (1)	No FP Shares	No PP Shares	Issued Capt £ (2)(3)	Notes
31.03.53	2,794,350		698,588	Balance
31.03.54	2,794,350		698,588	Balance
22.11.54		931,450	23,286	1 for 3 rts issue at 7/6 premium, payable 1/- (6d capt.) on application.
07.03.55		931,450	93,145	Call of 5/- (2/- capt.)
31.03.55	2,794,350	931,450	815,019	Balance
31.03.56	2,794,350	931,450	815,019	Balance
31.03.57	2,794,350	931,450	815,019	Balance
05.04.57	931,450	(931,450)	116,431	Final Call 6/6 (2/6 capt.)
05.08.57	62,900		15,725	Issue of FP shares to GMK shareholders following acquisition of the balance of the company's shares
31.03.58	3,788,700		947,175	Balance
31.03.59	3,788,700		947,175	Balance
31.03.60	3,788,700		947,175	Balance
31.03.61	3,788,700		947,175	Balance
00.06.61	180,000		45,000	FP shares issued to senior staff at a premium
27.10.61				Auth. Capt. Increased to £ 5,000,000 divided into 20,000,000 5/- shares
04.12.61		2,381,220	119,061	60 for 100 rts issue for shares held on 30.10.61 at prem. of 7/6. Payable on application 2/6 (1/- capt.)
23.03.62		2,381,220	119,061	First call 2/6 (1/- capt.)
31.03.62	3,968,700	2,381,220	1,230,297	Balance
28.09.62		2,381,220	119,061	Second call 2/6 (1/- capt.)
23.03.63		2,381,220	119,061	Third call 2/6 (1/- capt.)
31.03.63	3,968,700	2,381,220	1,468,419	Balance
30.09.63	2,381,220	(2,381,220)	119,061	Final Call 2/6 (1/- capt.)
31.03.64	6,349,920		1,587,480	Balance
09.10.64		1,905,222	158,768	3 for 10 rts issue at a premium of 10/-.
09.10.64		134,192	11,183	Payable on application 5/- (1/8 capt.)
02.02.65		1,905,222	158,768	Issued to senior staff on same terms as above
02.02.65		134,192	11,183	First call 5/- (1/8 capt.)
31.03.65	6,349,920	2,039,414	1,927,382	Call on senior staff shares
27.07.65	1,905,222	(1,905,222)	158,768	Balance
27.07.65	134,192	(134,192)	11,183	Final Call 5/- (1/8 capt.)
30.06.66	8,389,334		2,097,333	Call on senior staff shares
				Balance

**14.02.66 - CONVERSION TO DECIMAL CURRENCY &  
CHANGE IN FINANCIAL YEAR FROM MARCH TO JUNE**

Date Issued (1)	No FP Shares	No PP Shares	Issued Capt \$ (2)(3)	Notes
30.06.66	8,389,334		4,194,667	Balance
21.10.66		2,516,938	251,694	3 for 10 rts issue (except to UK holders) at a prem. of \$2.50. Payable 60c on application (10c capt.)
21.10.66		280,000	28,000	Issued to employees on same terms as above.
00.02.67	50,000		25,000	Issued to Hampton Gold Mining Areas Ltd for an Option over 14 sq miles of freehold near Kambalda
17.02.67		2,516,938	251,694	First call 60c (10c capt.)

Date Issued (1)	No FP Shares	No PP Shares	Issued Capt \$ (2)(3)	Notes
17.02.67		280,000	28,000	Call on employee shares
30.06.67	8,439,334	2,796,938	4,779,055	Balance
07.07.67		2,516,938	251,694	Second call 60c (10c capt.)
07.07.67		280,000	28,000	Call on employee shares
01.09.67	50,000		25,000	Exercise of Option to acquire land near Kambalda from Hampton Gold Mining Areas
09.10.67		2,516,938	251,694	Third call 60c (10c capt.)
09.10.67		280,000	28,000	Call on employee shares
23.02.68	2,516,938	(2,516,938)	251,694	Fourth and final call 60c (10c capt.)
23.02.68	280,000	(280,000)	28,000	Call on employee shares
28.02.68	56,431,360			Restructure of Auth. Capt. - 50c shares split to 5x10c shares, ie. 100,000,000 shares of 10c
18.04.68		14,096,894	352,422	1 for 4 rts issue for shares at a premium of \$3.10 Payable on application 80c (2.5c capt.)
18.04.68		425,680	10,642	Issued to employees on same terms as above.
30.06.68	56,431,360	14,522,524	6,006,200	Balance
00.10.68		13,059	327	Adjustment on 1 for 4 Issue
01.11.68		14,535,633	363,391	Second call of 80c (2.5c capt.)
01.05.69		14,535,633	363,390	Third call of 80c (2.5c capt.)
30.06.69	56,431,360	14,535,633	6,733,308	Balance
03.11.69	14,535,633	(14,535,633)	363,391	Fourth and final call of 80c (2.5c capt.)
00.01.70	4,320		432	Issue to executives and staff at a premium of \$3.10
30.06.70	70,971,313		7,097,131	Balance
00.07.70	4,370,000		437,000	Issued in exchange for 10,750,000 FP shares in Great Boulder Gold Mines Ltd
25.01.71				Auth. Capt. Increased to \$300,000,000 consisting of 3,000,000,000 shares of 10c each.
26.01.71	150,682,626		75,341,313	9 for 1 Bonus issue on 10c FP shares, then reconstruction to 50c shares ie. Shareholders received 2 FP 50c shares for every 10c share held
19.03.71		30,111,235	3,011,123	1 for 5 rts issue at premium of \$1.00 (ex to USA shareholders). Payable on application 30c (10c capt.)
19.03.71		800,000	80,000	Issue to staff on above terms.
30.06.71	150,682,626	30,911,235	78,432,436	Balance
00.07.71		24,735	6,184	Adjustment to 1 for 5 Issue after year end
00.10.71		30,911,235	4,636,686	Second call of 45c (15c capt.)
00.04.72		30,935,970	4,640,395	Third call of 45c (15c capt.)
30.06.72	150,682,626	30,935,970	87,715,701	Balance
00.08.72	30,935,970	(30,935,970)	3,093,597	Fourth and final call of 30c (10c capt.)
30.06.73	181,618,596		90,809,298	Balance
18.06.74	181,618,596		90,809,298	Balance
17.06.75	181,618,596		90,809,298	Balance
18.06.75	7,037,400		3,518,700	Issue of 7,037,400 FP 50c shares to shareholders of Great Boulder Mines Ltd
18.06.76		2,308,241	577,060	First part of 3 for 20 issue at a prem of 70c. First Call 60c (25c capt.)
29.06.76	188,655,996	2,308,241	94,905,058	Balance

Date Issued (1)	No FP Shares	No PP Shares	Issued Capt \$ (2)(3)	Notes
14.12.76	(8,267,200)		(4,133,600)	Cancellation of 8,267,200 shares of 50c previously held by Great Boulder Mines Ltd
19.12.76	2,308,241	(2,308,241)	577,060	Final call of 60c (25c capt.)
19.12.76	24,736,864		12,368,432	Balance of 3 for 20 issue at a premium of 70c. First and final call of \$1.20 (50c capt.)
28.06.77	207,433,901		103,716,950	Balance
27.06.78	207,433,901		103,716,950	Balance
26.06.79	207,433,901		103,716,950	Balance
19.11.79	207,433,901		103,716,950	Restructure of Group - Western Mining Corporation Holdings Ltd took over Western Mining Corporation Ltd. Authorised capital remains at \$300 million, ie 600 million 50c shares
01.01.80	49,005,591		24,502,796	Issue of FP 50c shares to holders in BH South Ltd on takeover by WMCH
24.06.80	256,439,492		128,219,746	Balance
23.06.81	256,439,492		128,219,746	Balance
27.05.82	19,000,000		9,500,000	Placement of 19,000,000 FP 50c shares at a premium of \$3.10 to institutions
22.06.82	275,439,492		137,719,746	Balance
21.06.83	275,439,492		137,719,746	Balance
01.09.83	27,500,000		13,750,000	Placement of 27,500,000 FP 50c shares at a premium of \$4.00 to institutions.
27.02.84	10,624,797		5,312,398	50c options exercised at \$2.00 (50c capt.)
19.06.84	313,564,289		156,782,144	Balance
14.09.84	3,178,746		1,589,373	50c options exercised at \$2.00 (50c capt.)
25.02.85	46,467,699		23,233,850	50c options exercised at \$2.00 (50c capt.)
18.06.85	363,210,734		181,605,367	Balance
00.06.85	300		150	50c options exercised at \$2.00 (50c capt.)
17.06.86	363,211,034		181,605,517	Balance
19.06.86	36,300,000		18,150,000	Placement of 36,300,000 shares at \$3.05 (50c capt.)
22.07.86	374,000		187,000	FP 50c shares issued to employees at prem. of \$2.70
05.05.87				Auth. Capt. increased to \$1,000 million, ie 2,000 million shares of 50c
12.05.87	249,910,098		124,955,049	5 for 8 Bonus Issue
30.06.87	649,795,132		324,897,566	Balance
01.07.87	22,300,833		11,150,416	Issued in lieu of cash to shareholders in Hill 50 Gold Mine (equivalent to 50c capt. and \$5.83 prem.)
25.09.87	167,751,262		83,875,631	1 for 4 rts issue at a premium of \$4.50
21.12.87		5,583,000	279,150	PP shares to senior staff at prem. of \$5.32 paid to 5c
05.05.88	2,302,812		1,151,406	Issue to shareholders who elected to participate in the Dividend Reinvestment Plan (DRP) at a prem. \$4.53.
30.06.88	842,150,039	5,583,000	421,354,169	Balance
14.11.88	2,126,400		1,063,200	Issued to 1,483 employees at a prem. of \$4.67
24.11.88		3,251,000	162,550	Issued to senior staff at a prem. of \$4.48 pd to 5c
30.11.88	5,274,598		2,637,299	FP 50c shares issued to shareholders at a prem. of \$4.42 per share under DRP

Date Issued (1)	No FP Shares	No PP Shares	Issued Capt \$ (2)(3)	Notes
31.05.89	6,736,630		3,368,315	FP 50c shares issued to shareholders at a prem. of \$4.21 per share under DRP
1988-89	5,496		2,748	Further FP shares issued to shareholders in Hill 50 at a prem. of \$5.83
1988-89	495,000	(495,000)	222,750	PP staff shares converted to FP by payment of 45c
30.06.89	856,788,163	8,339,000	428,811,031	<b>Balance</b>
01.07.89	95,781		47,891	FP 50c shares issued to shareholders at prem. \$4.21 under DRP.
30.11.89	8,596,302		4,298,151	FP 50c shares issued to shareholders at prem. \$4.92 under DRP
16.01.90	645,300		322,650	FP 50c shares issued to 974 employees at prem. of \$5.99
16.01.90		1,504,800	72,240	Issued to 332 senior staff at a price of \$6.49 pd to 5c
30.04.90	7,154,266		3,577,133	FP 50c shares issued to shareholders at prem. \$4.37 under DRP
30.04.90	1			A discretionary dividend share to facilitate payment of franked dividends
1989-90	469,400	(469,400)	211,230	PP staff shares converted to FP by payment of 45c
30.06.90	873,249,213	9,374,400	437,343,326	<b>Balance</b>
20.09.90	28,453,398		14,226,699	FP 50c shares at a prem. of \$4.00 issued to Commonwealth Management Services Ltd in exchange for the purchase of 14,226,699 shares in Alcoa of Australia Ltd.
31.10.90	14,357,932		7,178,966	FP 50c shares issued to shareholders at prem. \$3.67 under DRP
12.12.90	1,182,400		591,200	FP 50c shares issued to 1034 employees at a price of \$4.11 per share
12.12.90		2,569,600	128,480	Issued to 353 senior staff at \$4.11 per share pd to 5c.
22.02.91		100,000	5,000	Issued to senior staff at \$4.46 per share pd to 5c.
30.04.91	10,381,972		5,190,986	FP 50c shares issued to shareholders at prem. \$4.20 under DRP.
1990-91	1,209,200	(1,209,200)	544,140	PP staff shares converted to FP on payment of 45c
30.06.91	929,344,115	10,834,800	465,208,797	<b>Balance</b>
31.10.91	12,295,030		6,147,515	FP 50c shares issued to shareholders at prem. \$3.78 under DRP
04.12.91	1,572,100		786,050	FP 50c shares issued to 1482 employees at \$4.39 per share.
04.12.91		2,343,600	117,180	Issued to 354 senior staff at \$4.39 per share, pd to 5c.
18.12.91		17,700	885	Issued to senior staff at \$4.39 per share pd to 5c
30.04.92	6,552,615		3,276,308	FP 50c shares issued to shareholders at prem. \$4.21 under DRP.
1991-92	1,097,100	(1,097,100)	493,695	PP staff shares converted to FP by payment of 45c.
30.06.92	950,850,960	12,099,000	476,030,430	<b>Balance (4)</b>

**Notes:**

- (1) In some cases the exact date of a transaction is not known in which case "00" have been used in the Date column.
- (2) Note also that the company year end changed from March to June in 1966.
- (3) The above statement does not take into account some minor amounts of unprocessed calls at year end hence the figures shown may differ slightly from those published in the corresponding Annual Report. The year end figures may also vary due to rounding to the nearest whole figure.
- (4) For subsequent details on growth of capital of WMC refer records maintained by the Assistant Company Secretary.

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## WMC SHARE HISTORY

GHI WMC-77 a

## NUMBER, VALUE, CAPITAL, PRICE, MARKET CAPITALISATION

Year End (1)	Issued Capital \$x000	FP Shares on Issue (2) x000	Par Value cents	Share Price (3)			Market Capital (4) \$x000	Ratio Mkt/Iss Capt	Notes
				High \$	Low \$	Avg \$			
1933	64	321	100				-		Partly paid at time of issue
1934	329	329	100	1.35	1.15	1.25	411	1.3	\$1.00 shares
1935	361	329	100	1.53	0.83	1.18	388	1.1	Some remain partly paid
1936	650	650	100	1.00	0.58	0.79	514	0.8	
1937	650	650	100	0.75	0.57	0.66	429	0.7	
1938	650	650	100	0.73	0.73	0.73	475	0.7	
1939	650	650	100	1.20	0.75	0.98	637	1.0	
1940	650	650	100	0.80	0.80	0.80	520	0.8	
1941	650	650	100	0.65	0.55	0.60	390	0.6	
1942	650	650	100	0.80	0.62	0.71	462	0.7	
1943	650	650	100	0.88	0.65	0.76	494	0.8	
1944	650	650	100	1.00	0.73	0.86	559	0.9	
1945	650	650	100	1.13	0.80	0.96	624	1.0	
1946	650	650	100	1.18	0.80	0.99	644	1.0	
1947	650	650	100	1.25	0.90	1.08	702	1.1	
1948	650	1,299	50	2.30	2.30	2.30	2,988	4.6	\$1.00 shares split to 50c
1949	650	1,299	50	1.20	1.03	1.12	1,455	2.2	
1950	1,397	2,794	50	2.10	1.20	1.65	4,610	3.3	GEFCA take over, 1 for 2 rts issue
1951	1,397	2,794	50	1.40	0.89	1.15	3,213	2.3	
1952	1,397	2,794	50	1.20	0.88	1.02	2,850	2.0	
1953	1,397	2,794	50	1.58	0.93	1.25	3,493	2.5	
1954	1,397	2,794	50	1.90	1.30	1.60	4,470	3.2	
1955	1,630	2,794	50	2.05	1.18	1.61	4,498	2.8	1 for 3 rts issue
1956	1,630	2,794	50	1.28	1.08	1.18	3,297	2.0	
1957	1,638	2,794	50	1.50	1.21	1.35	3,772	2.3	
1958	1,894	3,789	50	1.25	0.94	1.10	4,168	2.2	Issue to GMK s/h
1959	1,894	3,789	50	1.35	0.93	1.14	4,319	2.3	
1960	1,894	3,789	50	1.45	1.13	1.29	4,888	2.6	
1961	1,894	3,789	50	1.43	1.07	1.25	4,736	2.5	
1962	2,460	3,969	50	2.93	1.28	2.10	8,335	3.4	60 for 100 rts issue, Staff issue
1963	2,936	3,969	50	2.78	2.15	2.47	9,803	3.3	
1964	3,174	6,350	50	3.13	2.17	2.65	16,828	5.3	
1965	3,854	6,350	50	2.98	2.20	2.59	16,447	4.3	3 for 10 rts issue, Staff issue
1966	4,195	8,389	50	5.10	2.18	3.64	30,536	7.3	
1967	4,779	8,439	50	22.10	4.98	13.50	113,927	23.8	3 for 10 rts issue, Staff issue, HGA
1968*	5,643	11,286	50	57.50	18.50	38.00	428,868	76.0	* In Feb prior to 5 x 1 split
1968*	6,006	56,431	10	16.00	6.66	11.33	639,363	106.5	* In Apr after 5 x 1 split and 1st Call
1969	6,733	56,431	10	6.71	4.74	5.71	322,221	47.9	2nd & 3rd Calls paid
1970	7,097	70,971	10	8.30	4.74	6.23	442,149	62.3	4th Call paid & Staff issue
1971*	7,524	75,241	10	6.22	5.00	5.61	422,102	56.1	* In Jan prior to 9 for 1 bonus
1971*	78,432	150,683	50	2.70	2.00	2.35	354,105	4.5	* After 9 for 1, cons to 50c & 1 for 5 rts.
1972	87,715	150,683	50	1.73	1.18	1.50	226,025	2.6	
1973	90,809	181,619	50	1.73	1.12	1.41	256,083	2.8	
1974	90,809	181,619	50	1.15	0.66	0.81	147,111	1.6	
1975	90,809	181,619	50	0.94	0.48	0.77	139,847	1.5	
1976	94,905	188,656	50	0.89	0.72	0.79	149,038	1.6	3 for 20 rts issue, issue to GBM s/h
1977	103,717	207,434	50	0.96	0.71	0.82	170,096	1.6	Cancel 8.3m re GBM, 3 for 20 rts(Bal)
1978	103,717	207,434	50	0.78	0.52	0.64	132,758	1.3	
1979	103,717	207,434	50	1.19	0.78	0.96	199,137	1.9	
1980	128,220	256,439	50	2.67	1.24	1.93	494,927	3.9	WMCH established, issue to BHS s/h
1981	128,220	256,439	50	3.26	2.25	2.73	700,078	5.5	
1982	137,720	275,439	50	2.40	1.56	1.97	542,615	3.9	Placed 19m shares
1983	137,720	275,439	50	2.40	1.46	1.87	515,071	3.7	
1984	156,782	313,564	50	2.46	1.74	2.22	696,112	4.4	Placed 27.5m shares, Options exerc.
1985	181,605	363,211	50	2.34	1.58	1.91	693,733	3.8	Options exercised
1986	181,606	363,211	50	2.34	1.60	1.95	708,261	3.9	
1987	324,898	649,795	50	6.13	1.80	3.57	2,319,768	7.1	Placed 36.3m, 5 for 8 bonus, Staff



1988	421,354	842,150	50	8.99	4.22	6.12	5,153,958	12.2	Issue to H50, 1 for 4 rts , DRP, Staff
1989	428,811	856,788	50	6.18	4.68	5.13	4,395,322	10.3	DRP, Staff, H50
1990	437,343	873,749	50	6.71	4.16	5.44	4,753,195	10.9	DRP, Staff
1991	465,208	929,344	50	5.55	3.66	4.60	4,274,982	9.2	DRP, Staff
1992	476,030	950,851	50	5.49	4.08	4.84	4,602,119	9.7	DRP, Staff
1993	482,657	963,985	50	5.74	3.57	4.62	4,453,611	9.2	DRP, Staff
1994	491,106	981,133	50	8.31	4.80	6.40	6,279,251	12.8	DRP, Staff, Options exercised
1995	554,959	1,109,066	50	8.39	6.41	7.43	8,240,360	14.8	1 for 8 rts issue, DRP, Staff, Options
1996	556,852	1,113,222	50	9.82	7.81	8.80	9,796,354	17.6	Staff, Options exercised
1997	564,877	1,129,426	50	9.11	7.41	8.12	9,170,939	16.2	DRP, Staff, Options exercised
1998*	571,490	1,142,753	50	8.37	4.33	5.72	6,536,547	11.4	DRP, Staff, Options exercised
1999*	574,970	1,149,942	50	8.55	4.63	6.47	7,440,125	12.9	Staff, Options exercised. *See note (5)
2000	554,054	1,097,899	50	8.91	6.12	7.45	8,179,348	14.8	5% buyback, Staff, Options exercised
2001		1,109,451		10.22	6.58	8.40	9,319,388		Note (6)
2002		1,128,351		4.45	3.50	3.97	4,479,553		Note (7)

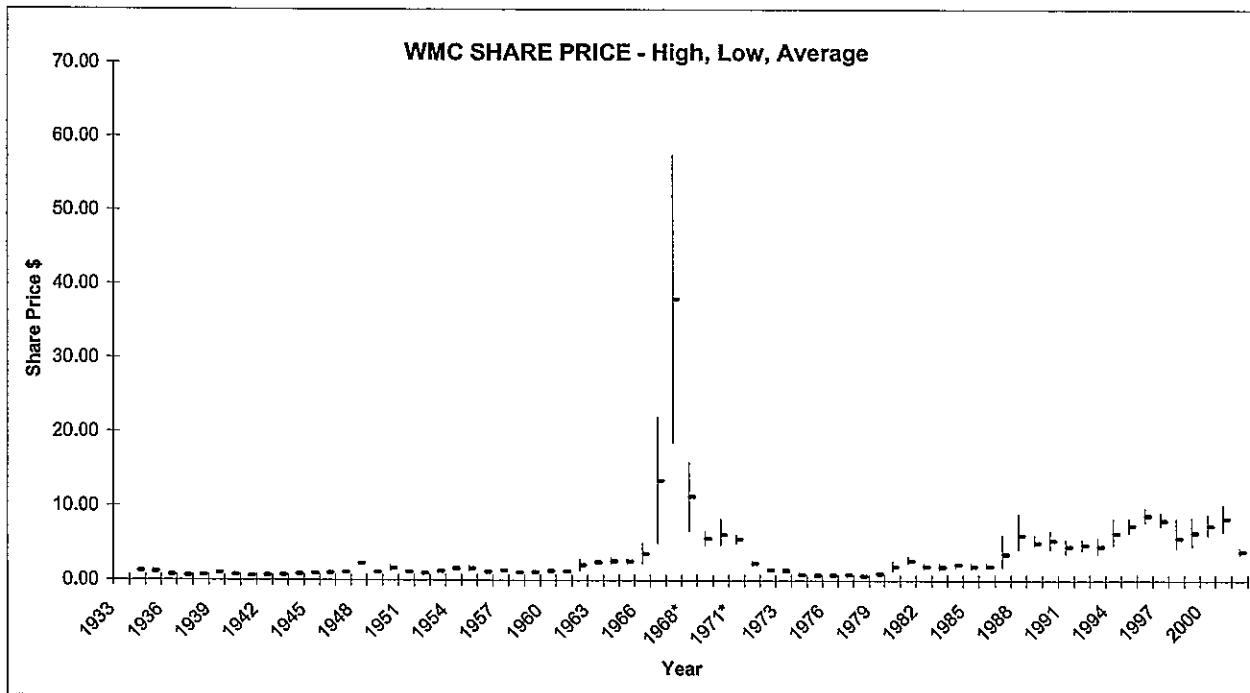
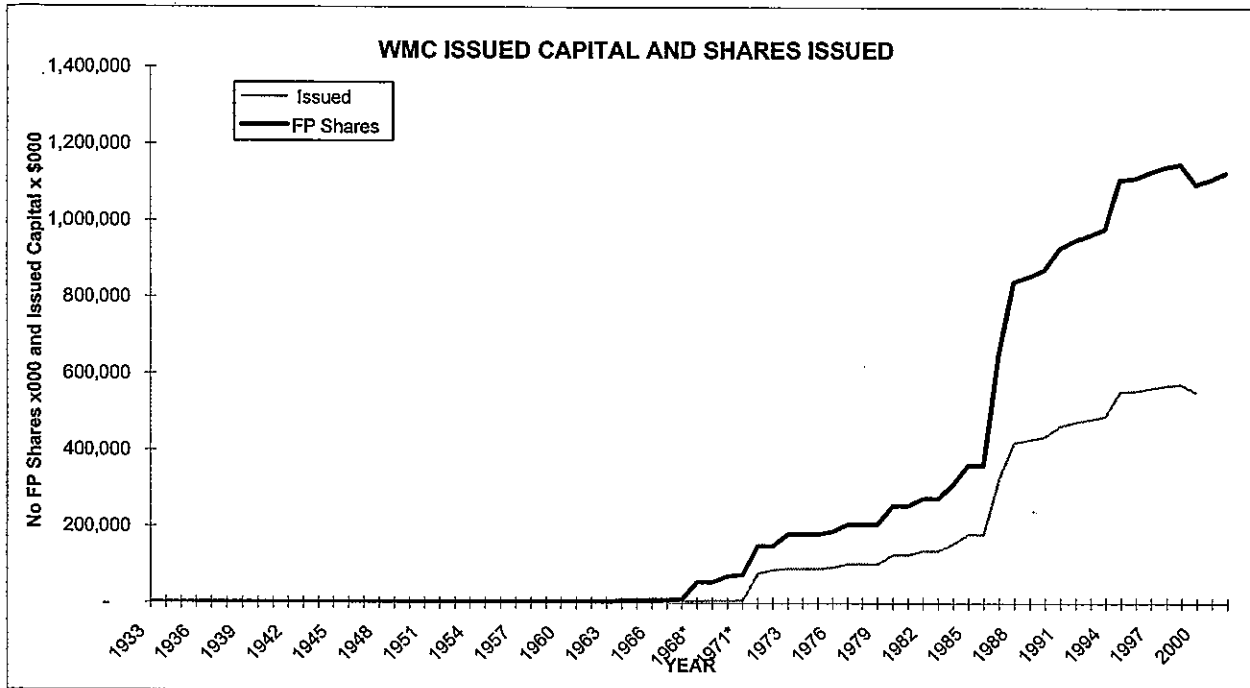
#### Notes

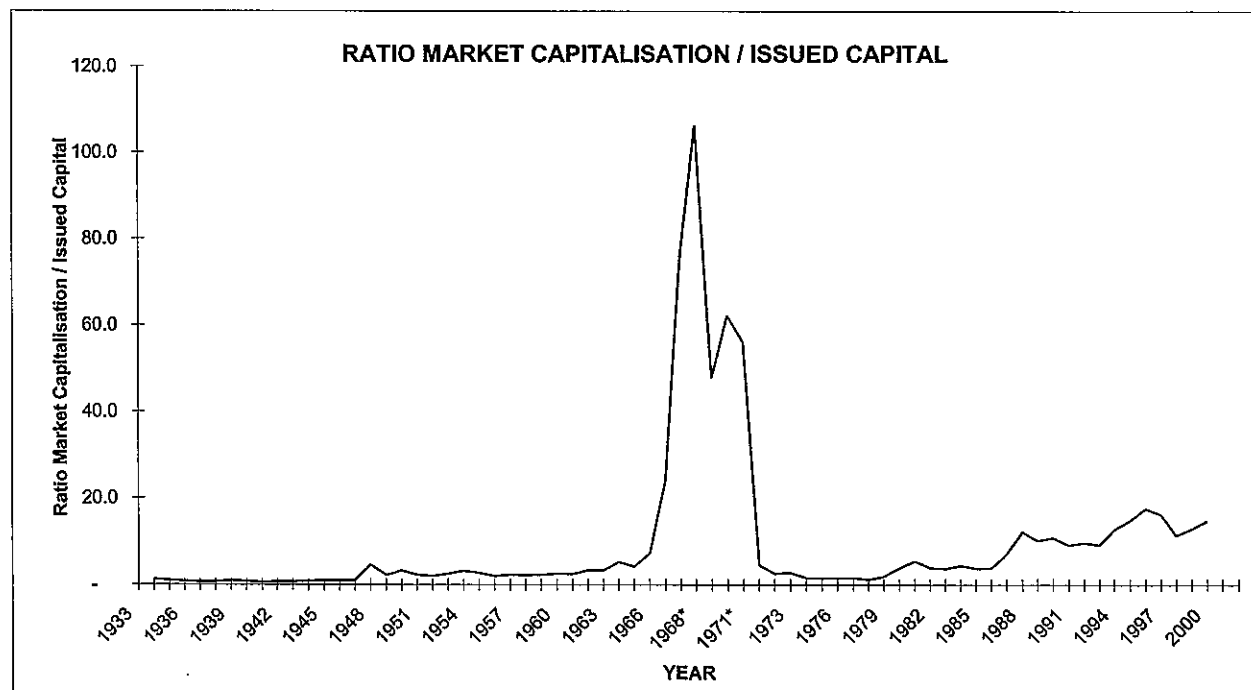
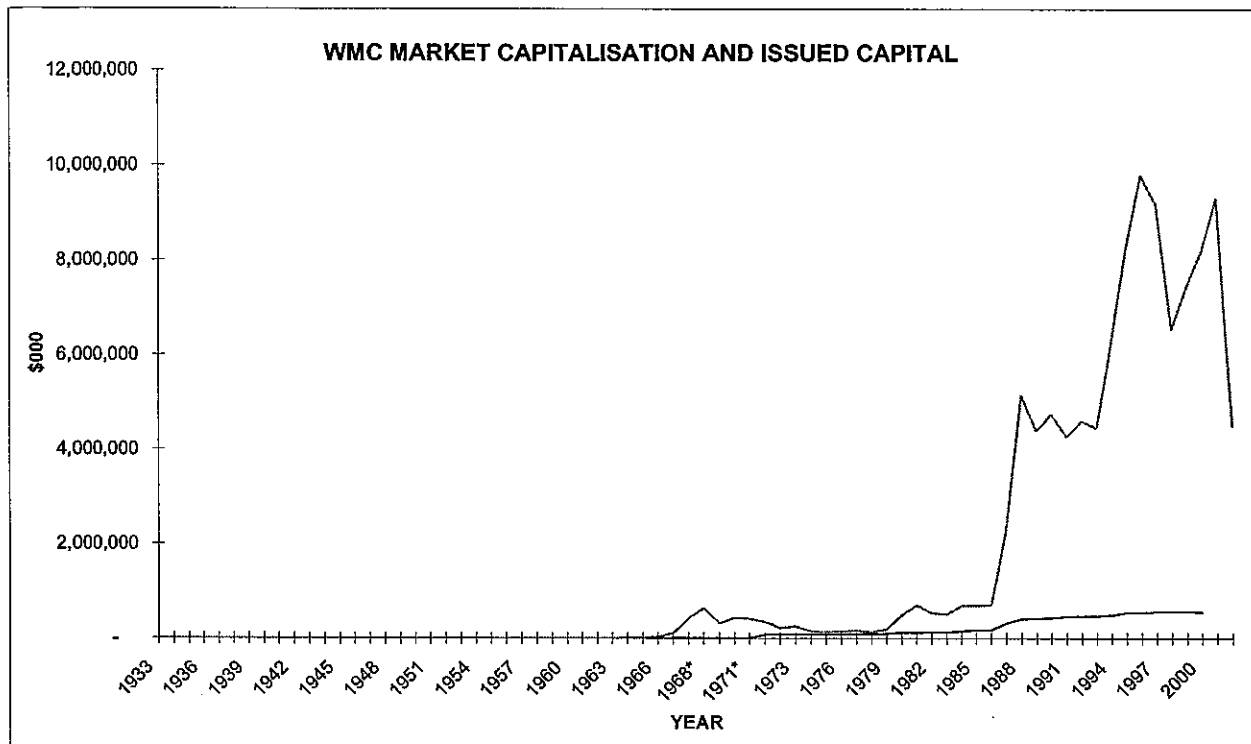
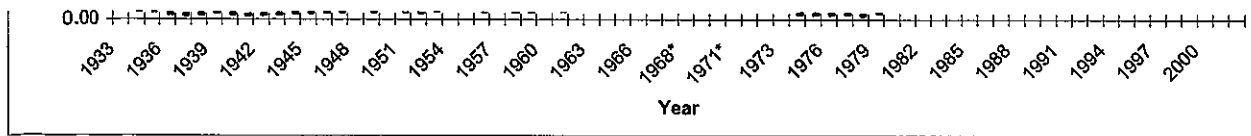
- (1) Y/E was 31 March to 1965, 30 June to 1998 and 31 Dec.since
- (2) PP shares not included in total until FP
- (3) From ASX Record to 1968, then Bloomberg's Database
- (4) No shares x average price
- (5) From 1999 share par value was discontinued. For this exercise it is assumed to remain at 50cents
- (6) Par value of 50c and Issued Capital no longer relevant
- (7) In Dec 2002 WMC Ltd demerged to form WMC Resources Ltd and Alumina Ltd at ratio 46.3% WMC and 53.7% Alumina

GM Ralph originally 8.7.98. Updated on 2.9.03.

#### Abbreviations

GEFCA = Gold Expl & Finance Co of Aust.  
HGA = Hampton Gold Areas Ltd  
GBM = Great Boulder Mines Ltd  
WMCH = Western Mining Corp Holdings Ltd  
H50 = Hill 50 Gold Mine NL





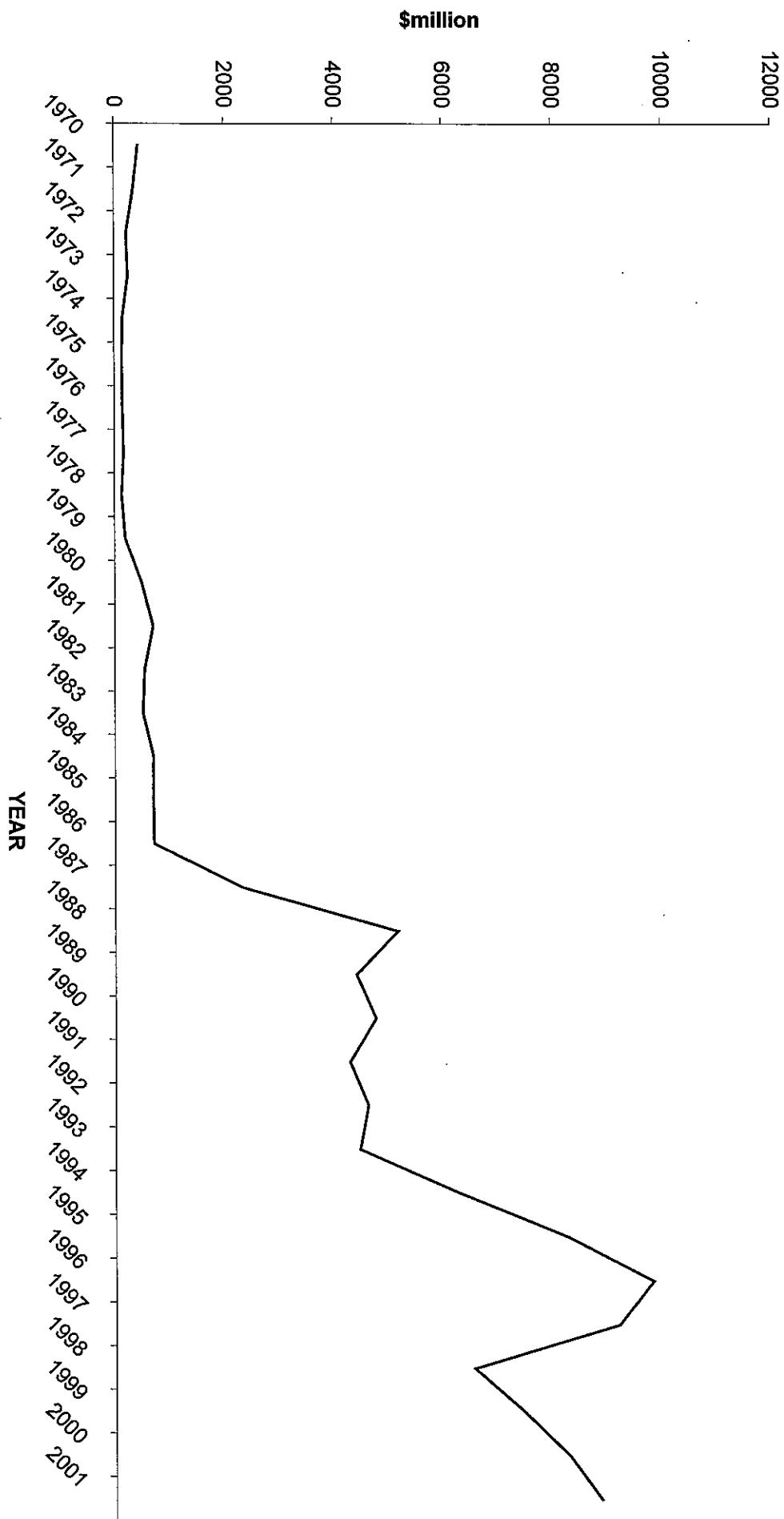
WMC Limited

MARKET CAPITALISATION

\$ MILLION

YEAR	MARKET CAP
	\$ MILLION
1970	442
1971	354
1972	226
1973	256
1974	147
1975	140
1976	149
1977	170
1978	132
1979	199
1980	495
1981	700
1982	543
1983	515
1984	696
1985	694
1986	708
1987	2320
1988	5154
1989	4395
1990	4750
1991	4275
1992	4602
1993	4454
1994	6279
1995	8240
1996	9796
1997	9170
1998	6537
1999	7440
2000	8255
2001	8837

# WMC MARKET CAPITALISATION \$Millions





## GROUP HISTORICAL INFORMATION

**Name:** WMC Limited

**Ref:** WMC - 97

**Compiled by:** G. M. Ralph

**Date:** 14.03.01

**Source:** WMC Annual Reports

**Page:** 1 of 1

**Subject:** Number of Shareholders and Shares Issued in WMC

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Year	No Shareholders 000	No Shares Issued 000	Value of Shares cents
1973-74	76	181.6	50
1974-75	75	181.6	50
1975-76	85	191.0	50
1976-77	84	207.4	50
1977-78	83	207.4	50
1978-79	78	207.4	50
1979-80	88	256.4	50
1980-81	88	256.4	50
1981-82	88	275.4	50
1982-83	83	275.4	50
1983-84	80	313.6	50
1984-85	76	363.2	50
1985-86	68	363.2	50
1986-87	64	649.8	50
1987-88	75	847.7	50
1988-89	73	865.1	50
1989-90	75	883.1	50
1990-91	77	940.2	50
1991-92	81	962.9	50
1992-93	73	977.3	50
1993-94	69	991.9	50
1994-95	72	1,117.6	50
1995-96	86	1,118.0	50
1996-97*	103	1,132.7	50
1997*	114	1,139.0	50
1998	112	1,145.0	50
1999	96	1,151.0	50
2000	109	1,098.7	50

- Note: Financial year changed from June to December in 1997





## GROUP HISTORICAL INFORMATION

<b>Name:</b>	WMC Limited	<b>Ref :</b>	WMC - 76
<b>Compiled by:</b>	G M Ralph	<b>Date:</b>	4.8.98
<b>Source:</b>	Melbourne Stock Exchange Record	<b>Page:</b>	1 of 11
<b>Subject:</b>	WMC Monthly Share Price, 1933 - 1968		

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WMC's share price has fluctuated significantly since it was first listed in 1933.

The Company does not appear to have maintained a record of trading in its shares on the Stock Exchange until recent times and the earliest database on a monthly basis dates from 1968. In an endeavour to fill the gap I have searched the records of the Melbourne Stock Exchange at the Melbourne University Archives (MUA) and have collated WMC share prices on a monthly basis from 1933 to 1968. As a matter of interest the MUA also holds the Stock Exchange Daily Quotes Sheets from 1870. These show Morning and Afternoon Closing Prices and Sales.

The first record of trading in WMC was in Options during December 1933. The 50 cent shares became fully paid in December 1933 and traded at between 115 and 120 cents in January 1934.

Much of the early trading was in Adelaide. It was, however, recorded in Melbourne. Strangely there is no record of trading during 1947 and 1948. The High and Low figures for 1947 and 1948 do, however, appear in the 'Record'.

The highest 'High' appears to have been during February 1968 when the shares reached \$57.50 for a 50 cent share, ie a multiple of 115. This was just prior to a 5 for 1 split, immediately after which they were \$7.90 per 10 cent share. By June, however, they had reached \$16.00 per 10 cent share, ie a multiple of 160. In terms of the pre-split shares this was equivalent to \$80.00. This is probably the highest price ever achieved by WMC shares (in relation to the issued capital in the period under review).

'Price' alone does not present the whole picture. Readers should also take into account the par value of WMC shares, the issued capital and the changing value of money. For a more detailed review of WMC share issues and prices refer to the following Group Historical Information papers;

WMC - 70 Growth of Capital of WMC from 1933-1992, and  
WMC - 77 WMC Share History, 1933 - 1998.

No doubt the Company Secretary and the Company Treasurer also have details on these matters.



## WMC MONTHLY SHARE PRICE - 1933-1968

From the 'Melbourne Stock Exchange Record' held at Melbourne University Archives.

Collated by G M Ralph, 29 July 1998

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
<b>1933</b>					
Dec					FP in Dec, trading in Options only
<b>1934</b>					
Jan	125		120	115	
Feb	125	135	135	125	
Mar		135	125		High 135 Low 115 (See Note 1)
Apr			125 (Mar)		
May	119	125	122.5		Adelaide
June	147	147.5	150	147	
July		148	152.5	142.5	
Aug	135		145	135	
Sep		140	140	133	
Oct		120			
NovDec		80	85	82.5	Paid to 10c
<b>Year</b>			<b>152.5</b>	<b>115</b>	
<b>1935</b>					
Jan		140	92.5	90	Paid to 10c
Feb		125	125	123	
Mar		120	100		H 152.5 L 82.5
Apr			100 (Mar)		
May			93		Adelaide
June			100		Adelaide
July	75				Adelaide
Aug	75				Adelaide
Sep	55	72	87	71	Adelaide
Oct		69	67		Adelaide
Nov	75		77	58	Adelaide
Dec	67.5		73	72	Adelaide
<b>Year</b>			<b>125</b>	<b>58</b>	
<b>1936</b>					
Jan	81	86	88	80	Adelaide
Feb		87	77		Adelaide
Mar	100	105	100		H 100 L 58
Apr	65	85			Adelaide
May		61	67.5	57	
June	57.5	61	57.5		Adelaide
July	52.5	60	59		Adelaide
Aug	57		59		Adelaide
Sep	60	80	60		
Oct	57.5		67	63	Adelaide
Nov	50	60	66	65	
Dec	68	74	75		Adelaide
<b>Year</b>			<b>100</b>	<b>57</b>	
<b>1937</b>					

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
Jan	65	73	69	62	Adelaide
Feb		70	70	67	Adelaide
Mar	65		67.5	65	H 75 L 57
Apr	70	90			
May	66				Adelaide
June	66 (May)				Adelaide
July		77.5			Adelaide
Aug		77.5 (July)			Adelaide
Sep	70	80	73		Adelaide
Oct	70	72.5	72		Adelaide
Nov	20*	77.5			* April Options
Dec	27.5*	75			* April Options, Adelaide
Year			73	62	
1938					
Jan	30*	80			* April Options, Adelaide
Feb	70				
Mar	100	150			H 73 L 73
Apr	70	100			Adelaide
May		85	120	80	
June	77		80	75	
July			80 (June)		
Aug	77.5		80		
Sep	80		80		
Oct	80		80		
Nov	80	85	81		
Dec	80		80		
Year			120	75	
1939					
Jan	80				
Feb	80				
Mar	100				H 120 L 75
Apr	80				
May	80		80		
June	80		80		
July			80 (June)		
Aug			80 (June)		
Sep			80 (June)		
Oct			80 (June)		
Nov	96				
Dec					
Year			80	80	
1940					
Jan					
Feb					
Mar					H 80 L 80
Apr					
May					
June					
July		55	55		Adelaide
Aug		55	55 (July)		Adelaide
Sep		50			Adelaide

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
Oct		50			Adelaide
Nov		50			Adelaide
Dec		50			Adelaide
<b>Year</b>			<b>55</b>	<b>55</b>	
<b>1941</b>					
Jan	55				Adelaide
Feb	55		65		Adelaide
Mar					H 65 L 55
Apr	55				
May	75				
June	70				
July	70				
Aug	55				
Sep	70				
Oct	75		62		Adelaide
Nov		86	62		Adelaide Oct
Dec	75		62		Adelaide Oct
<b>Year</b>			<b>65</b>	<b>62</b>	
<b>1942</b>					
Jan	75		80		
Feb	75		80 (Jan)		
Mar		80	80 (Jan)		H 80 L 62
Apr			80 (Jan)		
MayJune			80 (Jan)		
JulyAug			80 (Jan)		
SepOct			80 (Jan)		
NovDec	80	80	80 (Jan)		
<b>Year</b>			<b>80</b>	<b>80</b>	
<b>1943</b>					
JanFeb			80	65	
MarApr			87.5	72.5	H 87.5 L 65
MayJune			95	80	
JulyAug			100	80	
SepOct			100	80	
NovDec	85		100	80	
<b>Year</b>			<b>100</b>	<b>65</b>	
<b>1944</b>					
JanFeb	84		100	80	
MarApr	100		100	80	H 100 L 72.5
MayJune	100		100	80	
JulyAug	100		100	80	
SepOct	100		100	80	
NovDec	100		100	80	
<b>Year</b>			<b>100</b>	<b>80</b>	
<b>1945</b>					
JanFeb	100		112.5	97.5	
MarApr	100		100	80	H 112.5 L 80
MayJune	107.5		100	80	
JulyAug	100		100	80	
SepOct	110		110	90	
NovDec	110		110	90	

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
<b>Year</b>			<b>112.5</b>	<b>80</b>	
<b>1946</b>					
JanFeb	110		110	90	
MarApr	117.5		117.5	97.5	H 117.5 L 80.0
MayJune	117.5		117.5	90	
JulyAug	120		125	105	
Sep	125		125	105	
Oct	120		125	105	
Nov	125		125	105	
Dec	125		125	105	
<b>Year</b>			<b>125</b>	<b>90</b>	
<b>1947</b>					No trading in Melbourne in 1947
Jan					
Feb					
Mar					H 125 L 90 (assumed)
Apr					
May					
June					
July					
Aug					
Sep					
Oct					
Nov					
Dec					
<b>Year</b>			<b>230</b>	<b>230</b>	'Record' shows 230 but no trading
<b>1948</b>					No trading in Melbourne in 1948
Jan					
Feb					
Mar					H 230 L 230 (assumed)
Apr					
May					
June					
July					\$1.00 shares split to 50c
Aug					
Sep					
Oct					
Nov					
Dec					
<b>Year</b>			<b>102.5</b>	<b>102.5</b>	'Record' shows 102.5 but no trading
<b>1949</b>					
Jan	100	120	120		
Feb	100	120	120		
Mar	100		120 (Feb)		H 120 L 102.5
Apr	100		120 (Feb)		
May		135	120 (Feb)		
June	120	135	120 (Feb)		
July		135	120 (Feb)		
Aug	137.5		137.5		
Sep			137.5 (Aug)		
Oct		235	210		
Nov			205	190	1 for 2 rts issue

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
Dec	125	127.5	137.5	130	
Year			210	120	
1950					
Jan	120		140	130	
Feb	117.5	119	119	121	
Mar	122	122.5	116	124	H 210 L120
Apr	130	132.5	140	120	
May	130	134	138	132.5	
June	120		134	115	
July	95	97.5	118	97.5	
Aug	107.5	109	119	92.5	
Sep	118	109	122.5	105	
Oct	109	112.5	110	107.5	
Nov	95	99	112	97.5	
Dec	97.5	100	97.5	93	
Year			140	92.5	
1951					
Jan	100	105	112.5	97.5	
Feb	92.5	97.5	100	89	
Mar	92.5		97.5	90	H 140 L 89
Apr	107.5	110	107.5	95	
May	99	100	105	97.5	
June	95	97.5	102.5	97.5	
July	90	92.5	102.5	87.5	
Aug	93	95	96	88	
Sep			110	92.5	
Oct		115	120	102	
Nov	100	103	115	100	
Dec	102.5	103	105	101	
Year			120	87.5	
1952					
Jan	96	97.5	103	102	
Feb	95	97	100	94	
Mar	95	97.5	102	97	H 120 L 87.5
Apr					
May	94	95	98	92.5	
June	102	102.5	102	94	
July	106	107	107	99	
Aug	113	115	117.5	105	
Sep	117	117.5	117.5	111	
Oct	125		127	117	
Nov	139		139	125	
Dec	135	137	146	135	
Year			146	92.5	
1953					
Jan	147.5	149	148	136	
Feb		148	157.5	148	
Mar	154	155	157	142.5	H 157.5 L 92.5
Apr	159	159	159	152	
May	159	159	162	154	
June	157	159	160	153	

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
July	165	167	177.5	158	
Aug	170	172	173	167	
Sep	160	169	172	156	
Oct	154	155	161	150	
Nov		142.5	155	142	
Dec	155	157.5	157.5	130	
Year			177.5	130	
1954					
Jan		157	190	155	
Feb	152	152.5	157.5	150	
Mar	142	142.5	152	138	H 190 L 130
Apr	146		150	142.5	
May		147.5	147.5	144	
June	175	180	175	144	
July	195	200	200	165	
Aug	174	175	205	170	
Sep	167.5	188	180	165	
Oct	148	150	168	145	
Nov	143	145	180	140	1 for 3 rts issue. Rts trading began
Dec		137.5	140	135	
Year			205	135	Rts traded 10-25c
1955					
Jan	128	130	140	129	
Feb	120	122	127.5	119	
Mar		126	127.5	117.5	H 205 L 117.5
Apr	115	116	126	114	
May		115	115	108	
June	127.5	130	127.5	110	
July	117.5	120	127.5	115	
Aug	115	117	120	115	
Sep	110	115	118	113	
Oct	115	117.5	118	112.5	
Nov	110	112.5	117.5	110	
Dec	115	116	117	108	
Year			140	108	Rts traded 9-57.5c
1956					
Jan	117.5		122	115	
Feb		127	128	120	
Mar	128	129	128	117	H 128 L 108
Apr	122.5	125	131	125	
May	120	122.5	126	122	
June	122	123	125	121	
July	127	128	127	122	
Aug	133	135	137	127.5	
Sep	135	137.5	142.5	135	
Oct	138	140	142.5	135	
Nov	135	137.5	138	136	
Dec	139	142	145	137.5	
Year			145	115	Rts traded 49-72.5c
1957					
Jan	142.5	145	150	140	

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
Feb	132.5	135	145	135	
Mar	123	125	135	122.5	Rts trading ended, H 150 L 121
Apr	118	120	125	114	
May	115	119	121	110	
June	111	114	117.5	110	
July	119	120	121	113	
Aug	121		124	117.5	
Sep	116	117.5	120	112	
Oct	112.5	115	117.5	110	
Nov	113	114	115	112.5	
Dec	112	115	115	110	
Year			150	110	Rts traded 62.5-75c
1958					
Jan	105	10.75	117	102.5	
Feb	103		106	94	
Mar		100	106	100	H 125 L 94
Apr	97.5	99	101	97.5	
May	102.5	105	103	92.5	
June	109		109	103	
July	102.5	105	111	97	
Aug	107.5	110	109	105	
Sep	112		114	118	
Oct		115	117.5	112	
Nov	112	118	120	112.5	
Dec			135	118	
Year			135	92.5	
1959					
Jan			133	125	
Feb			127.5	125	
Mar			132.5	127	H 135 L 92.5
Apr			133	125	
May			142.5	127	
June			135	130	
July			142.5	130	
Aug			142.4	131	
Sep			140	133	
Oct			145	135	
Nov			142	137.5	
Dec			137.5	130	
Year			145	125	
1960					
Jan			137.5	127	
Feb			135	123	
Mar			126	112.5	H 145 L 112.5
Apr			130	127.5	
May			127.5	107	
June			122.5	117.5	
July			122.5	120	
Aug			132.5	118	
Sep			125	117	
Oct			135	121	

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
Nov			142.5	119	
Dec			135	120	
Year			142.5	107	
1961					
Jan			142.5	132.5	
Feb			137.5	120	
Mar			126	122.5	H 142.5 L 107
Apr			150	128	
May			157.5	142	
June			220	157.5	
July			250	205	
Aug			292.5	230	
Sep			254	210	
Oct			227.5	189	
Nov			225	190	
Dec			212.5	200	60 for 100 rts issue
Year			292.5	120	
1962					
Jan			260	205	
Feb			260	232.5	
Mar			260	237.5	H 292.5 L 128
Apr			245	215	
May			230	219	
June			250	217.5	
July			270	231	
Aug			247.5	235	
Sep			247.5	240	
Oct			270	242.5	
Nov			270	250	
Dec			275	263	
Year			275	205	
1963					
Jan			280	265	
Feb			277.5	245	
Mar			255	245	H 277.5 L 215
Apr			247.5	217	
May			230	217.5	
June			250	225	
July			270	247.5	
Aug			285	250	
Sep			262.5	235	
Oct			240	230	
Nov			270	230	
Dec			292.5	270	
Year			292.5	217	
1964					
Jan			312.5	282.5	
Feb			292.5	272.5	
Mar			295	285	H 312.5 L 217
Apr			297.5	282.5	
May			294	220	



YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
June			242.5	227.5	
July			275	230	
Aug			267.5	242.5	
Sep			270	225	
Oct			260	245	3 for 10 rts issue
Nov			255	245	
Dec			267	242.5	
Year			312.5	220	
1965					
Jan			285	250	
Feb			255	247.5	
Mar			250	240	H 297.5 L220
Apr			250	232.5	
May			262.5	250	
June			252.5	220	
July			247.5	217.5	
Aug			271	252.5	
Sep			260	242.5	
Oct			242.5	227.5	
Nov			247.5	227.5	
Dec			245	235	
Year			285	217.5	
1966					
Jan			260	250	
Feb			280	248	
Mar			276	250	
Apr			368	260	
May			445	360	
June			510	447	H 510 L 217.5
July			548	498	
Aug			602	502	
Sep			648	532	
Oct			680	598	3 for 10 rts issue
Nov			700	620	
Dec			700	620	
Year			700	248	
1967					
Jan			700	650	
Feb			684	630	
Mar			834	644	
Apr			1250	852	
May			1590	1040	
June			2110	1370	H 2210 L 498
July			2050	1850	
Aug			2110	1920	
Sep			2320	1970	
Oct			2800	2290	
Nov			3140	2600	
Dec			3000	2655	
Year			3140	630	
1968					

YEAR/ MONTH	END OF MONTH PRICE (cents)		RANGE FOR MONTH (cents)		NOTES
	Buyer	Seller	High	Low	
Jan			4380	2900	
Feb			5750	4680	Split: 5x10c H 5750 L 1850
Mar			790	666	
Apr			1010	700	1 for 4 rts issue
May			1420	980	
June			1600	1190	H 1600 L 666
July			1550	1290	
Aug			1420	1240	
Sep			1310	910	
Oct			1130	750	
Nov			1160	900	
Dec			1130	1030	
Year			1600	666	

**Note 1.** The High and Low prices shown in the Notes column are those at the end of the Company's financial year which began as March in 1934, but changed to June in 1966.

**Note 2.** Much of the early trading was in Adelaide. It was recorded in Melbourne. Strangely there is no record of trading during 1947 and 1948. The High and Low figures for 1947 and 1948 do, however, appear in the 'Record'.

**Note 4.** Where a month appears in brackets in the High column it indicates that the trades were in the month bracketed.

**Note 5.** The first record of trading was in December 1933 when the shares first became fully paid. Trading was in Options only. First trading was in January 1934 at 115 to 120 cents per 50cent fully paid share.

**Note 5.** The highest 'High' appears to have been during February 1968 when the shares reached \$57.50 for a 50 cent share ie a multiple of 115. This was just prior to a 5 for 1 split, immediately after which they were \$7.90 per 10 cent share. By June, however they had reached \$16.00 per 10 cent share ie a multiple of 160. In terms of the pre split shares this was equivalent to \$80.00. This is probably the highest price ever achieved in relation to the issued capital in the period under review.

**Note 6.** Pre 1966 prices were originally recorded in shilling and pence and have been converted to decimal currency in the above table at the following rates:

Pence: 1 2 3 4 5 6 7 8 9 10 11 12  
Cents: 1 2 2.5 3 4 5 6 7 7.5 8 9 10

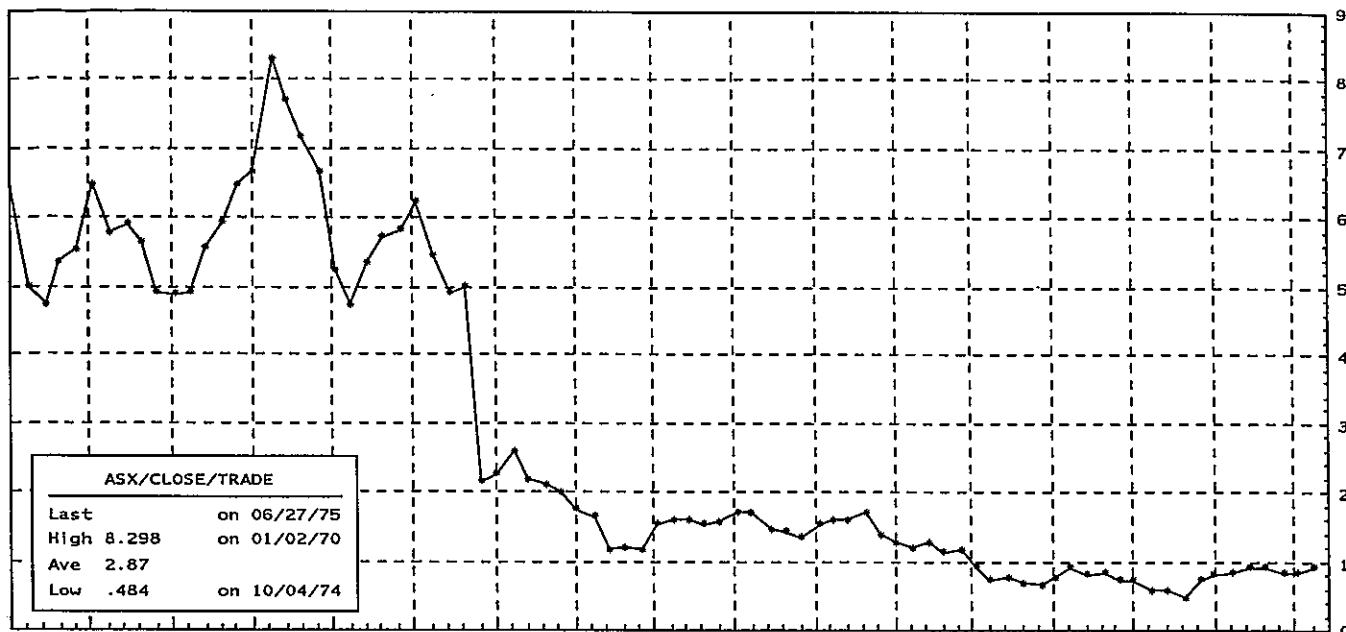


1  
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Equity GPA

**AVG PRICE LINE GRAPH for WMC AU A\$**

**8/30/68 - 6/27/75** Period **W** Weekly  
Market Type **I** Trade

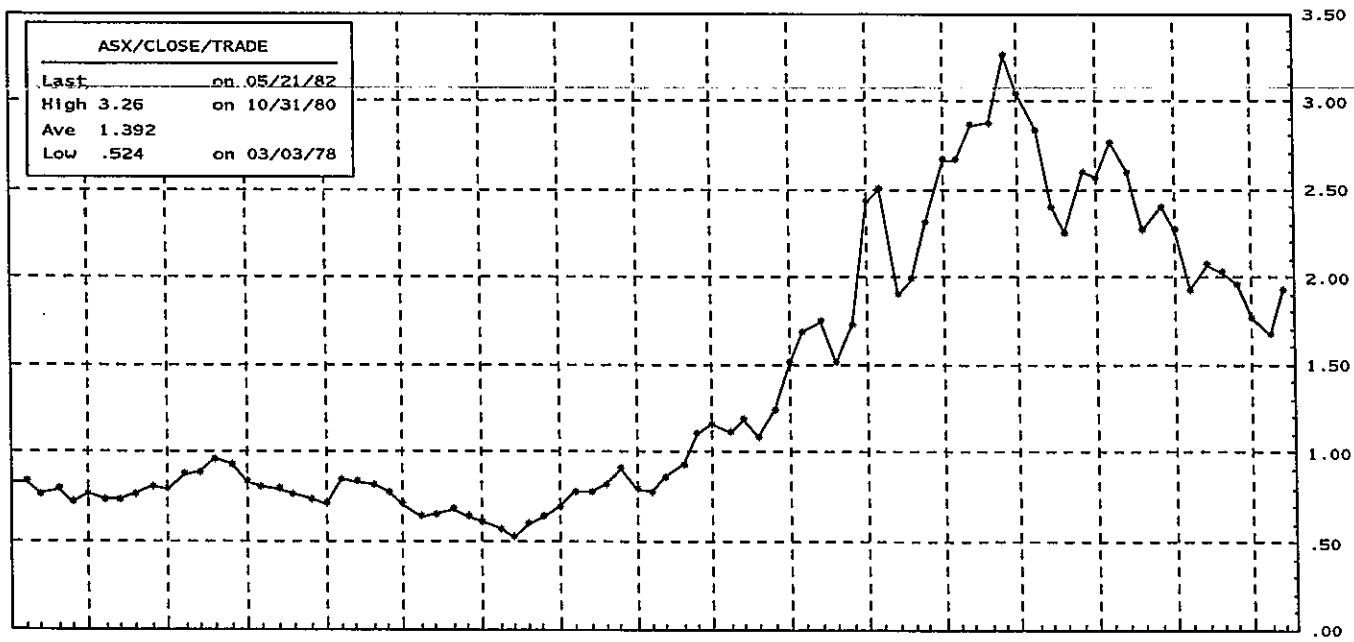


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Copyright 1998 BLOOMBERG L.P. Frankfurt:69-920410 Hong Kong:2-2977-6000 London:171-330-7500 New York:212-318-2000  
Princeton:609-279-3000 Singapore:226-3000 Sydney:2-9777-8666 Tokyo:3-3201-8900 Sao Paulo:11-3048-4500  
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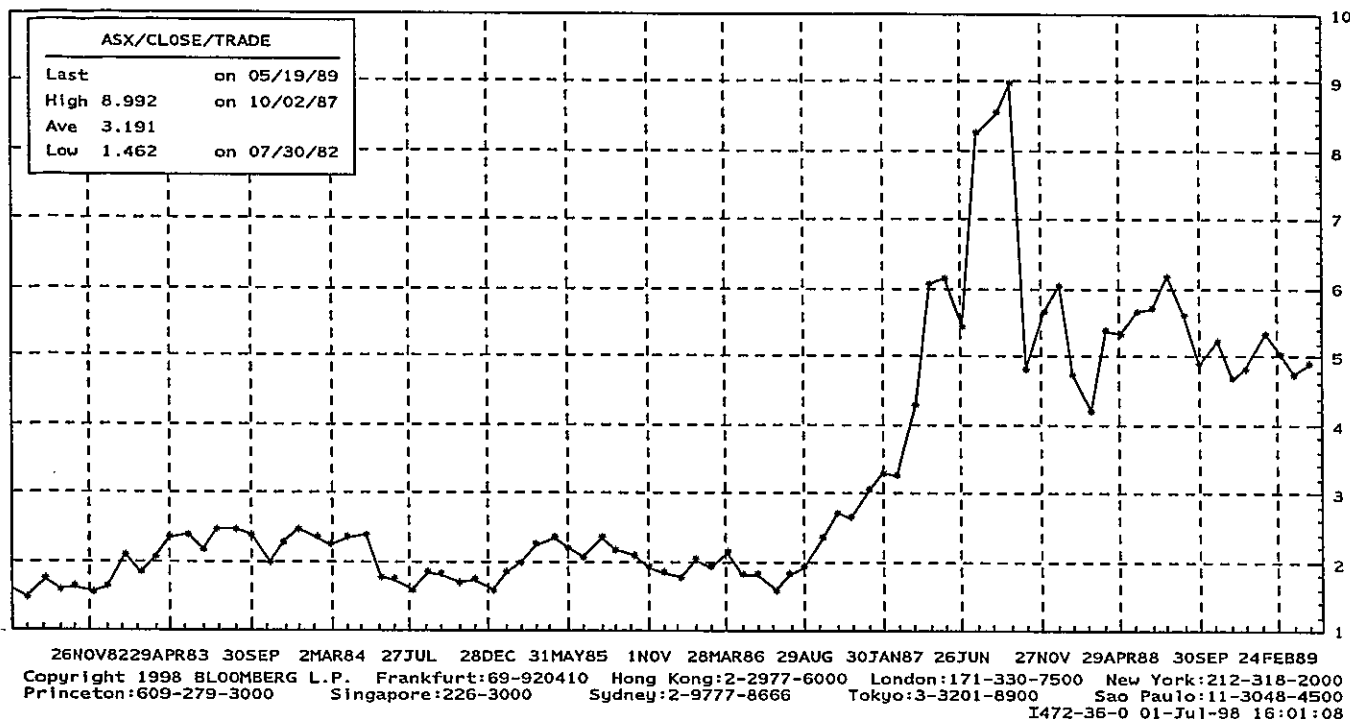
**AVG PRICE LINE GRAPH for WMC AU A\$**

**7/ 4/75 - 5/21/82** Period **W** Weekly  
Market Type **I** Trade

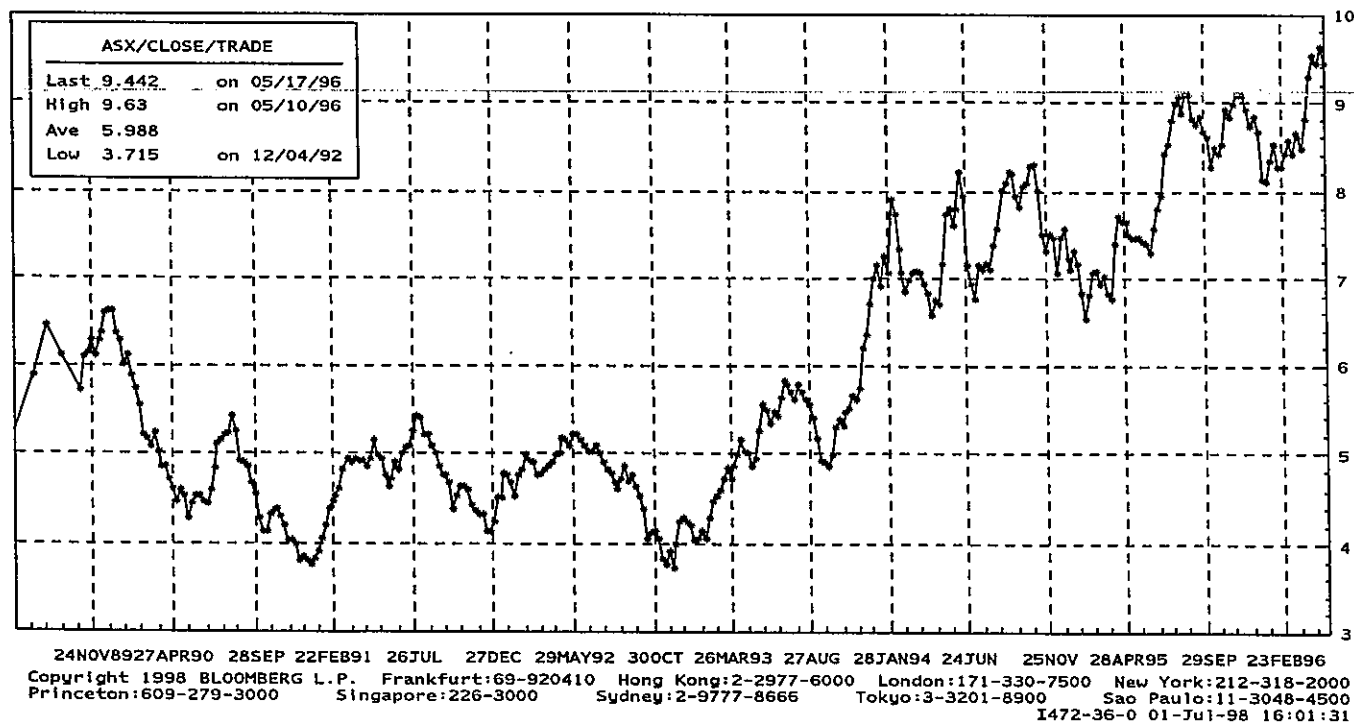


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Copyright 1998 BLOOMBERG L.P. Frankfurt:69-920410 Hong Kong:2-2977-6000 London:171-330-7500 New York:212-318-2000  
Princeton:609-279-3000 Singapore:226-3000 Sydney:2-9777-8666 Tokyo:3-3201-8900 Sao Paulo:11-3048-4500  
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1  
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**AVG PRICE LINE GRAPH** for WMC AU A\$  
**7/2/82 - 5/19/89** Period **W** Weekly  
 Market Type **I** Trade



1  
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**AVG PRICE LINE GRAPH** for WMC AU A\$  
**6/30/89 - 5/17/96** Period **W** Weekly  
 Market Type **I** Trade



Equity GPA

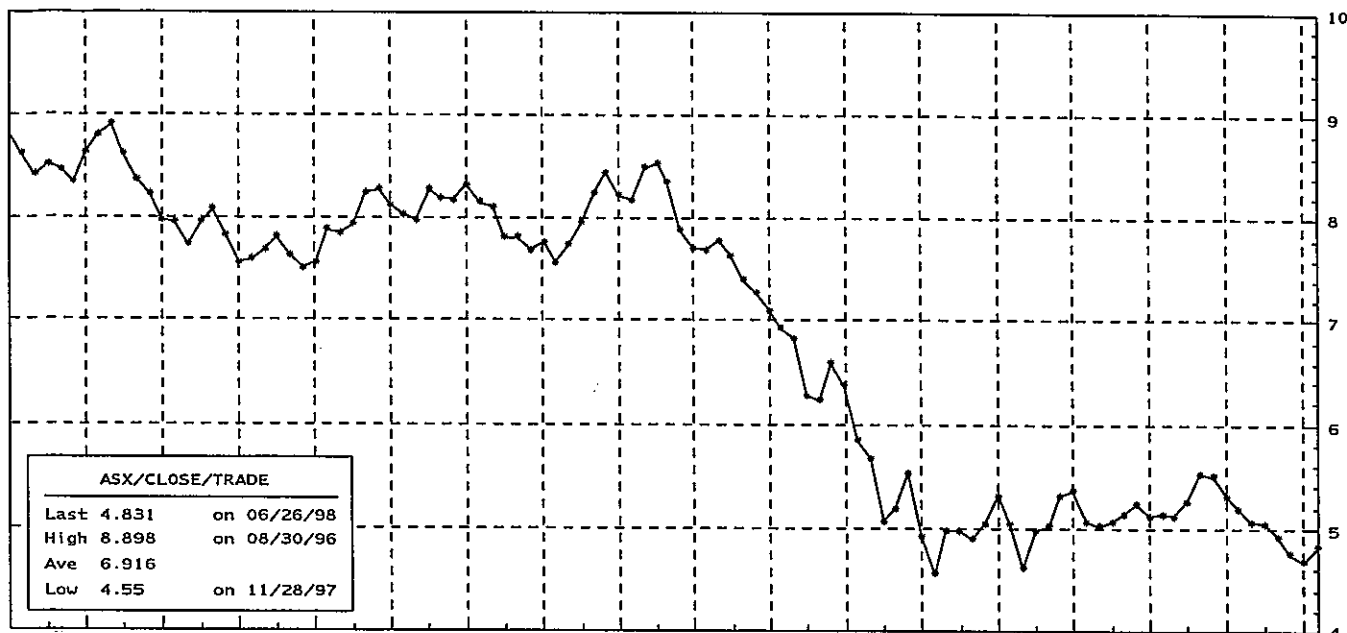
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## AVG PRICE LINE GRAPH for WMC AU A\$

7/ 5/96 - 6/26/98

Period W Weekly

Market Type I Trade



16AUG96 27SEP 8NOV 20DEC 31JAN97 14MAR 25APR 6JUN 18JUL 29AUG 10OCT 21NOV 27JAN98 13FEB 27MAR 8MAY 19JUN  
 Copyright 1998 BLOOMBERG L.P. Frankfurt:69-920410 Hong Kong:2-2977-6000 London:171-330-7500 New York:212-318-2000  
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Equity GPA

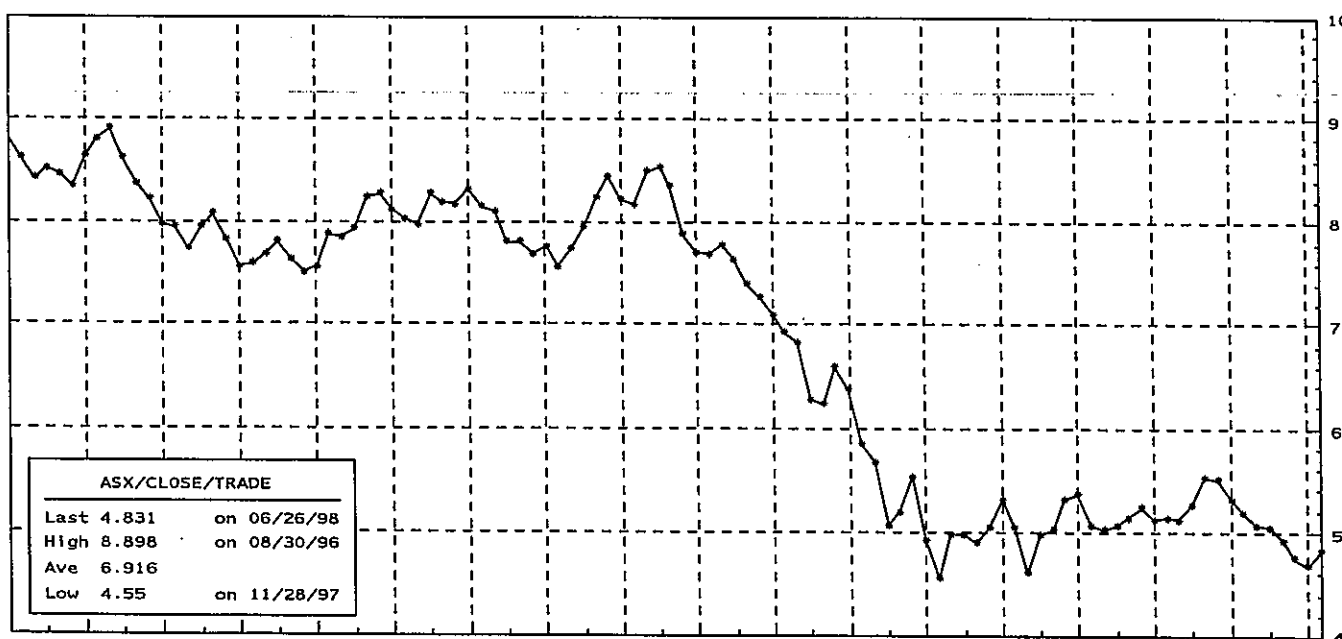
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## AVG PRICE LINE GRAPH for WMC AU A\$

7/ 5/96 - 6/26/98

Period W Weekly

Market Type I Trade



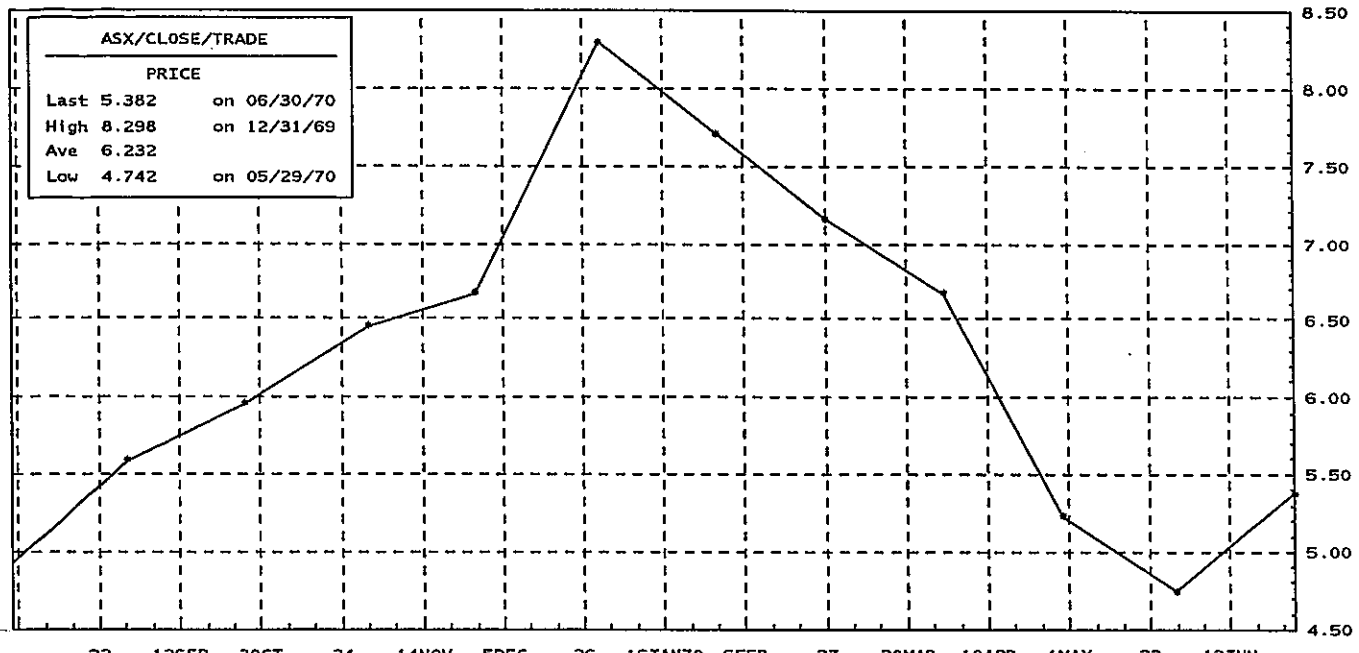
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 Princeton:609-279-3000 Singapore:226-3000 Sydney:2-9777-8666 Tokyo:3-3201-8900 Sao Paulo:11-3048-4500  
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DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/31/69 - 6/30/70 Period ☒ Daily ☐ No additional graph(s)  
☒ PRICE Market Type ☐ Trade



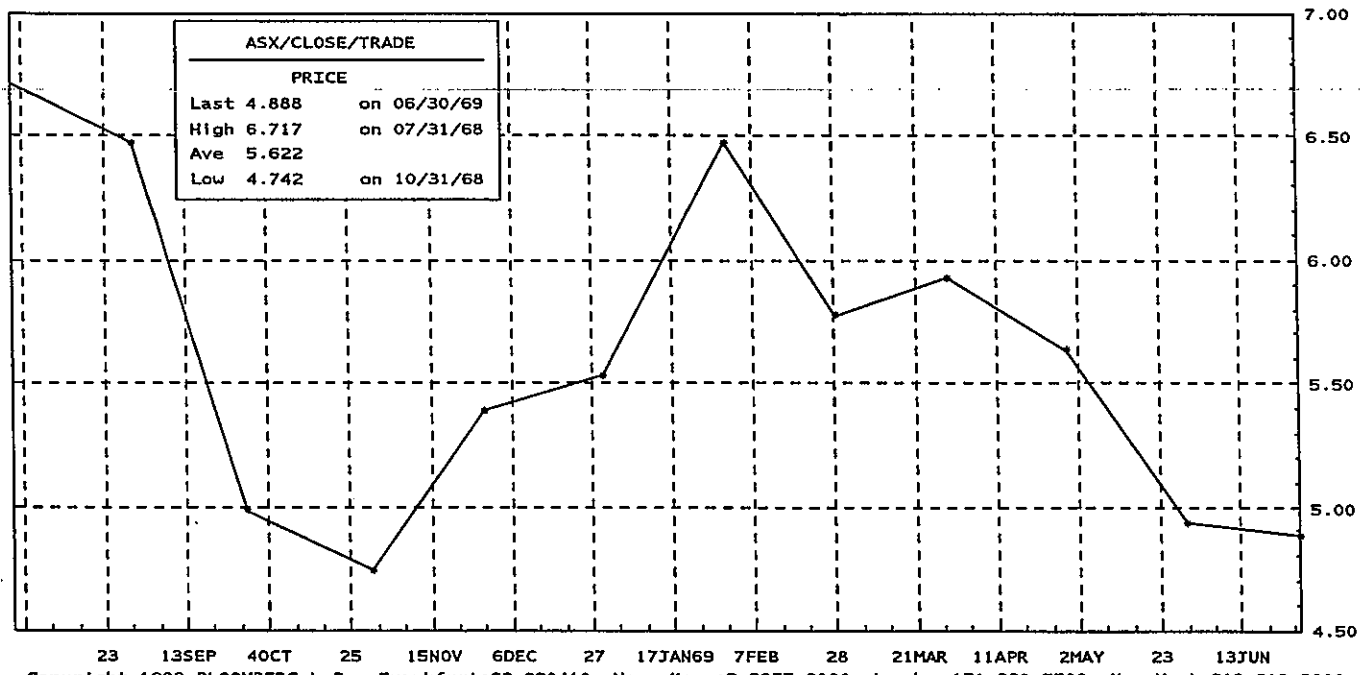
Copyright 1998 BLOOMBERG L.P. Frankfurt:69-920410 Hong Kong:2-2977-6000 London:171-330-7500 New York:212-318-2000  
 Princeton:609-279-3000 Singapore:226-3000 Sydney:2-9777-8666 Tokyo:3-3201-8900 Sao Paulo:11-3048-4500  
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DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/31/68 - 6/30/69 Period ☒ Daily ☐ No additional graph(s)  
☒ PRICE Market Type ☐ Trade



Copyright 1998 BLOOMBERG L.P. Frankfurt:69-920410 Hong Kong:2-2977-6000 London:171-330-7500 New York:212-318-2000  
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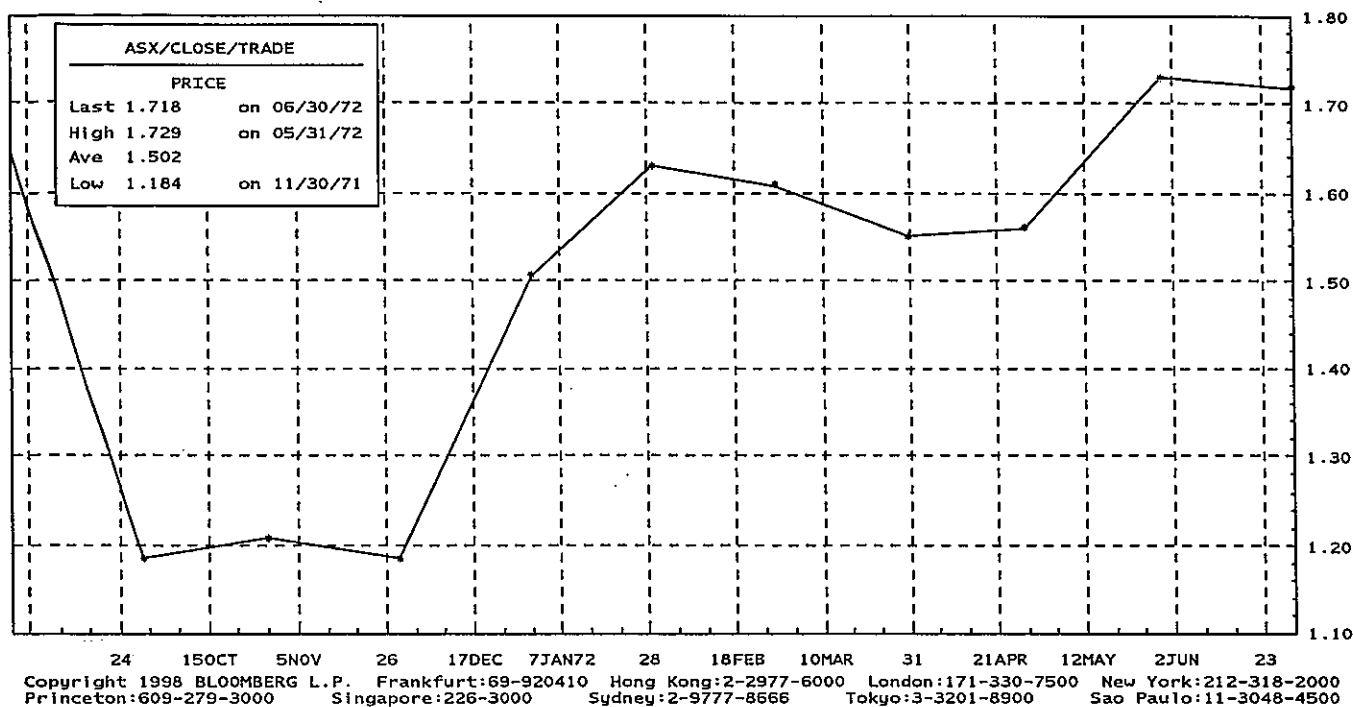
DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

8/31/71 - 6/30/72 Period D Daily N No additional graph(s)

1 PRICE Market Type T Trade



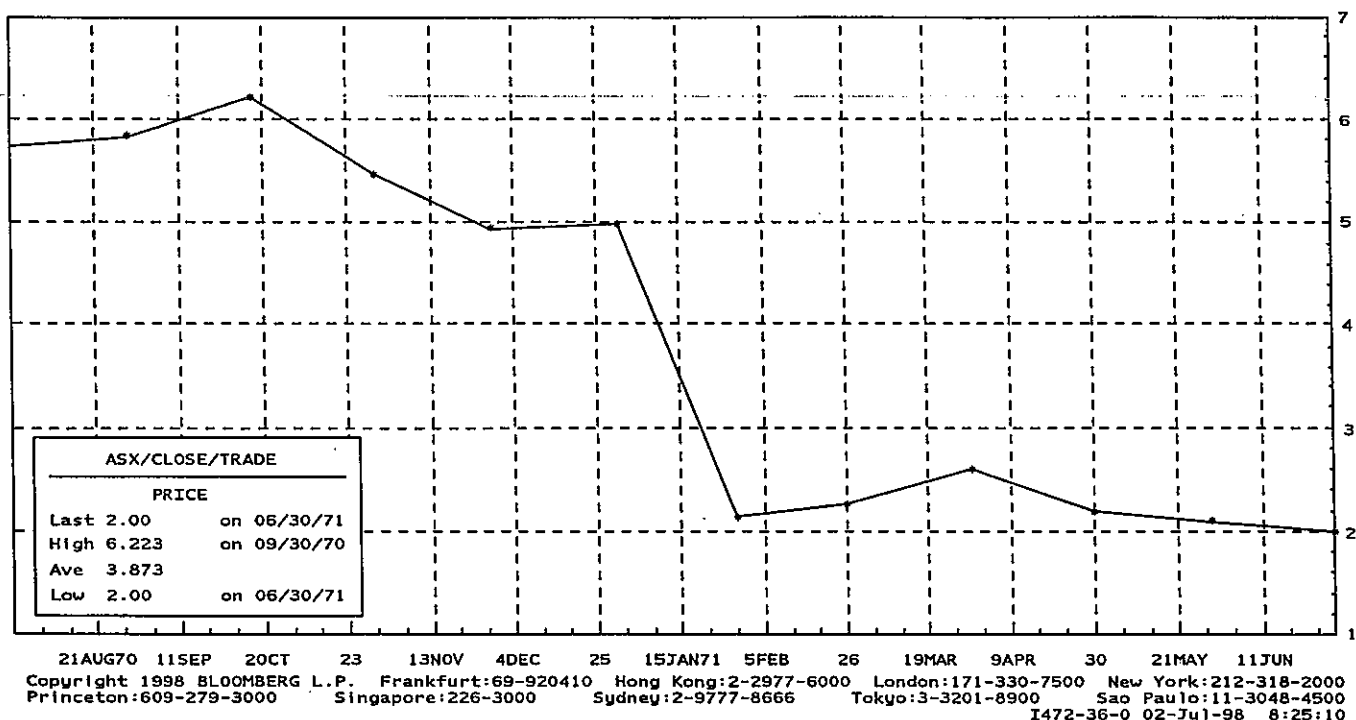
DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/31/70 - 6/30/71 Period D Daily N No additional graph(s)

1 PRICE Market Type T Trade





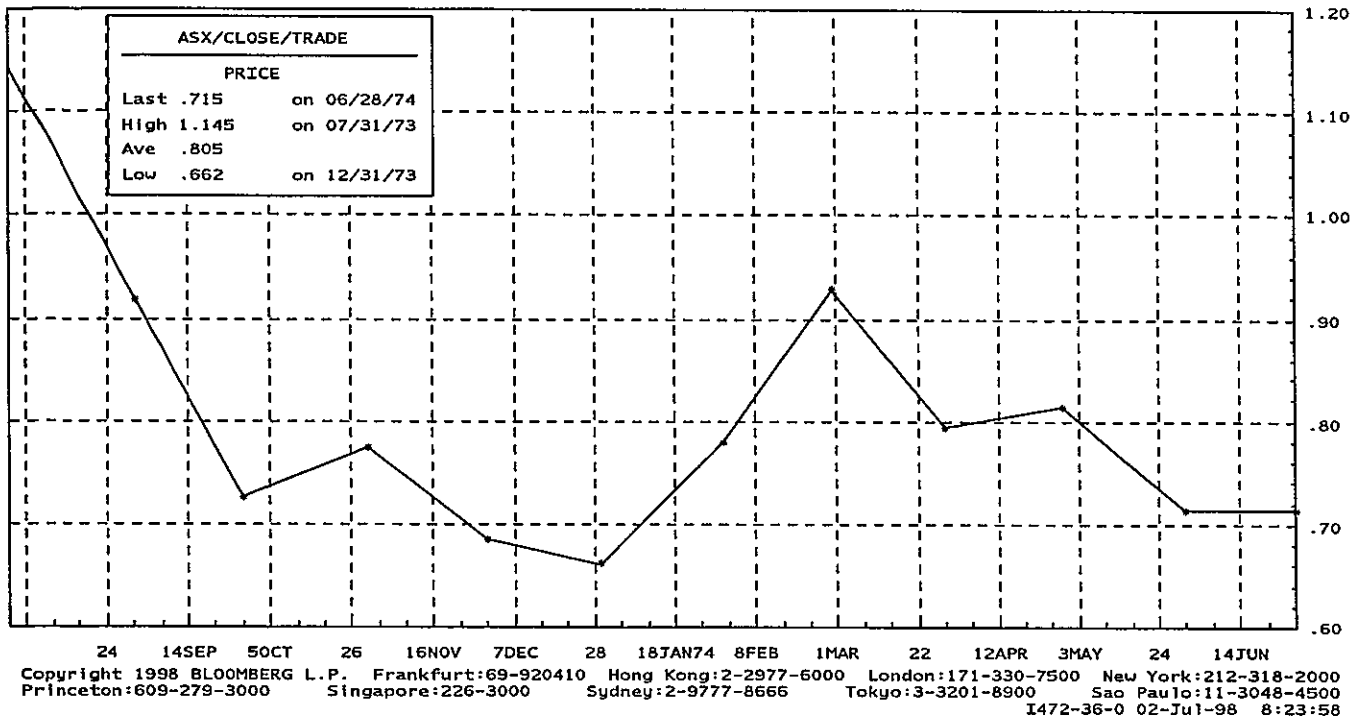
DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/31/73 - 6/28/74 Period ☒ Daily ☒ No additional graph(s)

1 PRICE

Market Type ☒ Trade

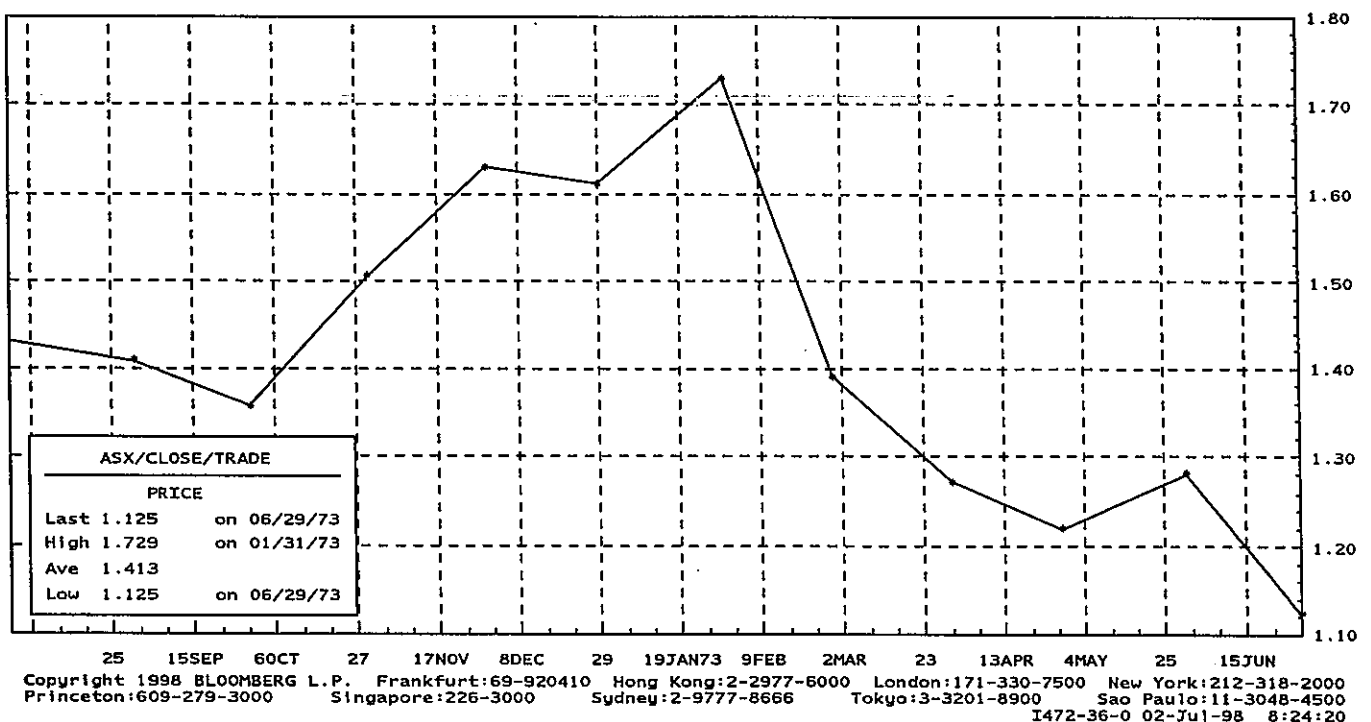
DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/31/72 - 6/29/73 Period ☒ Daily ☒ No additional graph(s)

1 PRICE

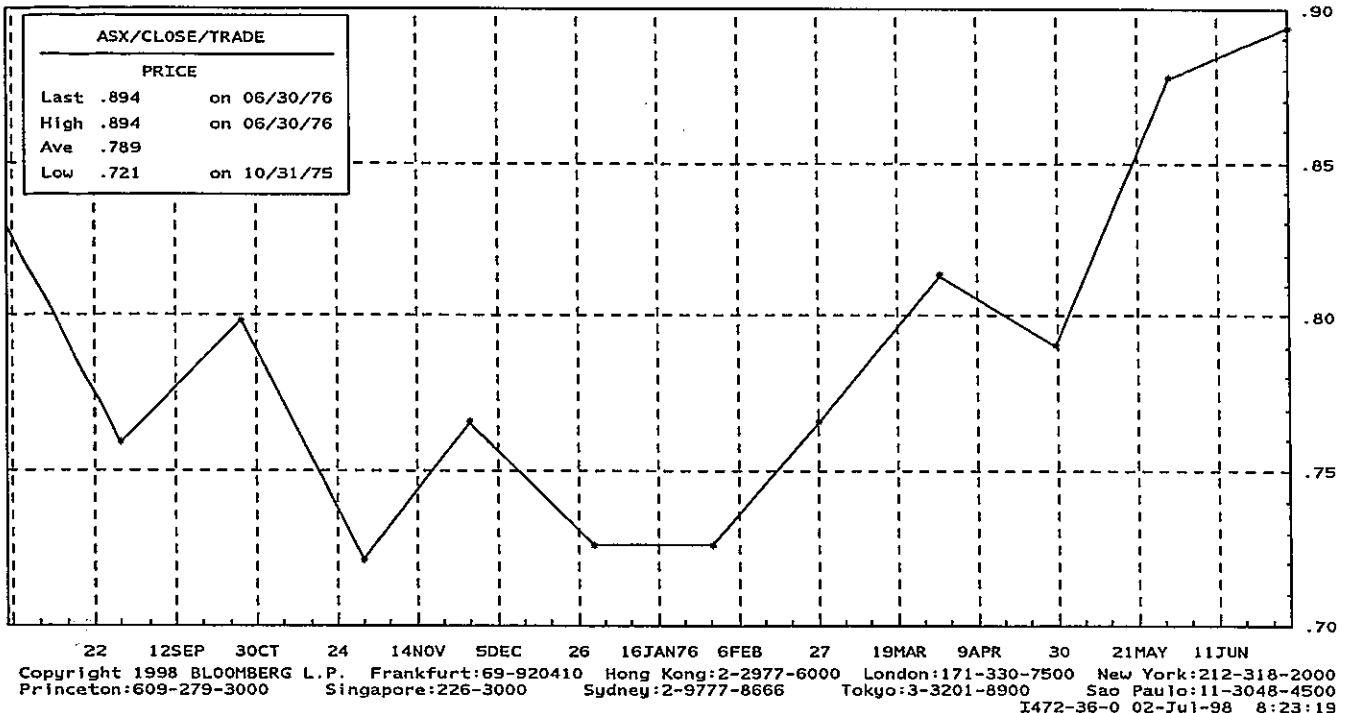
Market Type ☒ Trade

DGT6 Equity GP

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# LINE GRAPH for WMC AU A\$

7/31/75 - 6/30/76 Period ☒ Daily ☒ No additional graph(s)  
 1 PRICE Market Type ☒ Trade

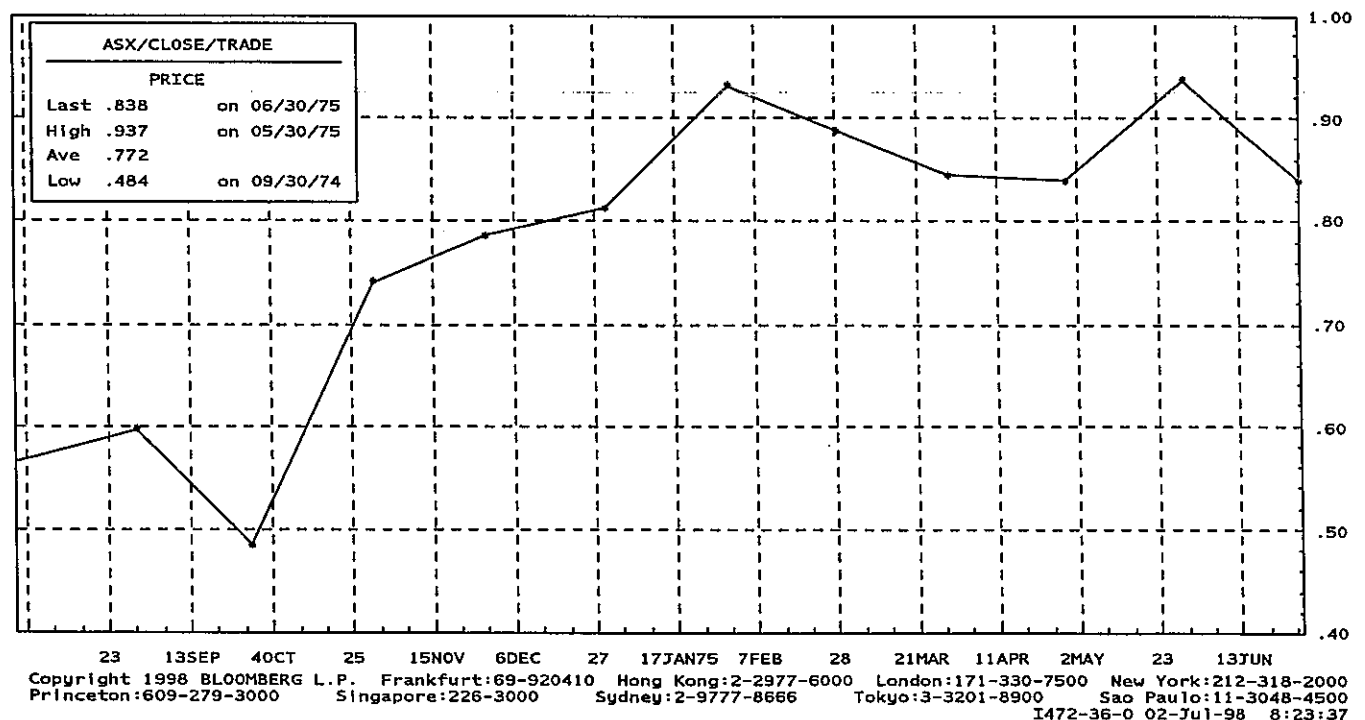


DGT6 Equity GP

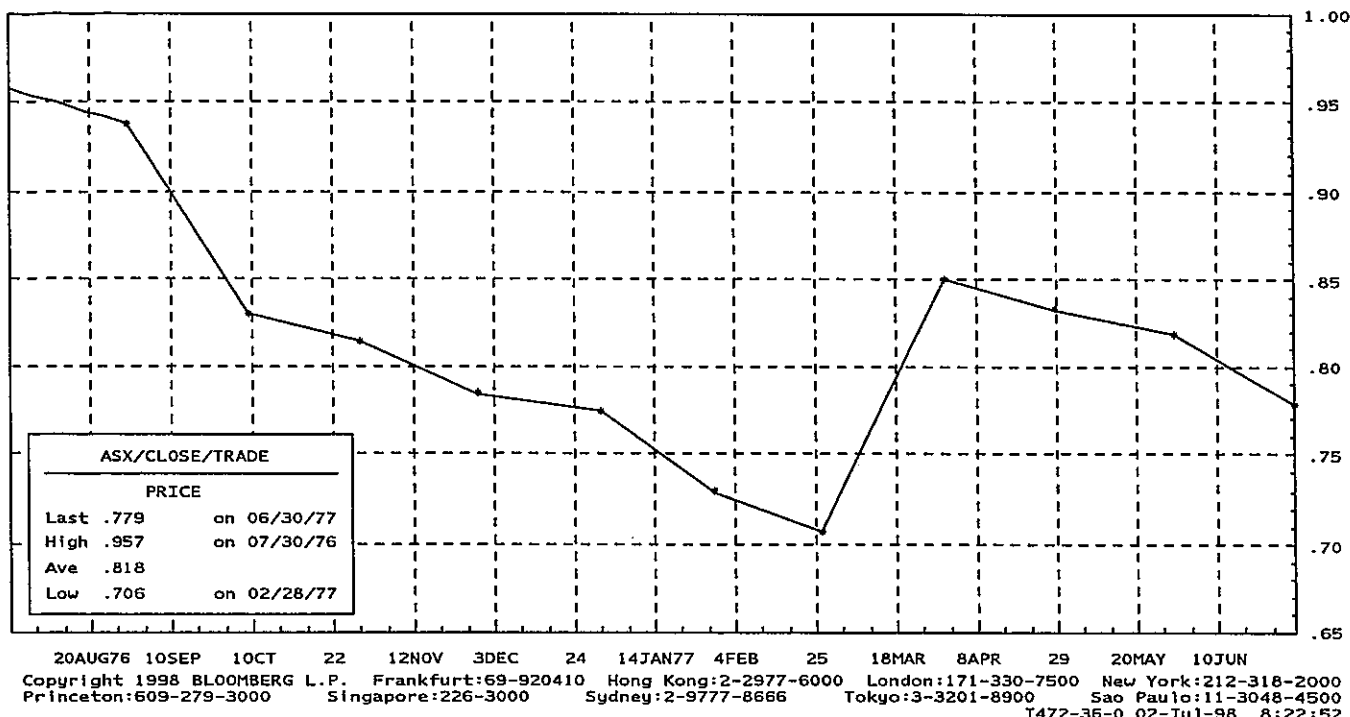
WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00

# LINE GRAPH for WMC AU A\$

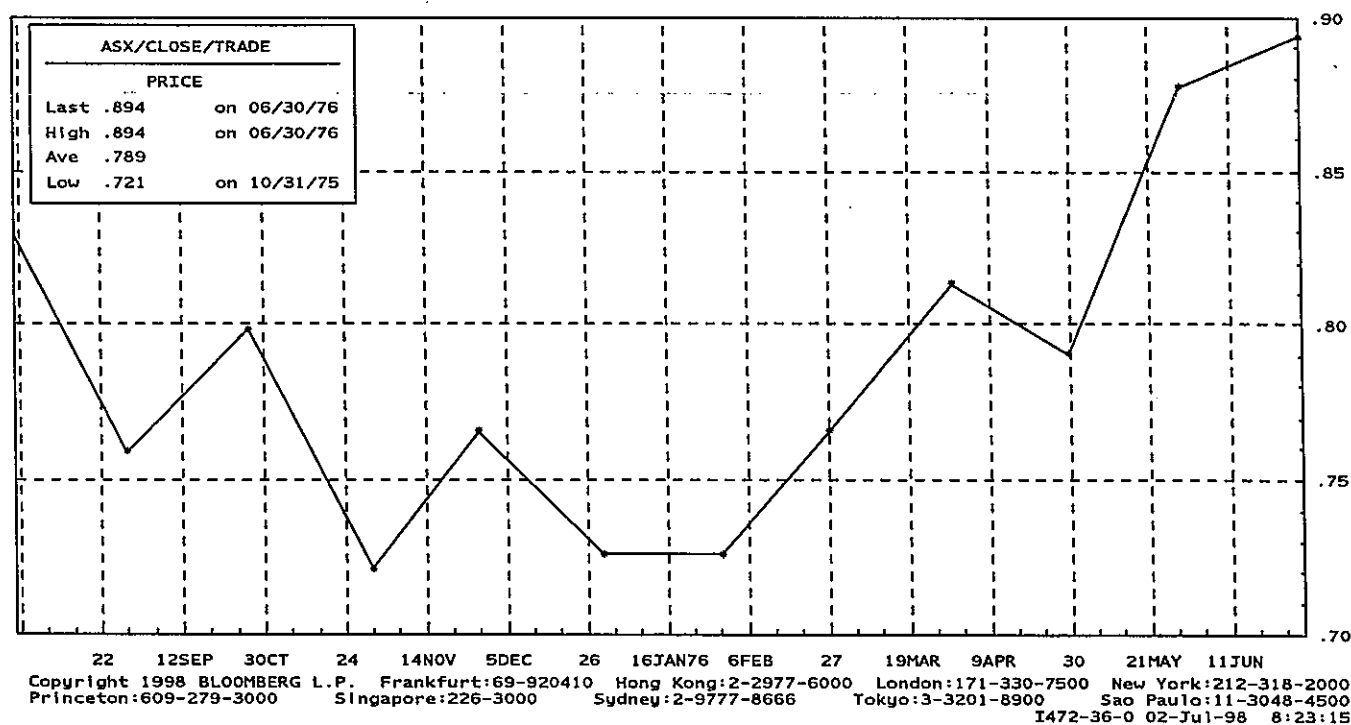
7/31/74 - 6/30/75 Period ☒ Daily ☒ No additional graph(s)  
 1 PRICE Market Type ☒ Trade



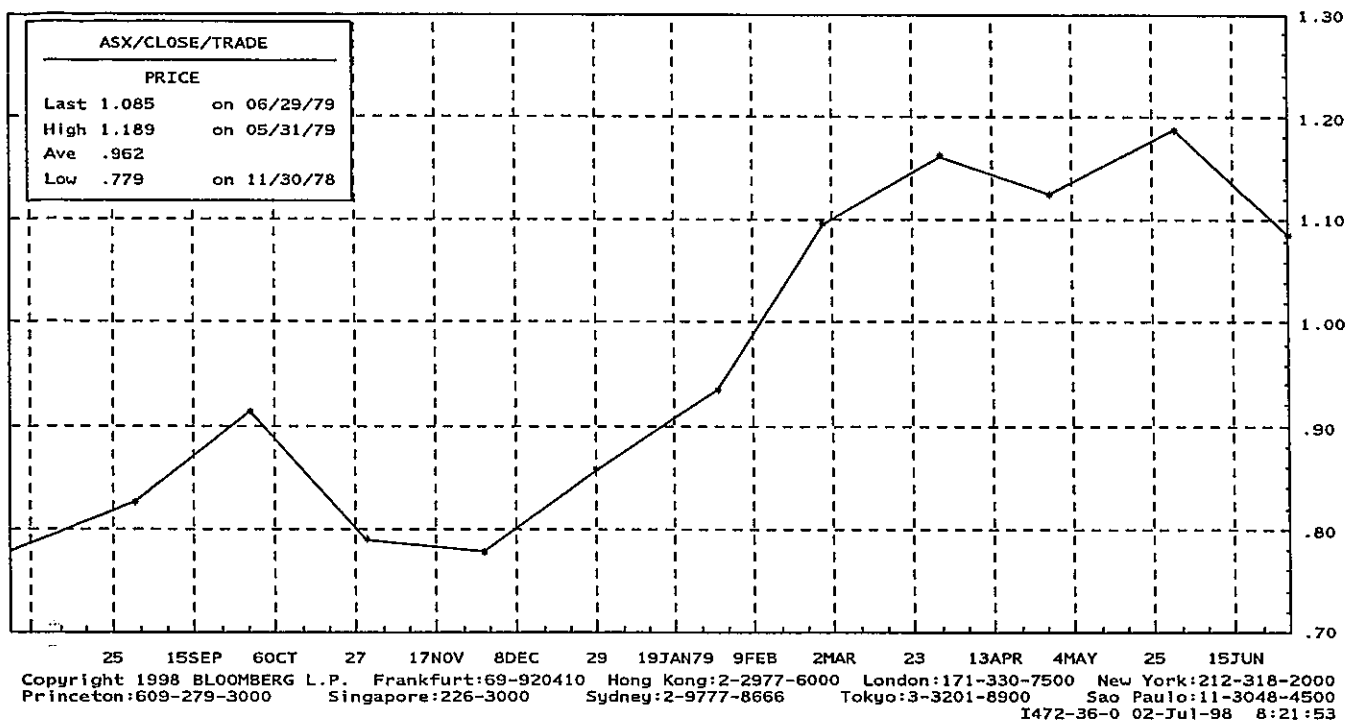
WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00 DGT6 Equity GP  
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 1 PRICE Market Type ☒ Trade



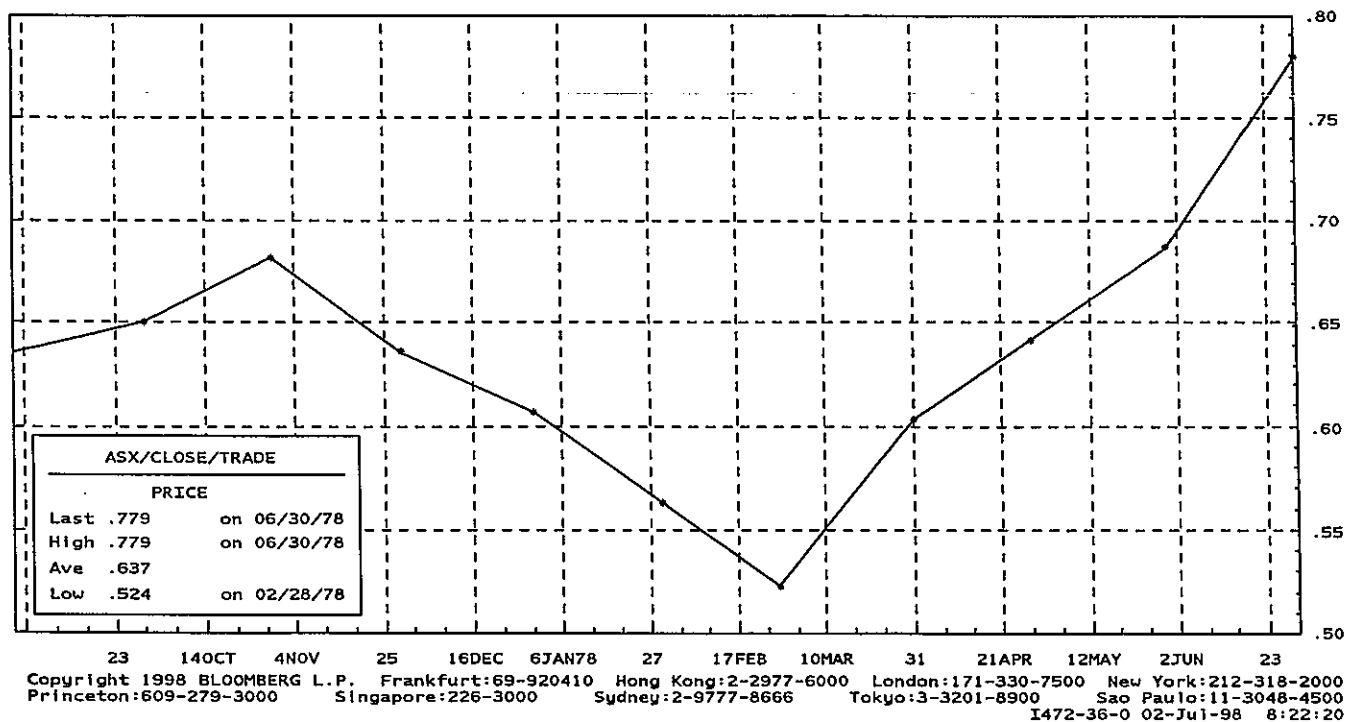
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 7/31/75 - 6/30/76 Period ☒ Daily ☐ No additional graph(s)  
 1 PRICE Market Type ☒ Trade



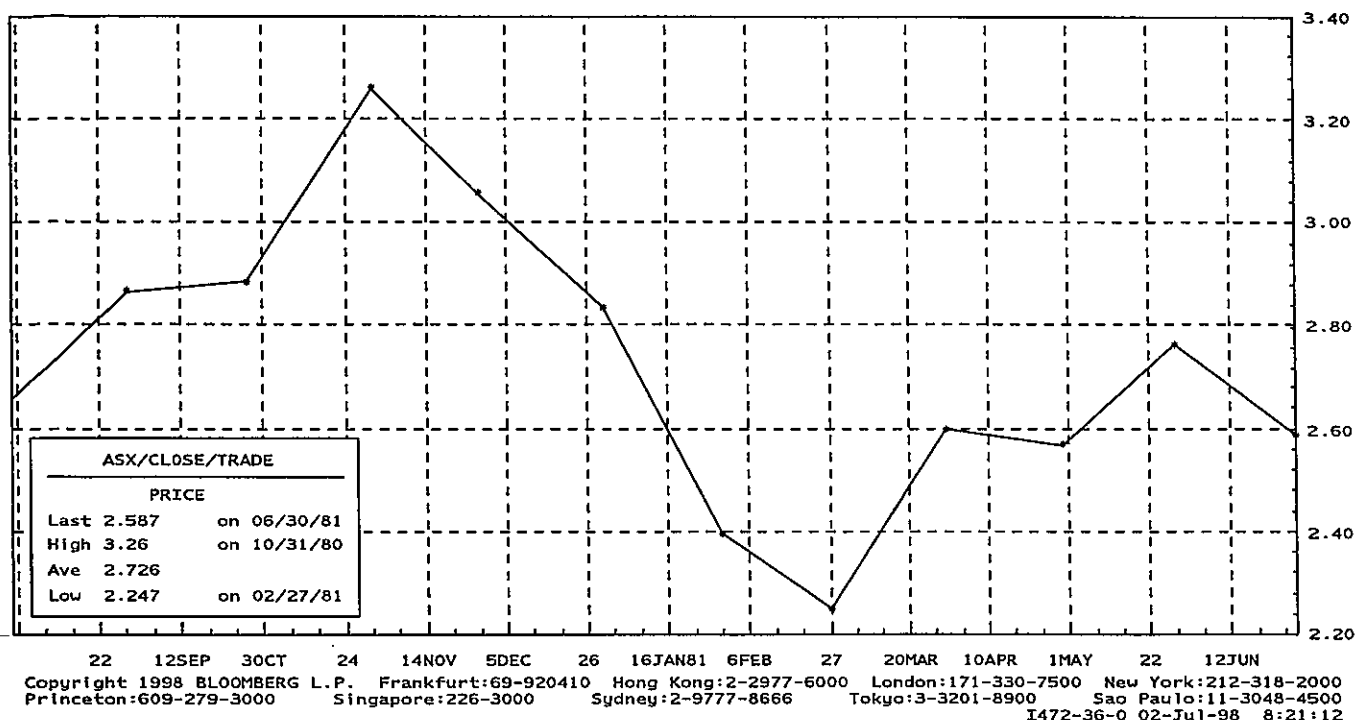
WMC AU A\$ Market 5.02/5.00 1,000x8,406 Vol 1,800 Prev 5.00 DGT6 Equity GP  
 LINE GRAPH for WMC AU A\$  
 7/31/78 - 6/29/79 Period D Daily No additional graph(s)  
 PRICE Market Type T Trade



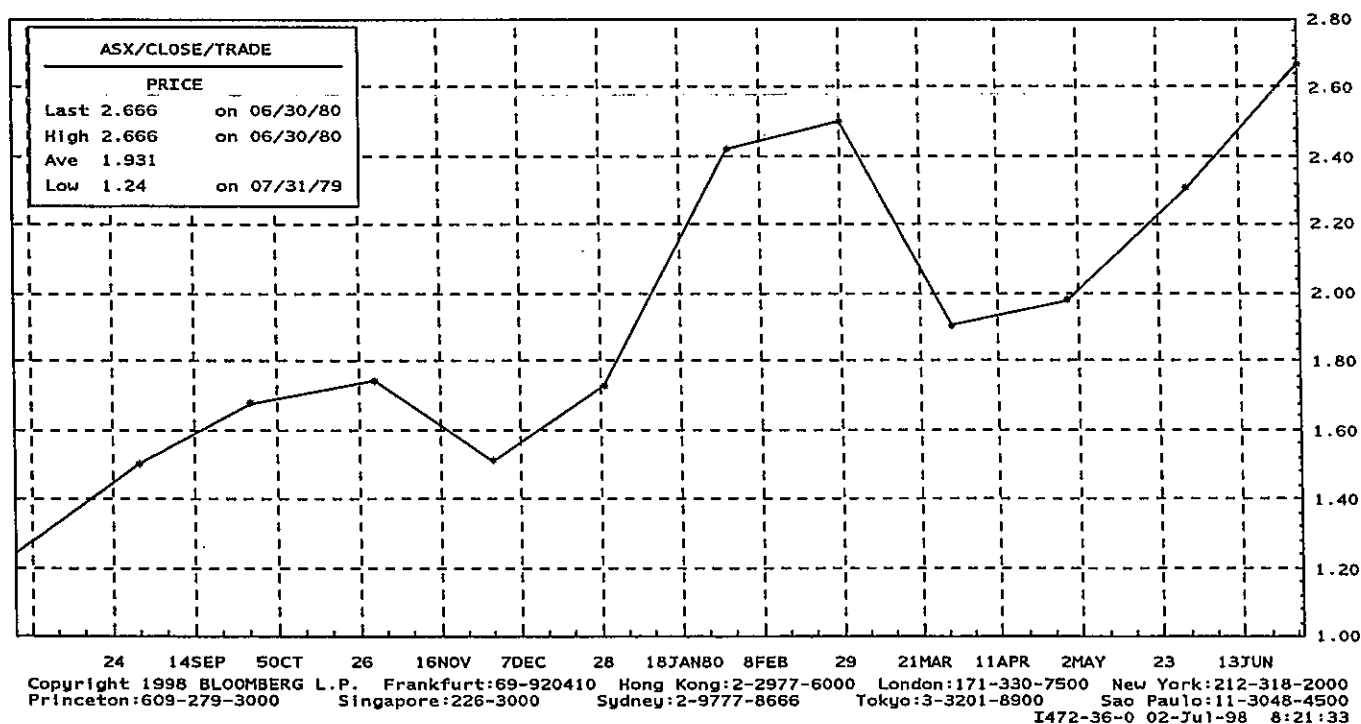
WMC AU A\$ Market 5.02/5.00 1,150x11.4K Vol 1,800 Prev 5.00 DGT6 Equity GP  
 LINE GRAPH for WMC AU A\$  
 8/31/77 - 6/30/78 Period D Daily No additional graph(s)  
 PRICE Market Type T Trade



WMC AU A\$ Market 5.02/5.00 1,000x7,486 Vol 1,800 Prev 5.00 DGT6 Equity GP  
 LINE GRAPH for WMC AU A\$  
 7/31/80 - 6/30/81 Period D Daily N No additional graph(s)  
 PRICE Market Type T Trade



WMC AU A\$ Market 5.02/5.00 1,000x7,486 Vol 1,800 Prev 5.00 DGT6 Equity GP  
 LINE GRAPH for WMC AU A\$  
 7/31/79 - 6/30/80 Period D Daily N No additional graph(s)  
 PRICE Market Type T Trade



DGT6 Equity GP

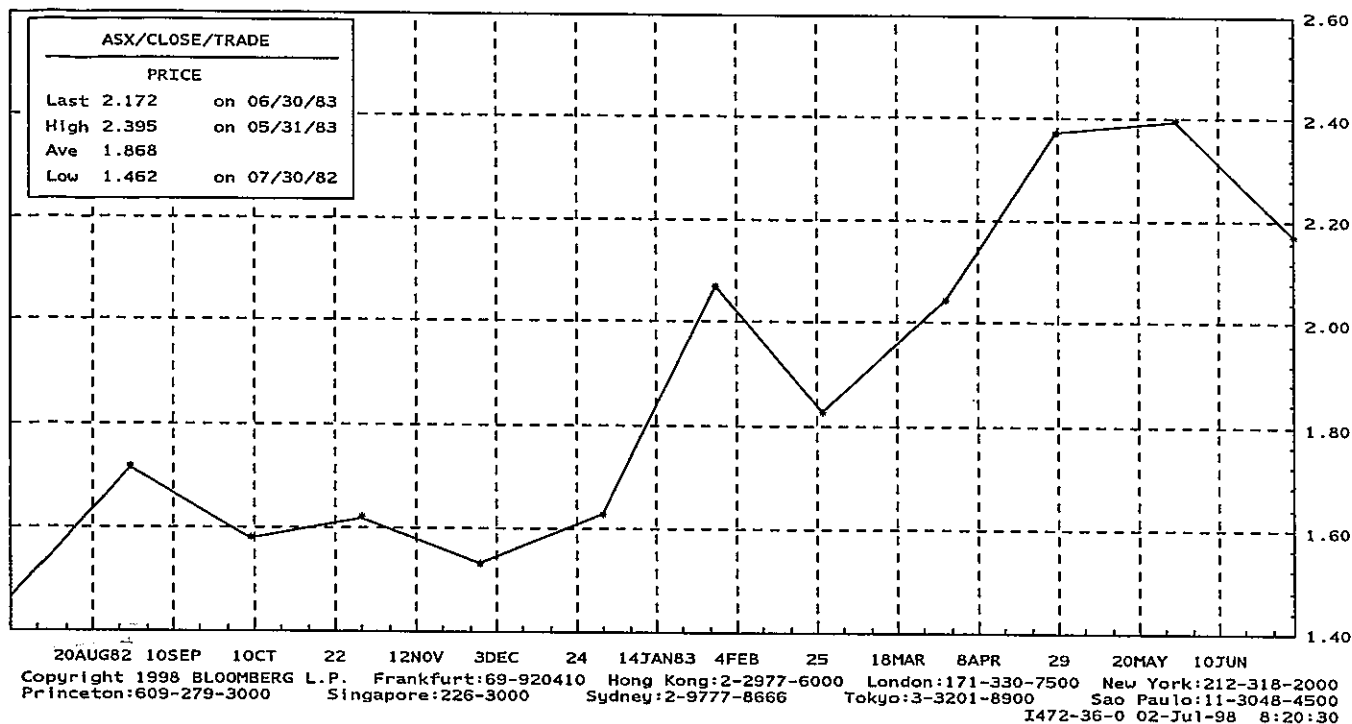
WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/30/82 - 6/30/83 Period D Daily No additional graph(s)

1 PRICE

Market Type I Trade



DGT6 Equity GP

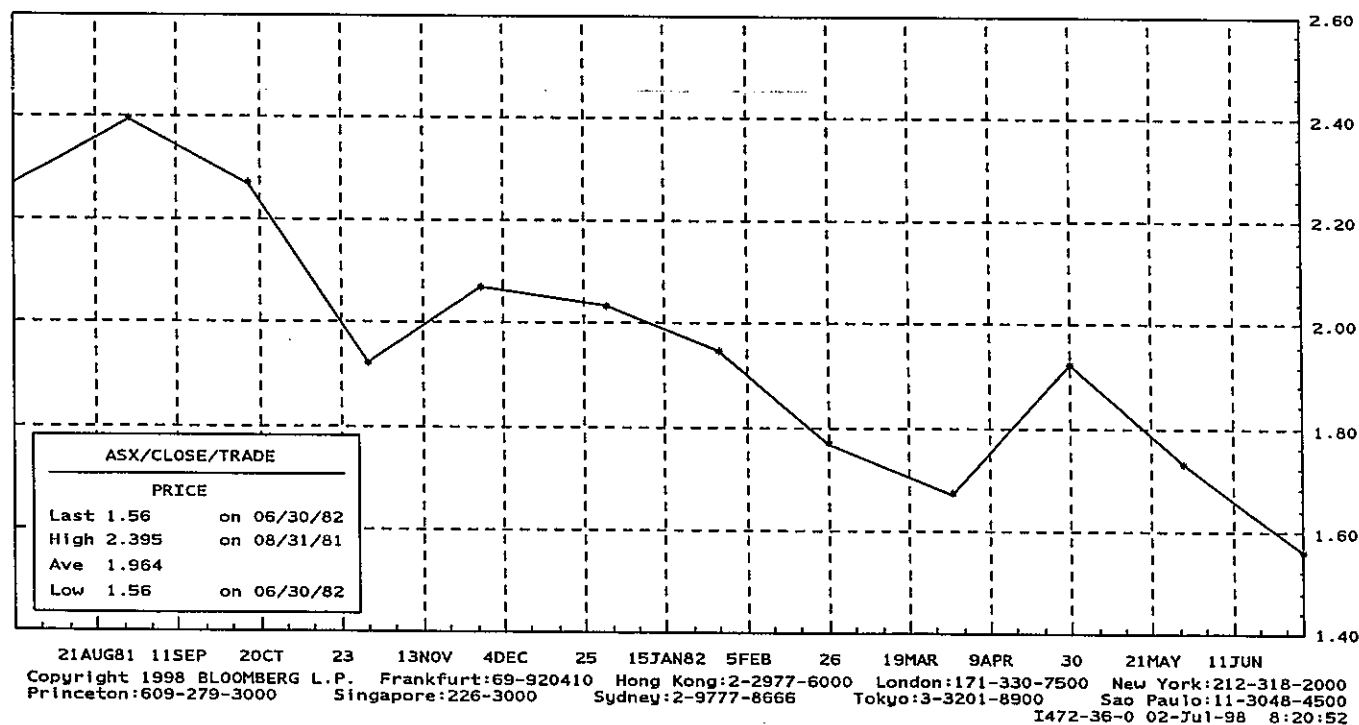
WMC AU A\$ Market 5.02/5.00 1,000x7,486 Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/31/81 - 6/30/82 Period D Daily No additional graph(s)

1 PRICE

Market Type I Trade

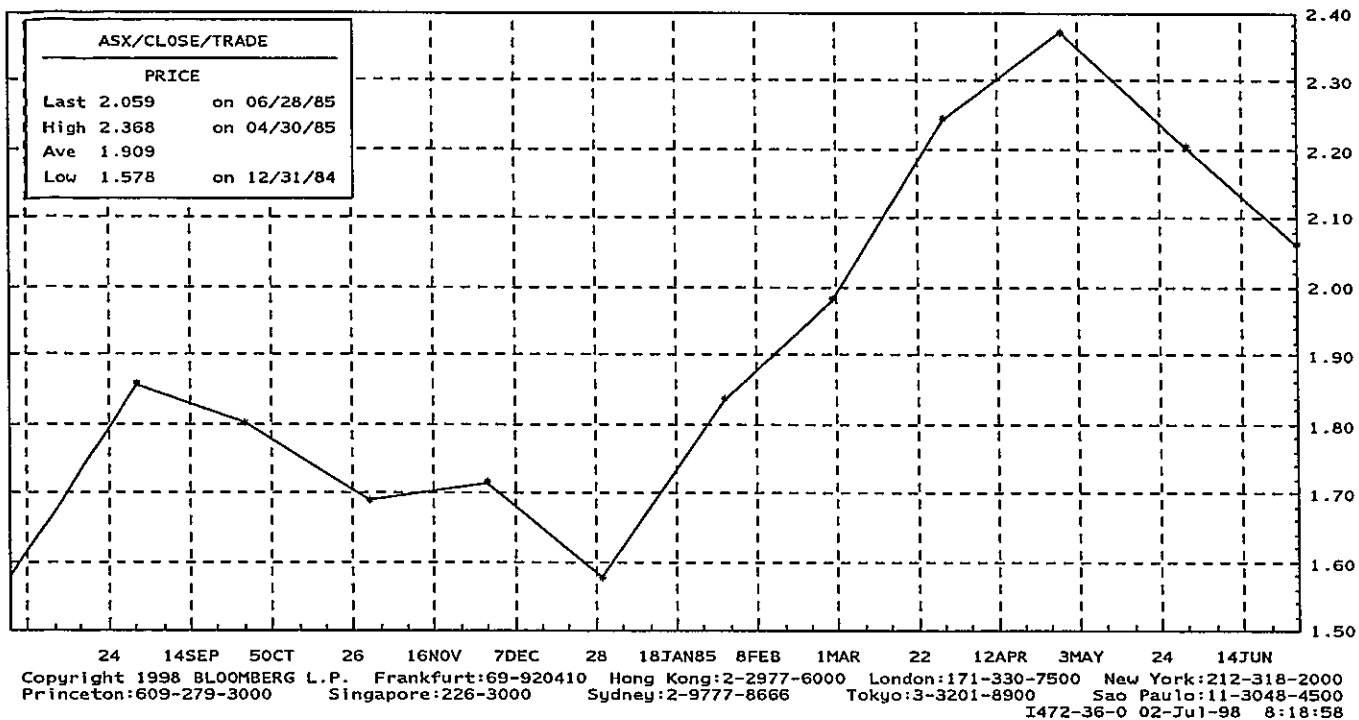


DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/31/84 - 6/28/85 Period D Daily N No additional graph(s)  
I PRICE Market Type T Trade

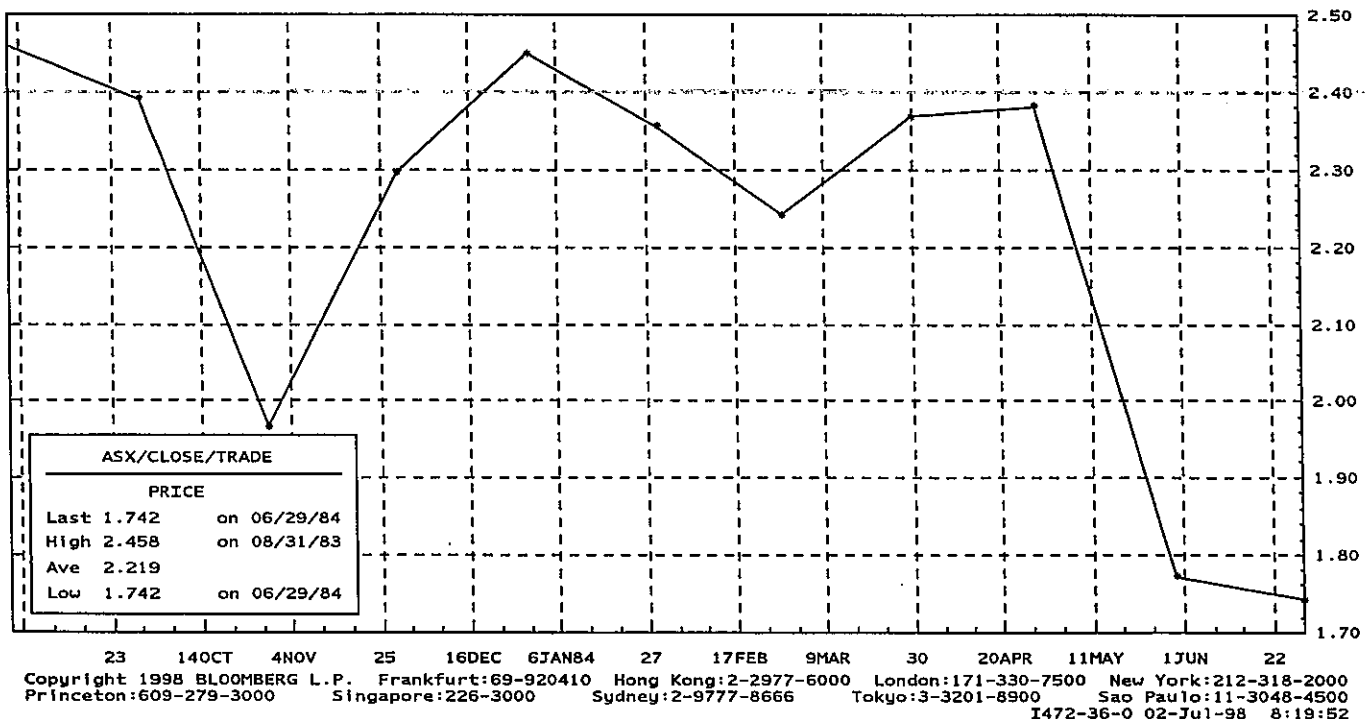


DGT6 Equity GP

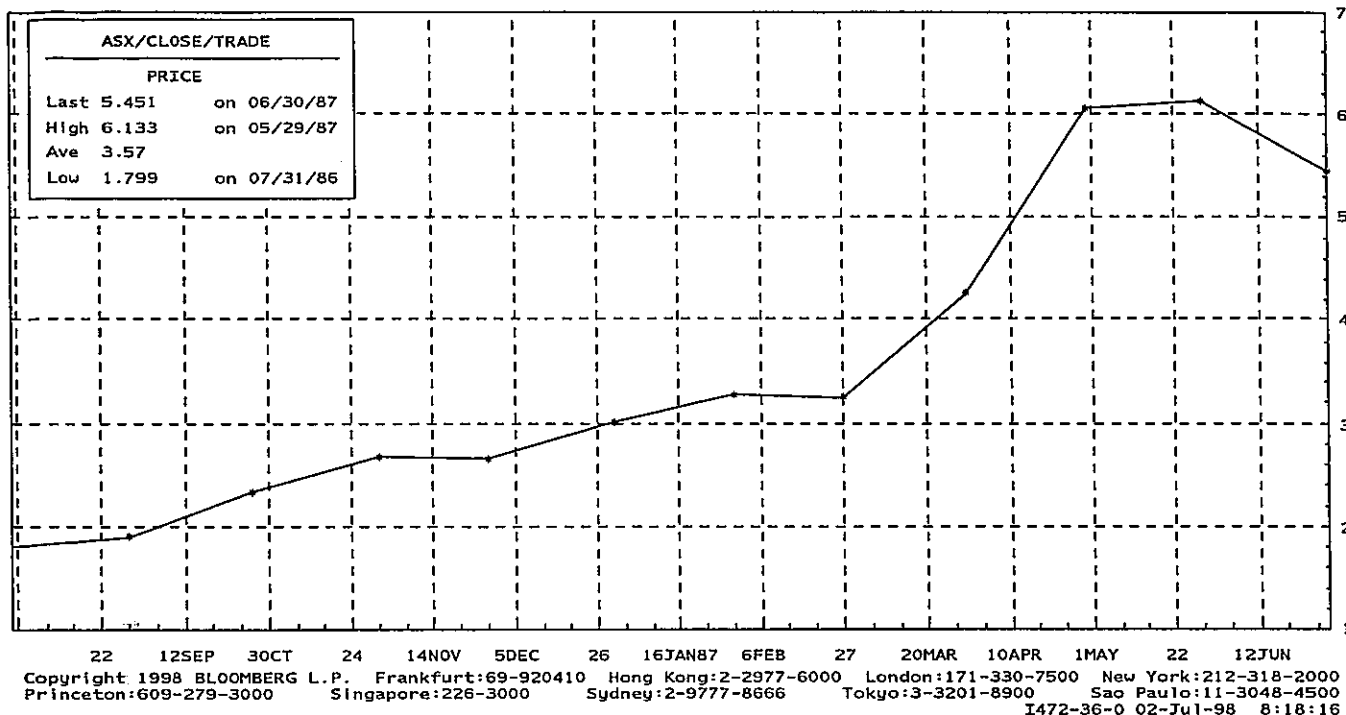
WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

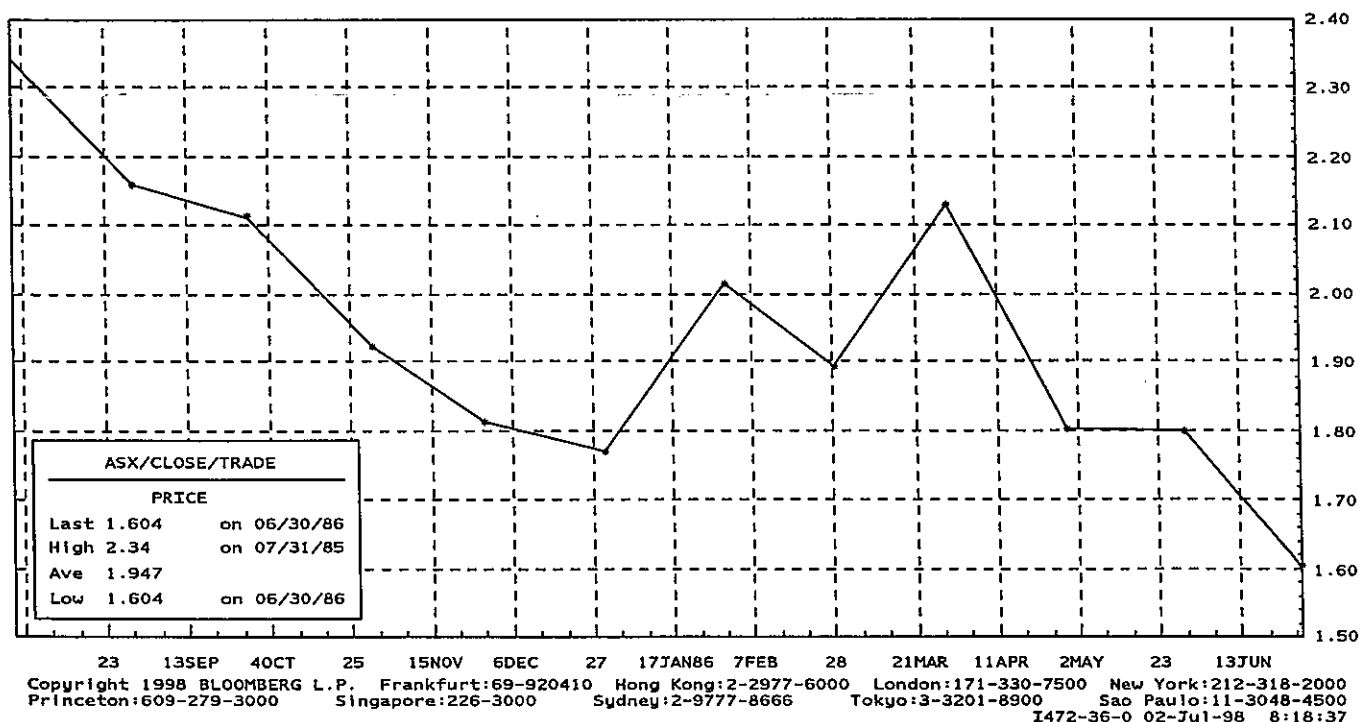
8/31/83 - 6/29/84 Period D Daily N No additional graph(s)  
I PRICE Market Type T Trade



WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00 DGT6 Equity GP  
 LINE GRAPH for WMC AU A\$  
 7/31/86 - 6/30/87 Period D Daily N No additional graph(s)  
 PRICE Market Type T Trade



WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00 DGT6 Equity GP  
 LINE GRAPH for WMC AU A\$  
 7/31/85 - 6/30/86 Period D Daily N No additional graph(s)  
 PRICE Market Type T Trade

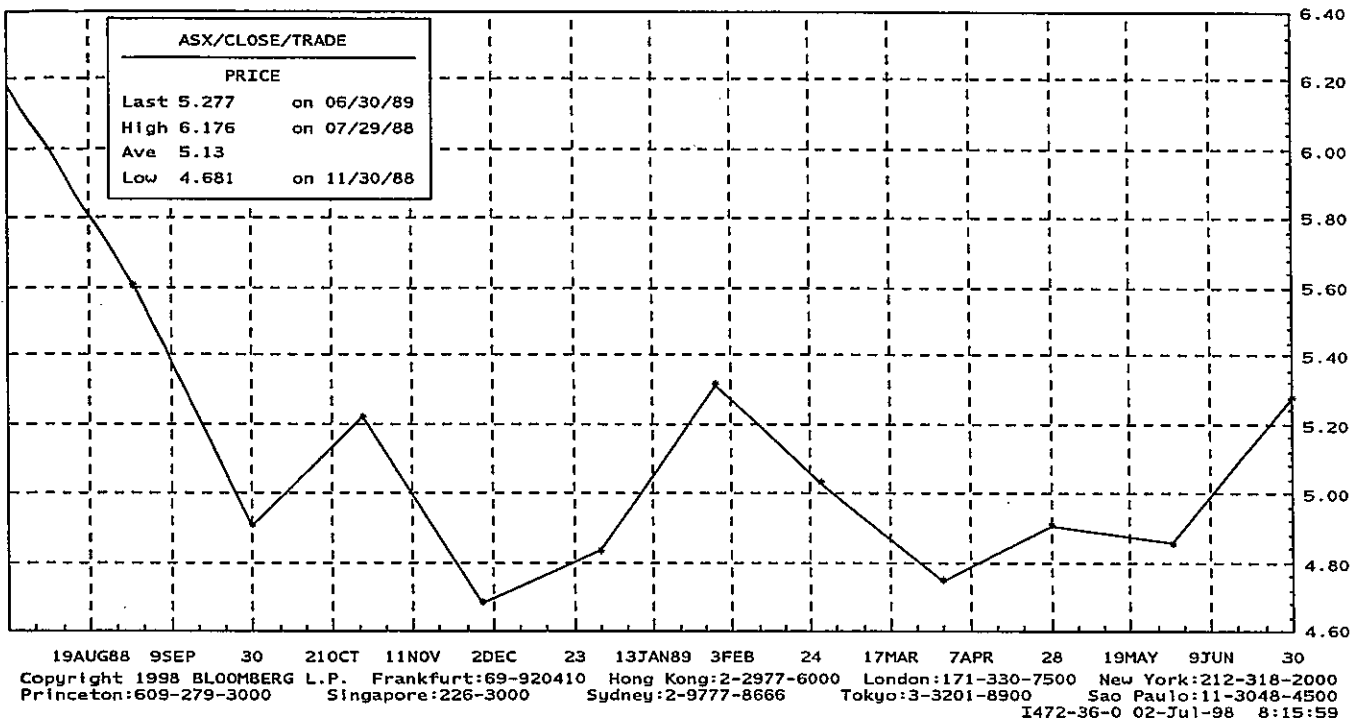




DGT6 Equity GP

## LINE GRAPH for WMC AU A\$

7/29/88 - 6/30/89 Period ☒ Daily ☒ No additional graph(s)  
 1 PRICE Market Type ☒ Trade

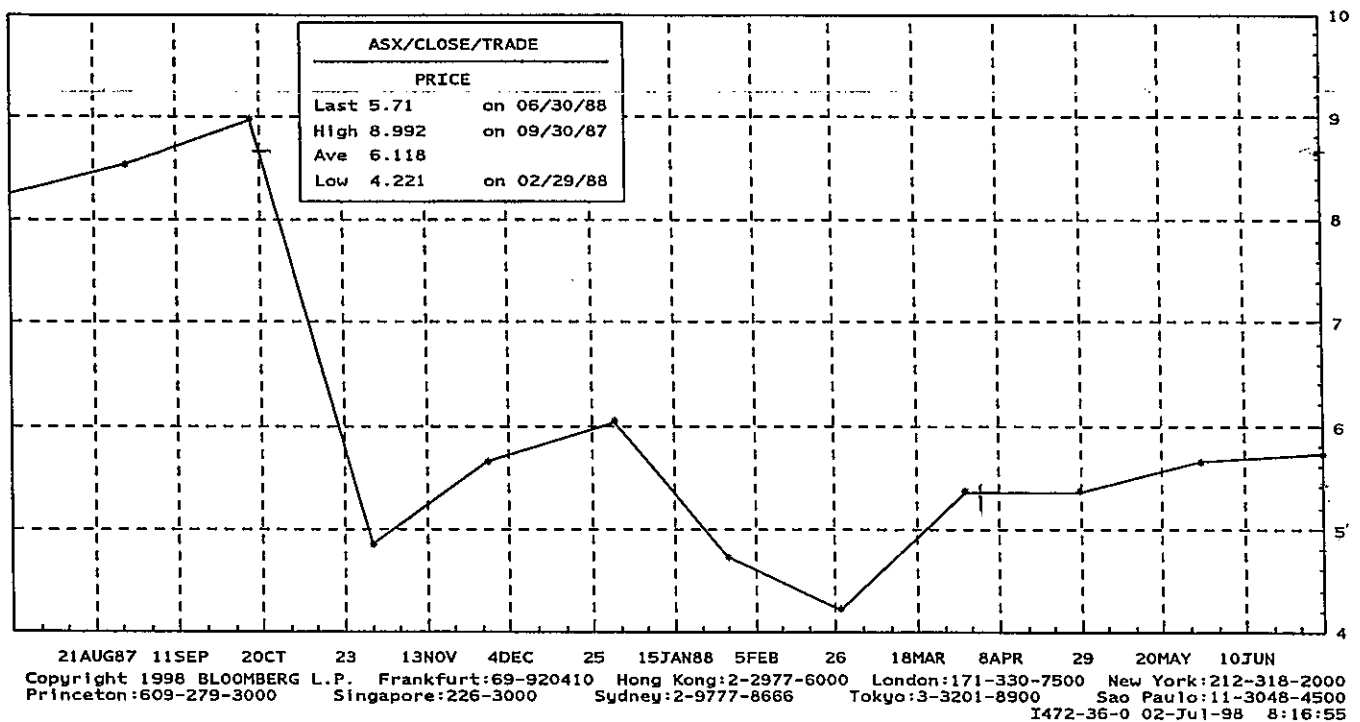


DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

## LINE GRAPH for WMC AU A\$

7/31/87 - 6/30/88 Period ☒ Daily ☒ No additional graph(s)  
 1 PRICE Market Type ☒ Trade



DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

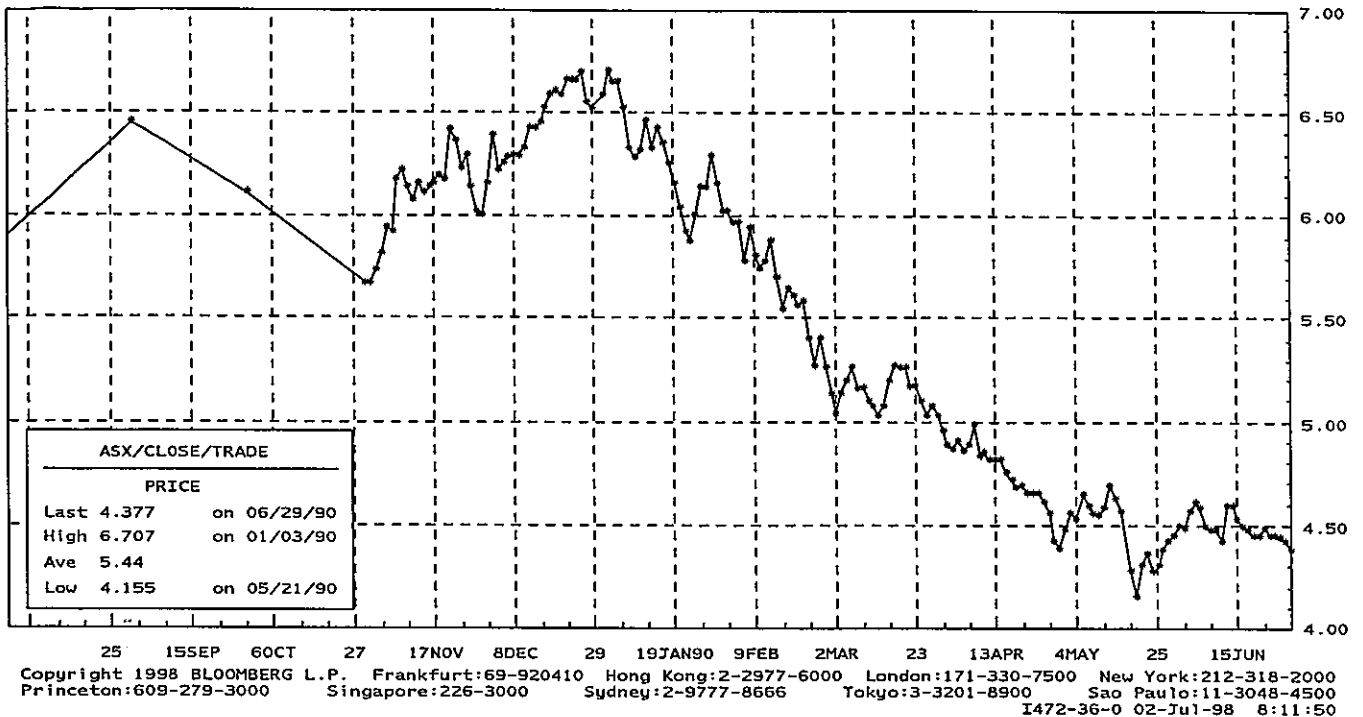
7/31/89 - 6/29/90

Period D Daily

N No additional graph(s)

I PRICE

Market Type I Trade



DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

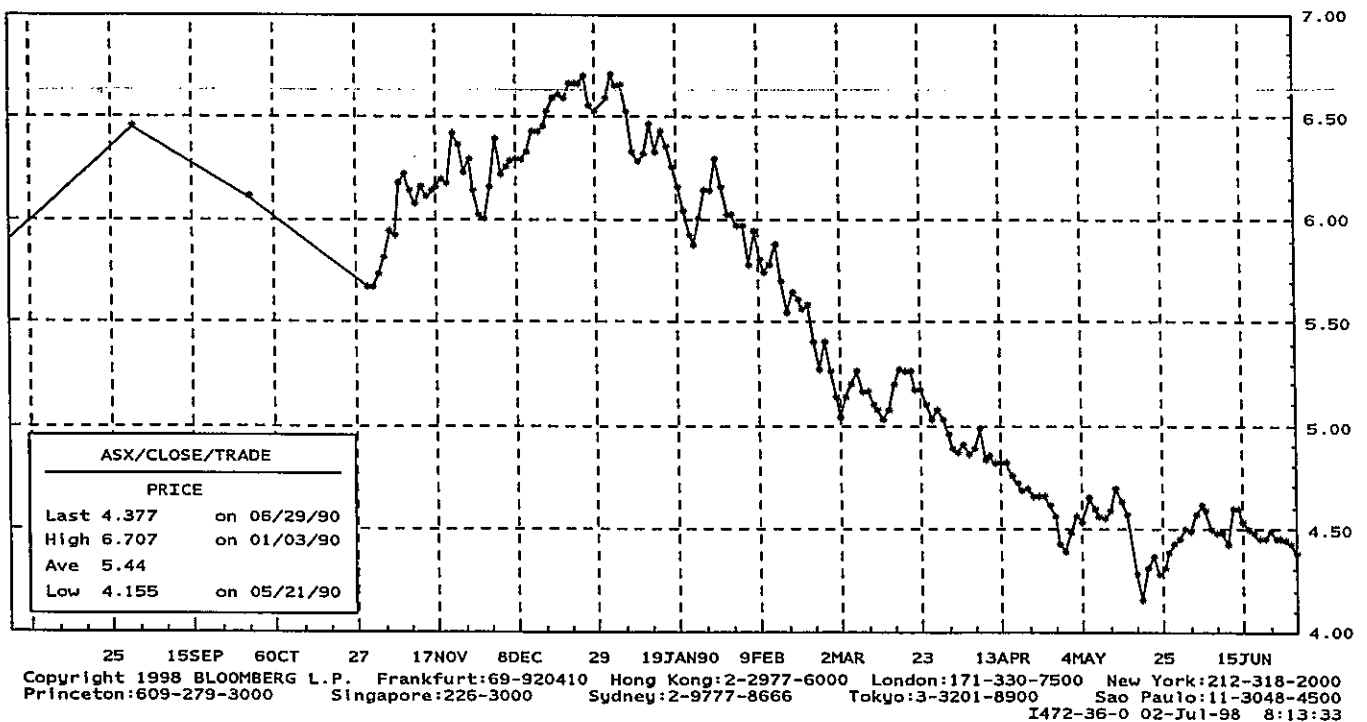
7/31/89 - 6/29/90

Period D Daily

N No additional graph(s)

I PRICE

Market Type I Trade

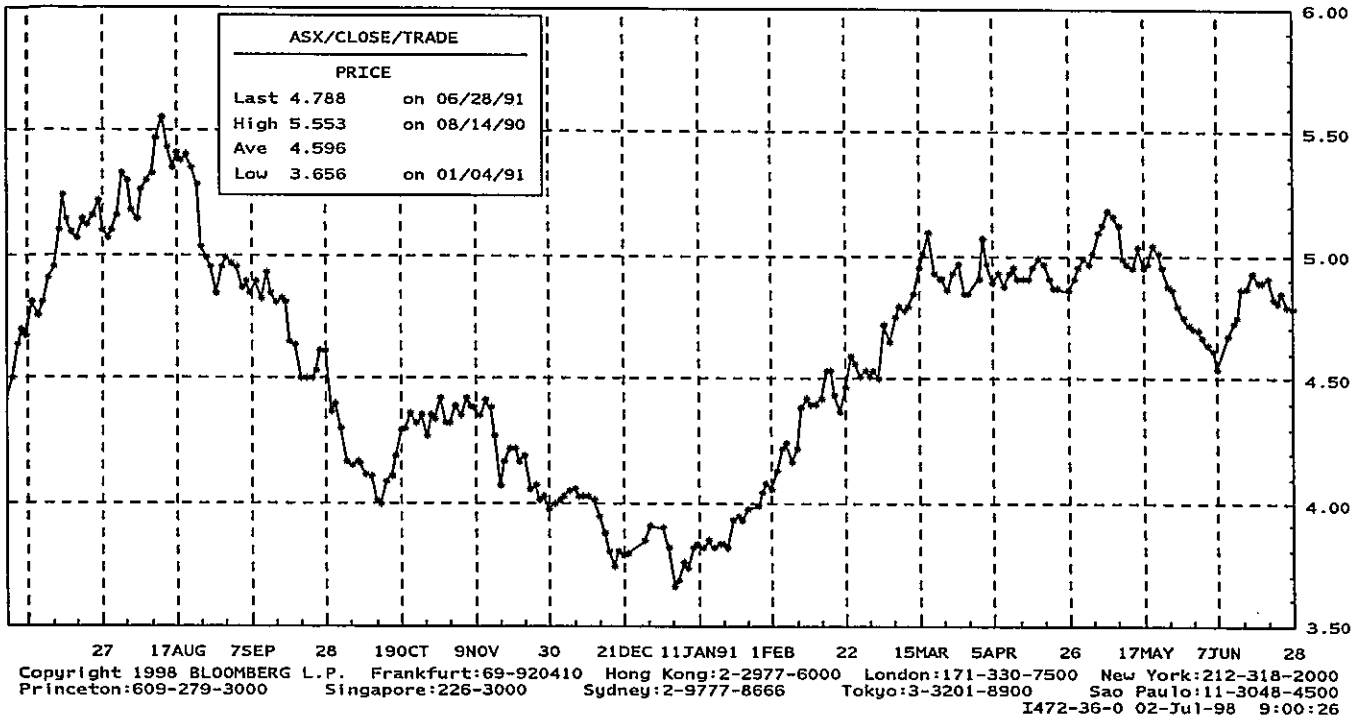


DGT6 Equity GP

WMC AU A\$ Market 5.03/5.00 12.3Kx11.4K Vol 1,800 Prev 5.00

LINE GRAPH for WMC AU A\$

7/ 2/90 - 6/28/91 Period D Daily N No additional graph(s)  
1 PRICE Market Type T Trade

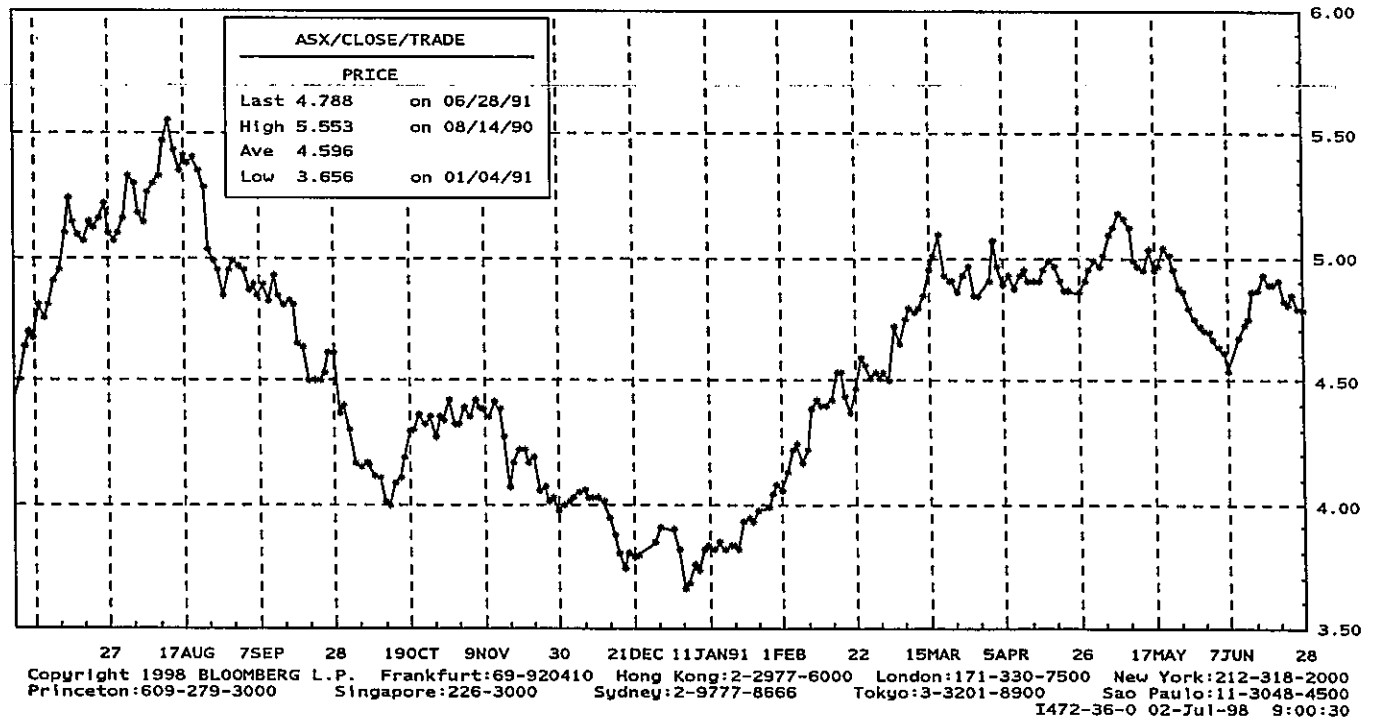


DGT6 Equity GP

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LINE GRAPH for WMC AU A\$

7/ 2/90 - 6/28/91 Period D Daily N No additional graph(s)  
1 PRICE Market Type T Trade

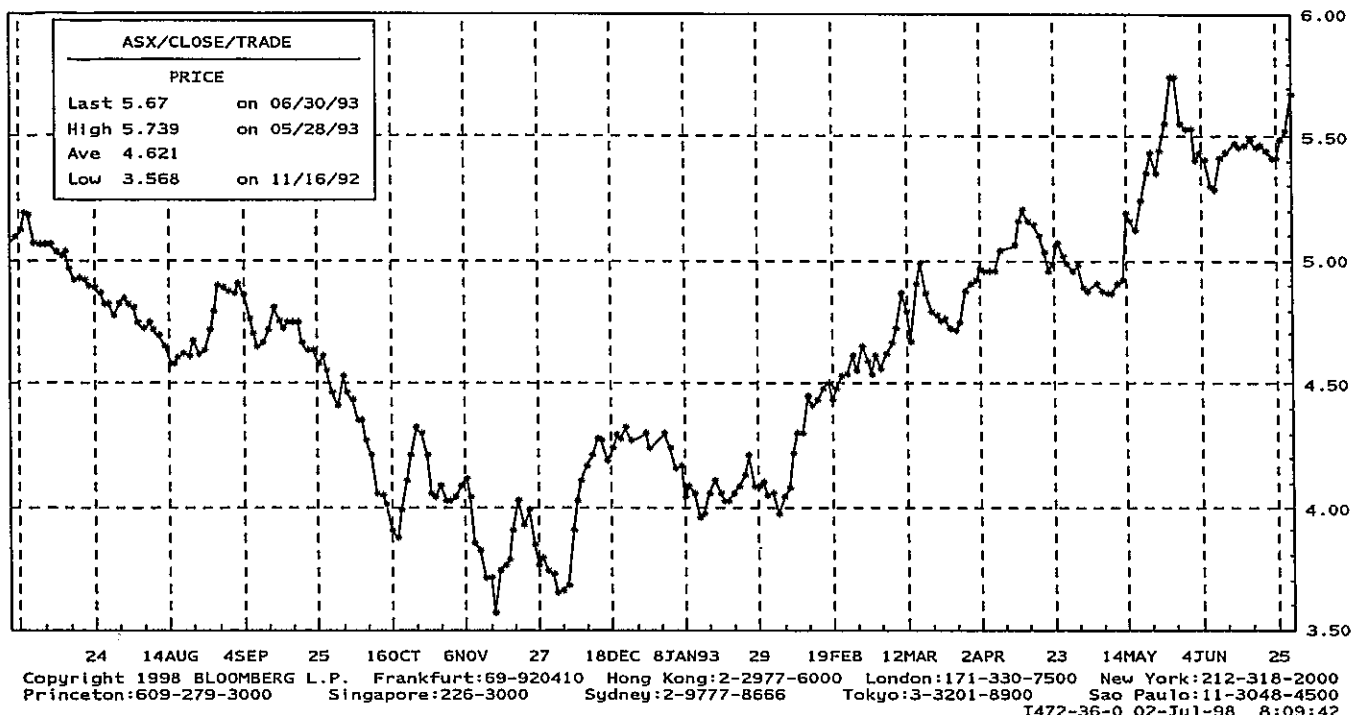


Menu

DGT6 Equity GP

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

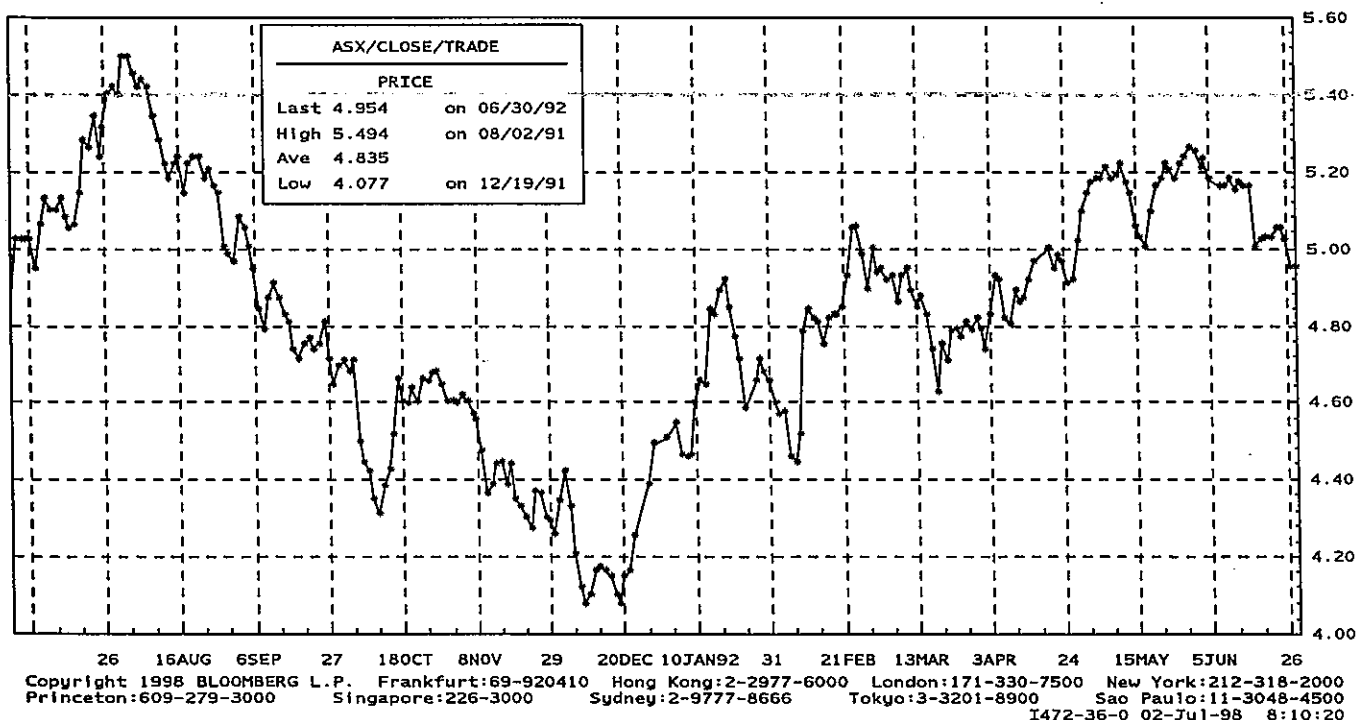
LINE GRAPH for WMC AU A\$

7/ 1/92 - 6/30/93 Period ☒ Daily ☒ No additional graph(s)1 PRICE Market Type ☒ Trade

Equity GP

Only positive numbers allowed with &lt;Print&gt;.

LINE GRAPH for WMC AU A\$

7/ 1/91 - 6/30/92 Period ☒ Daily ☒ No additional graph(s)1 PRICE Market Type ☒ Trade

Menu

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

DGT6 Equity GP

LINE GRAPH for WMC AU A\$

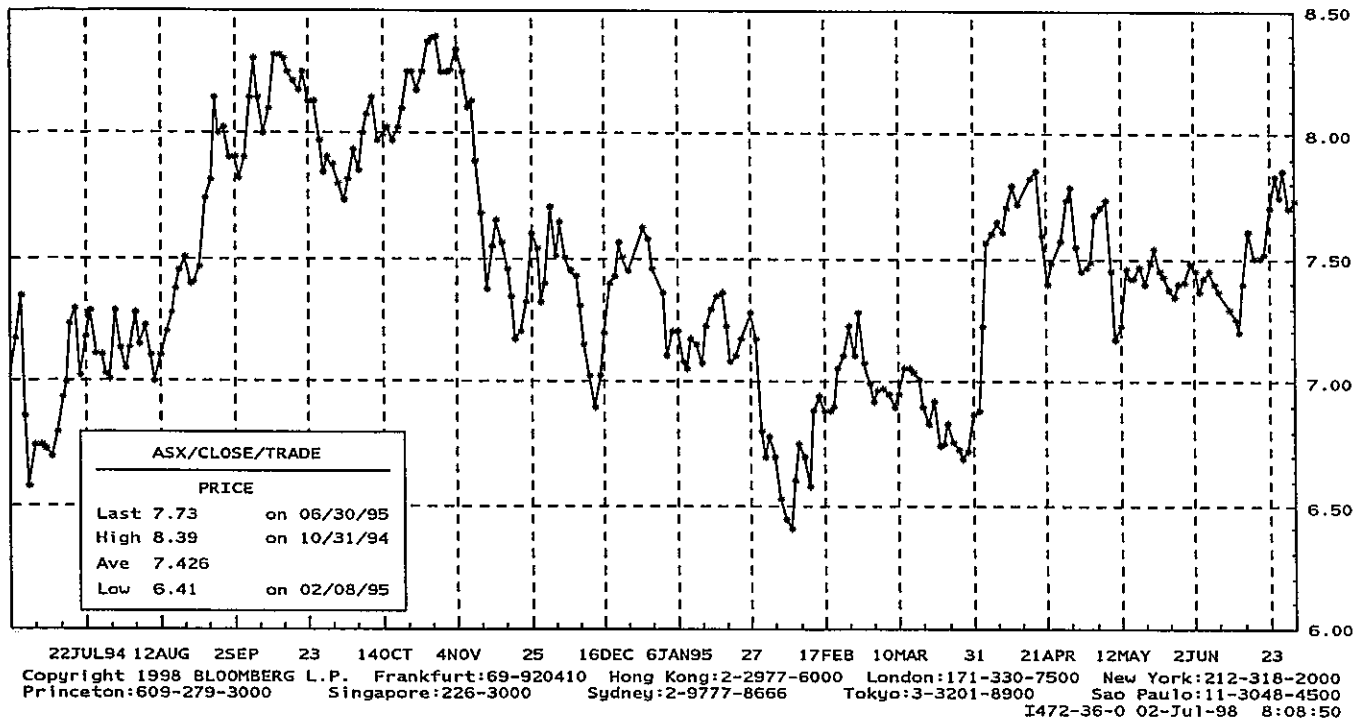
7/1/94 - 6/30/95

Period D Daily

N No additional graph(s)

1 PRICE

Market Type T Trade



Menu

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

DGT6 Equity GP

LINE GRAPH for WMC AU A\$

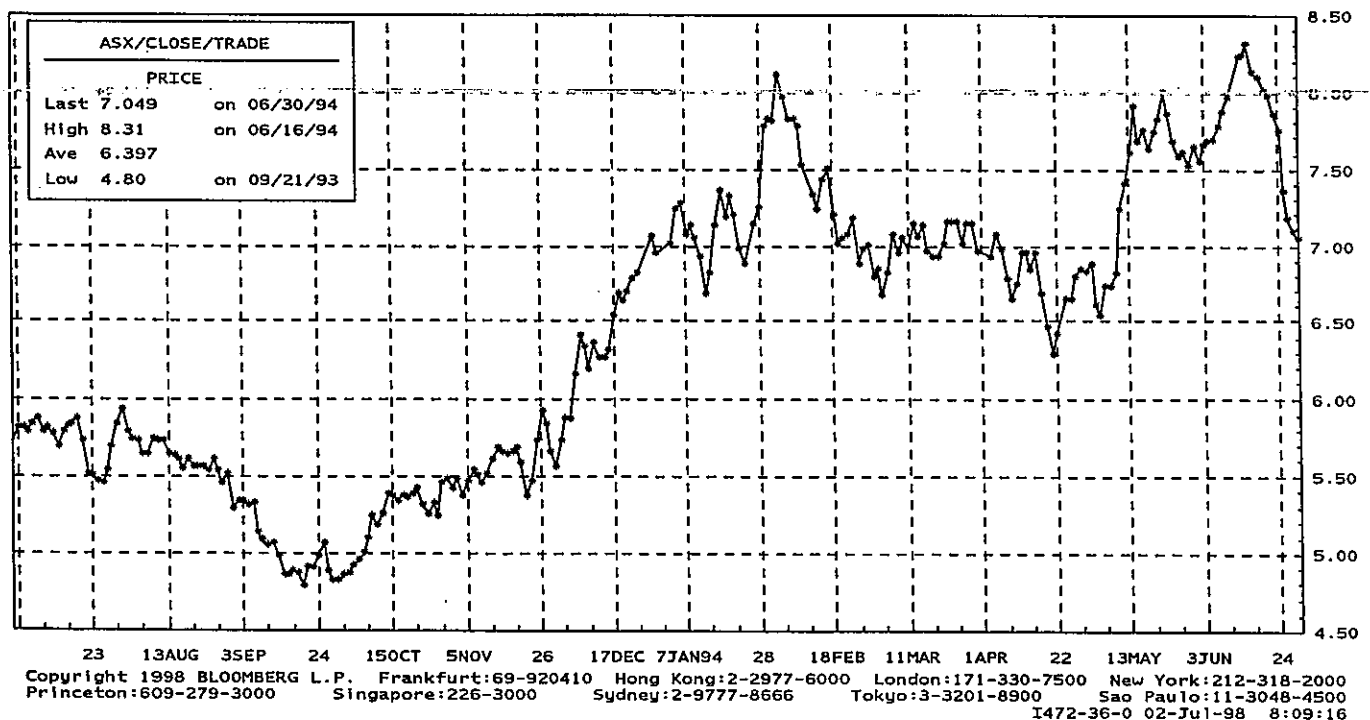
7/1/93 - 6/30/94

Period D Daily

N No additional graph(s)

1 PRICE

Market Type T Trade



Menu

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

DGT6 Equity GP

LINE GRAPH for WMC AU A\$

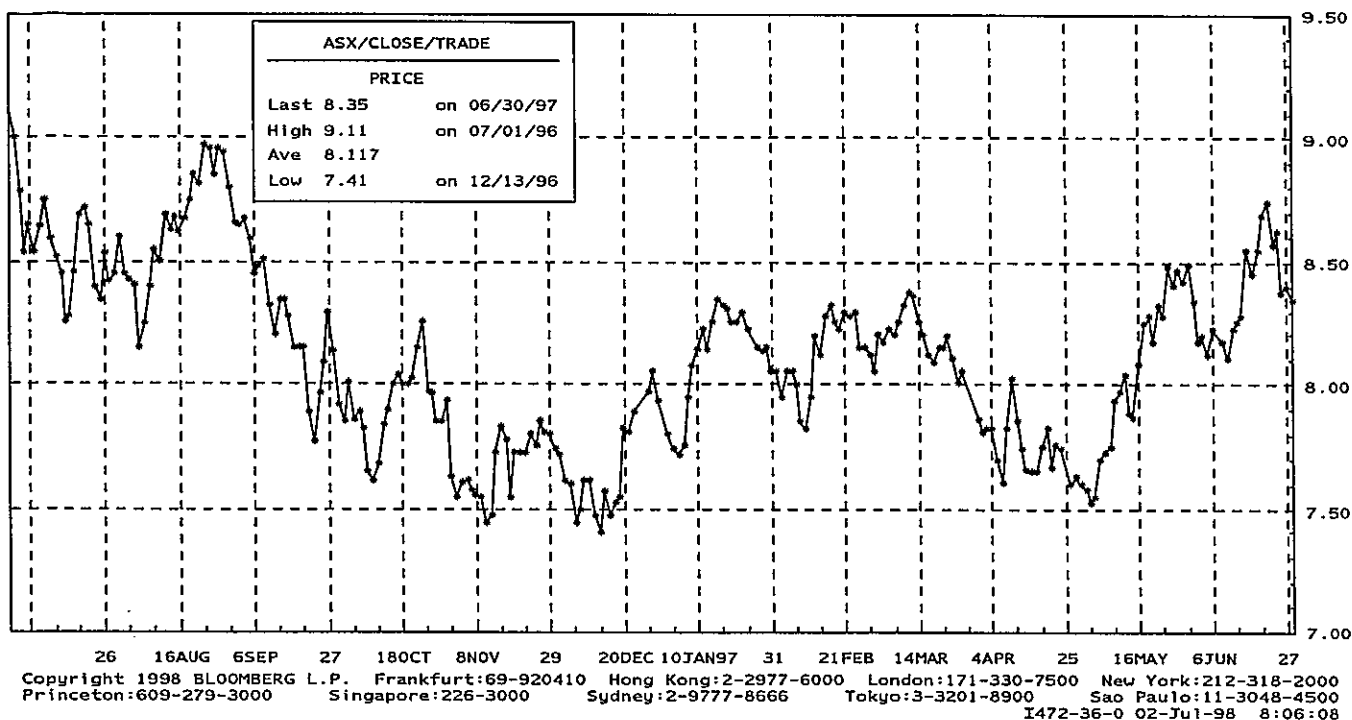
7/ 1/96 - 6/30/97

Period D Daily

N No additional graph(s)

1 PRICE

Market Type I Trade



Menu

WMC AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00

DGT6 Equity GP

LINE GRAPH for WMC AU A\$

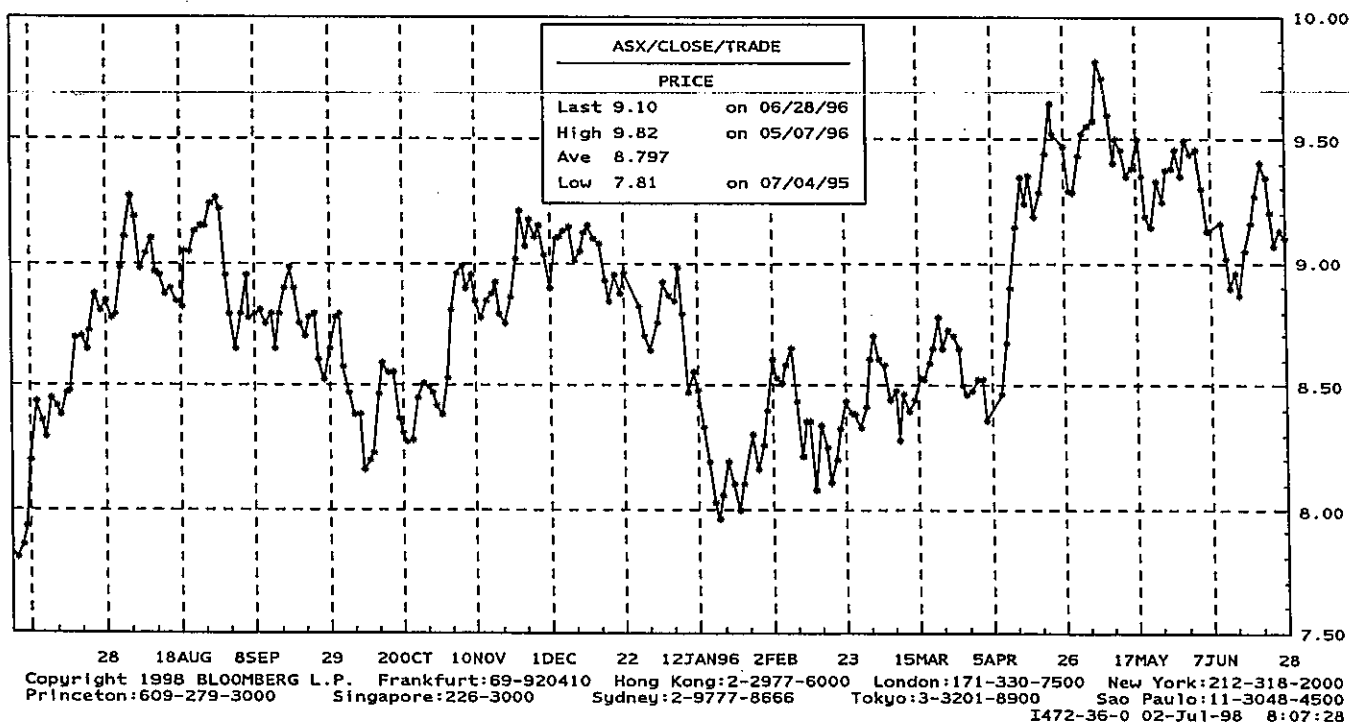
7/ 3/95 - 6/28/96

Period D Daily

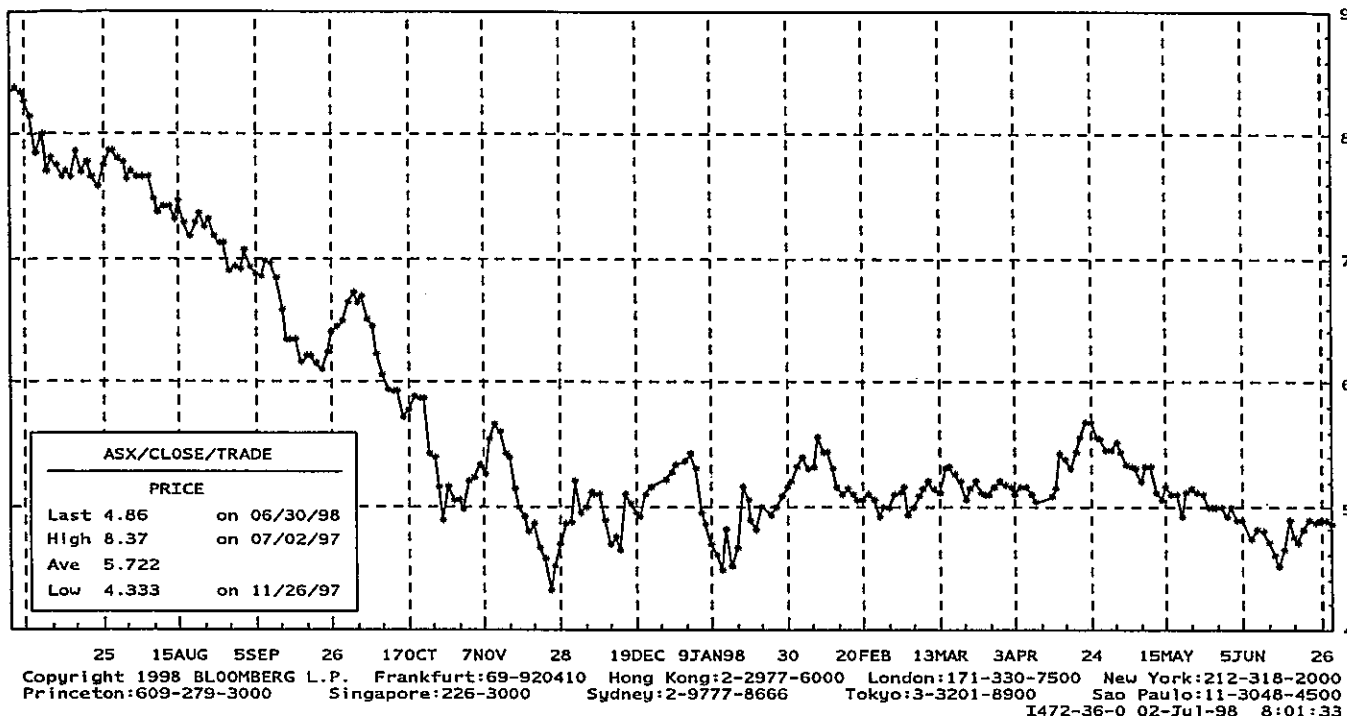
N No additional graph(s)

1 PRICE

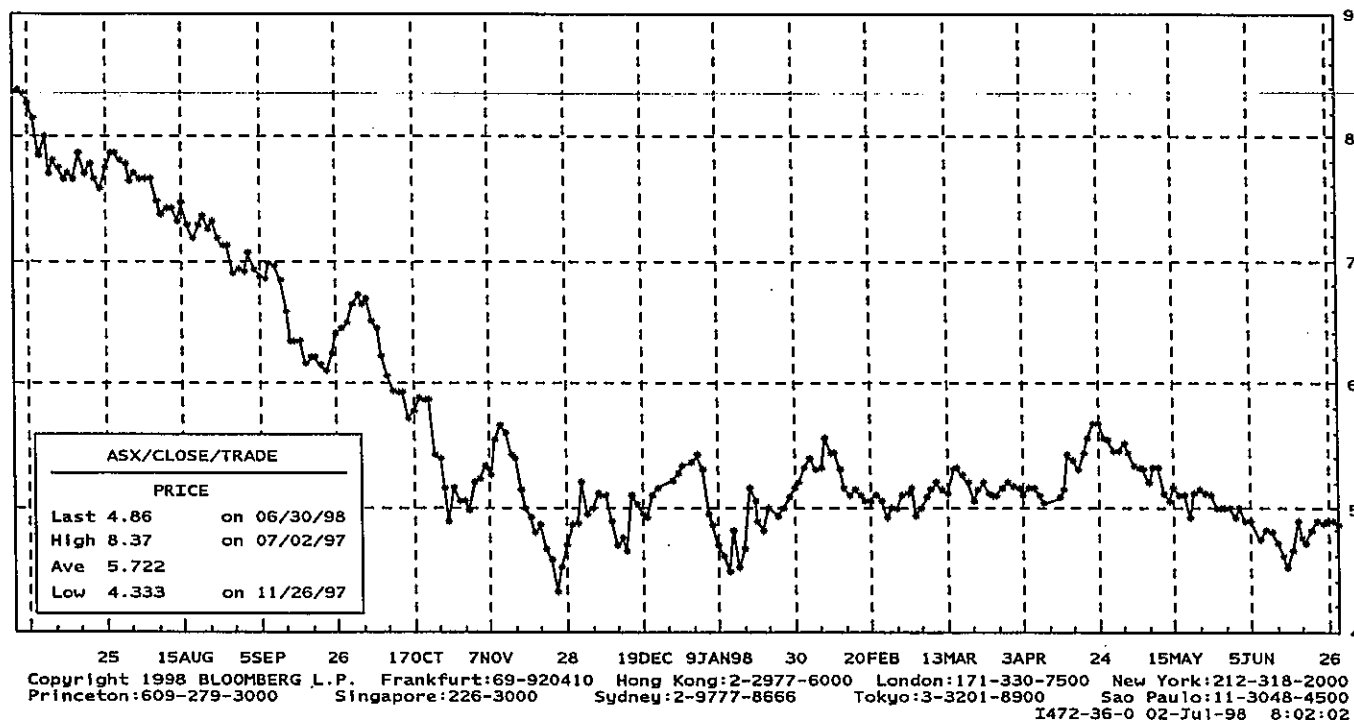
Market Type I Trade



1 DGT6 Equity GP  
**WMC** AU A\$ Market 5.02/5.00 1,000x7,480 Vol 1,800 Prev 5.00  
**LINE GRAPH** for **WMC** AU A\$  
**7/ 1/97** - **6/30/98** Period **D** Daily **N** No additional graph(s)  
**1** PRICE Market Type **T** Trade

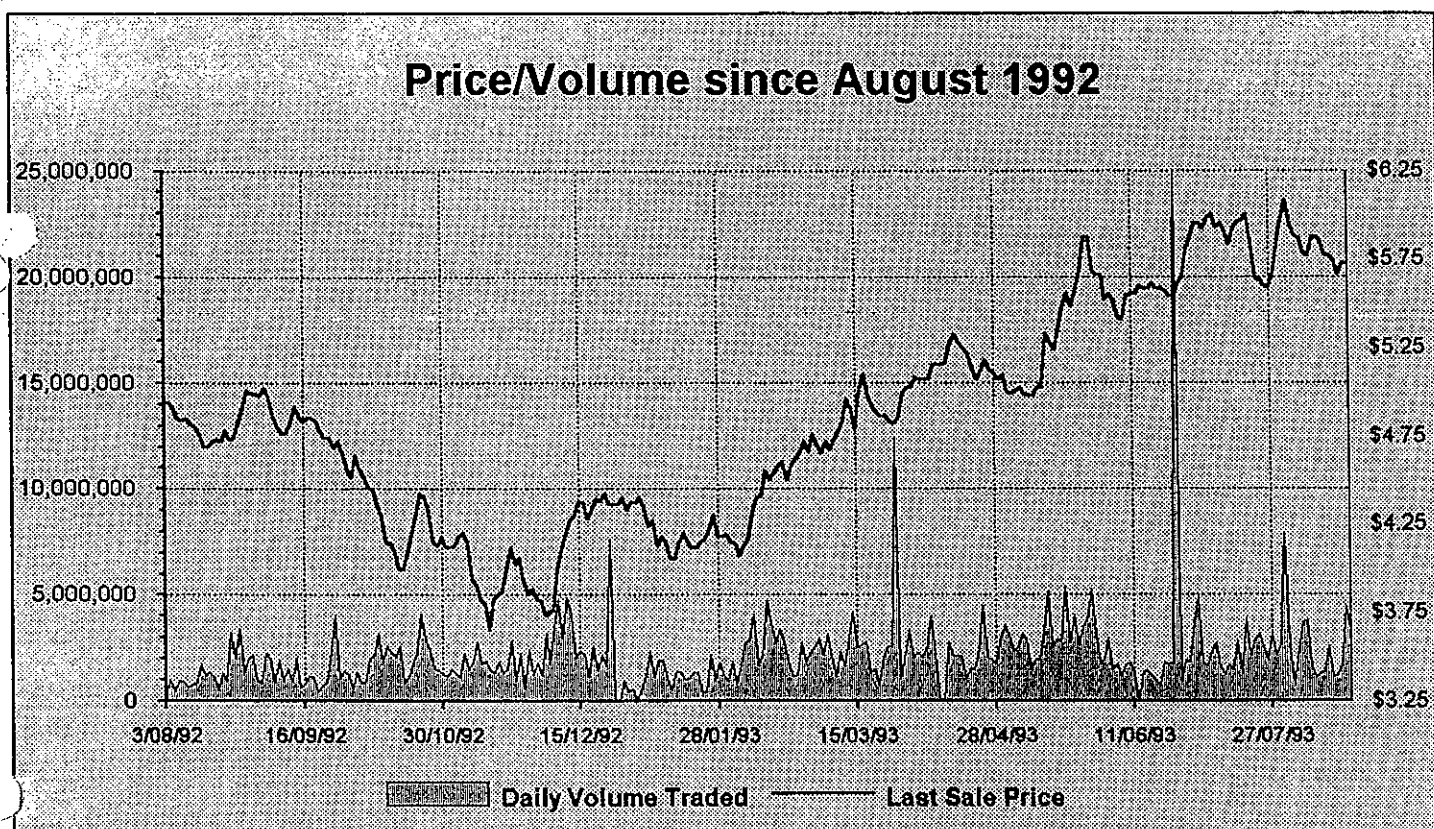
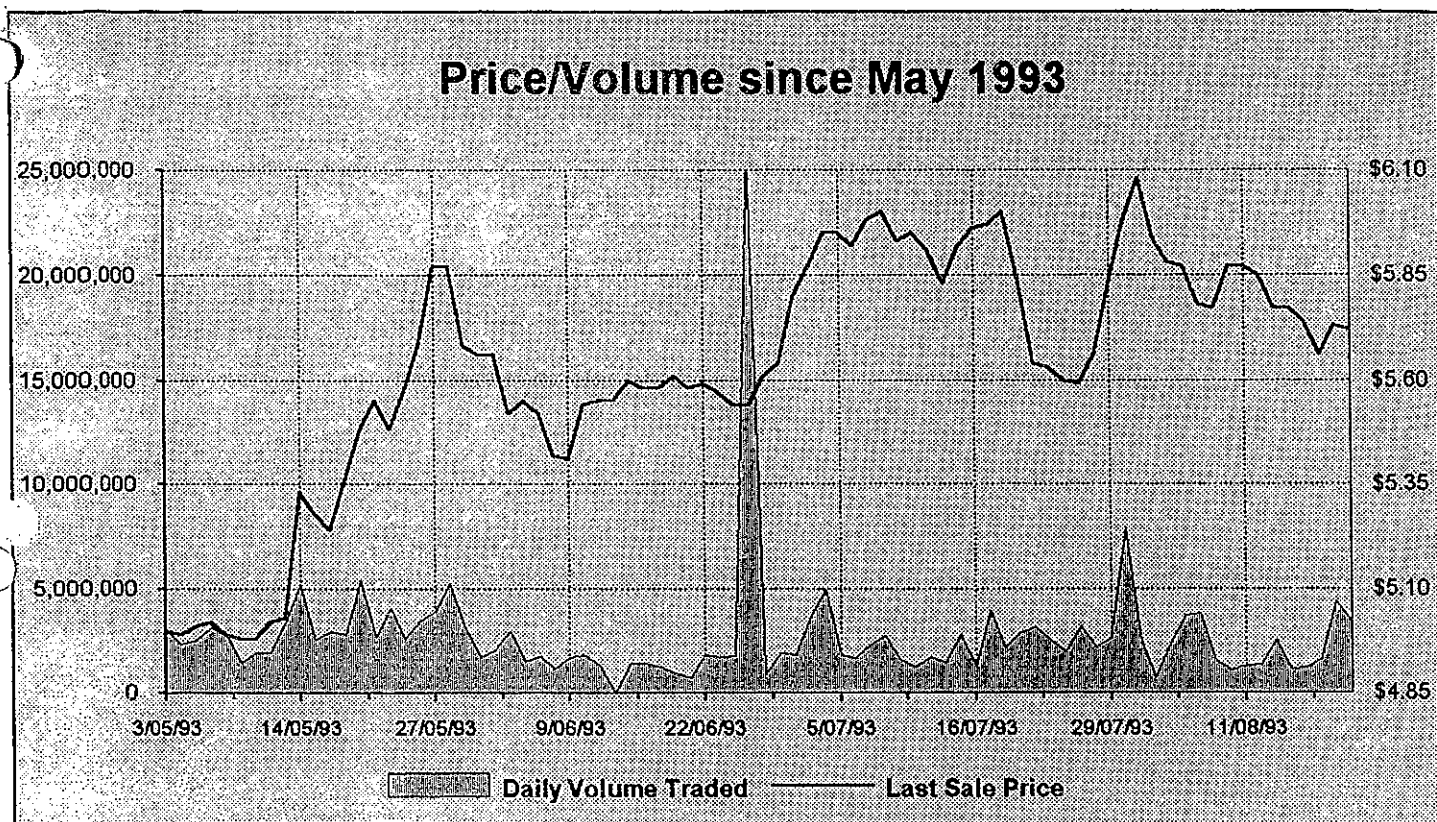


1 DGT6 Equity GP  
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**LINE GRAPH** for **WMC** AU A\$  
**7/ 1/97** - **6/30/98** Period **D** Daily **N** No additional graph(s)  
**1** PRICE Market Type **T** Trade



# WMCH share price performance

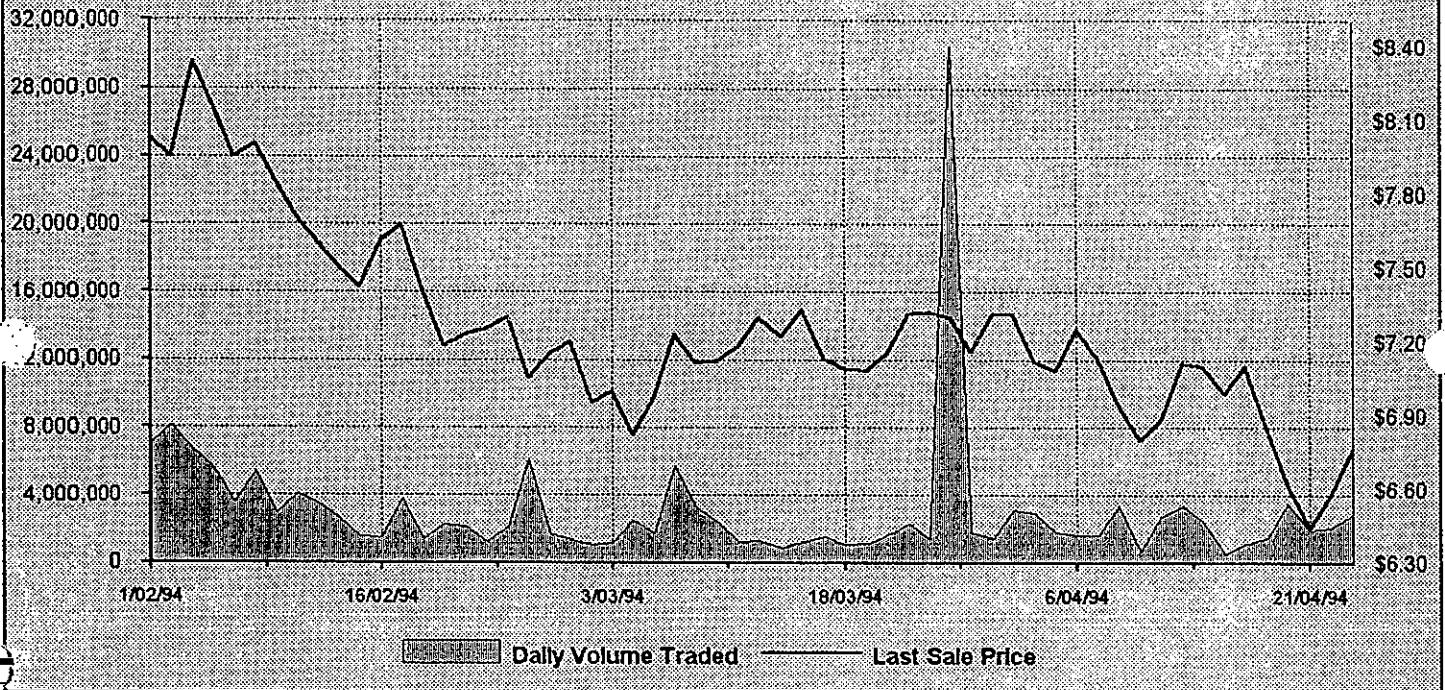
92



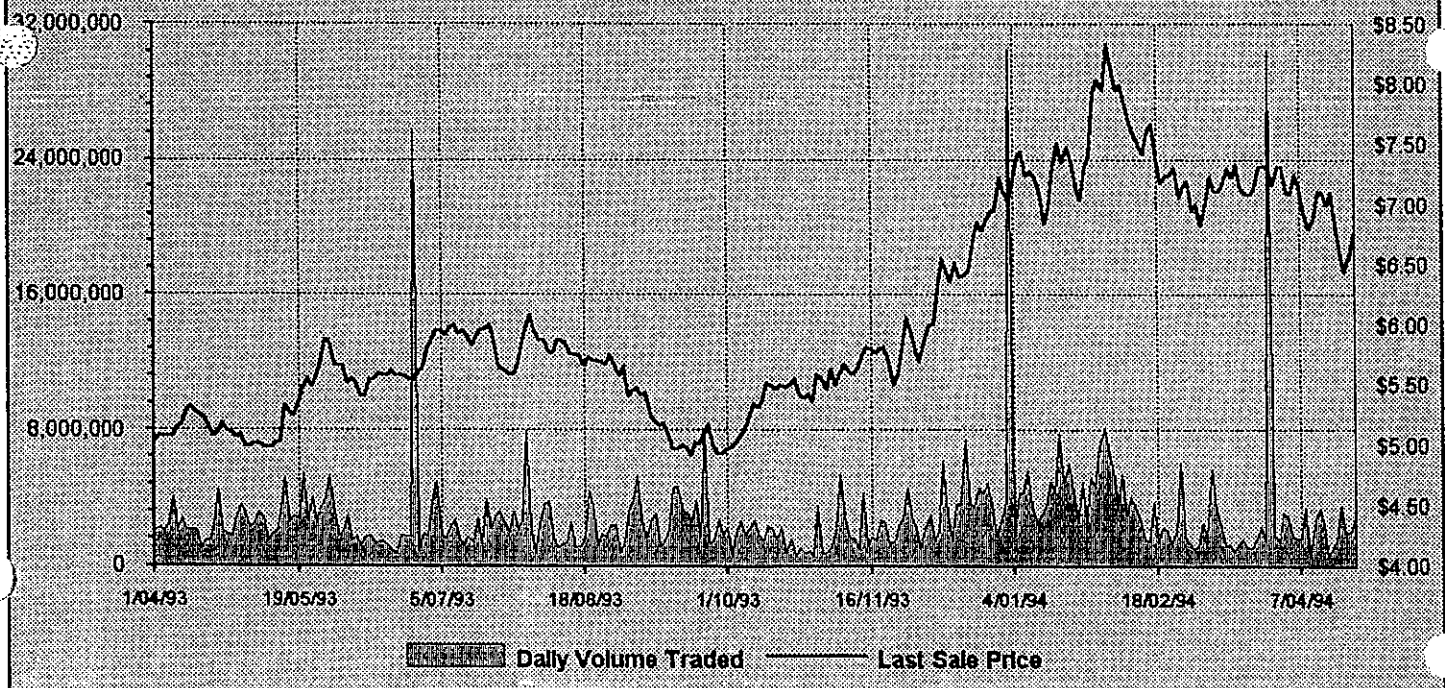


# WMCH Share Price Performance

## Price/Volume since February 1994

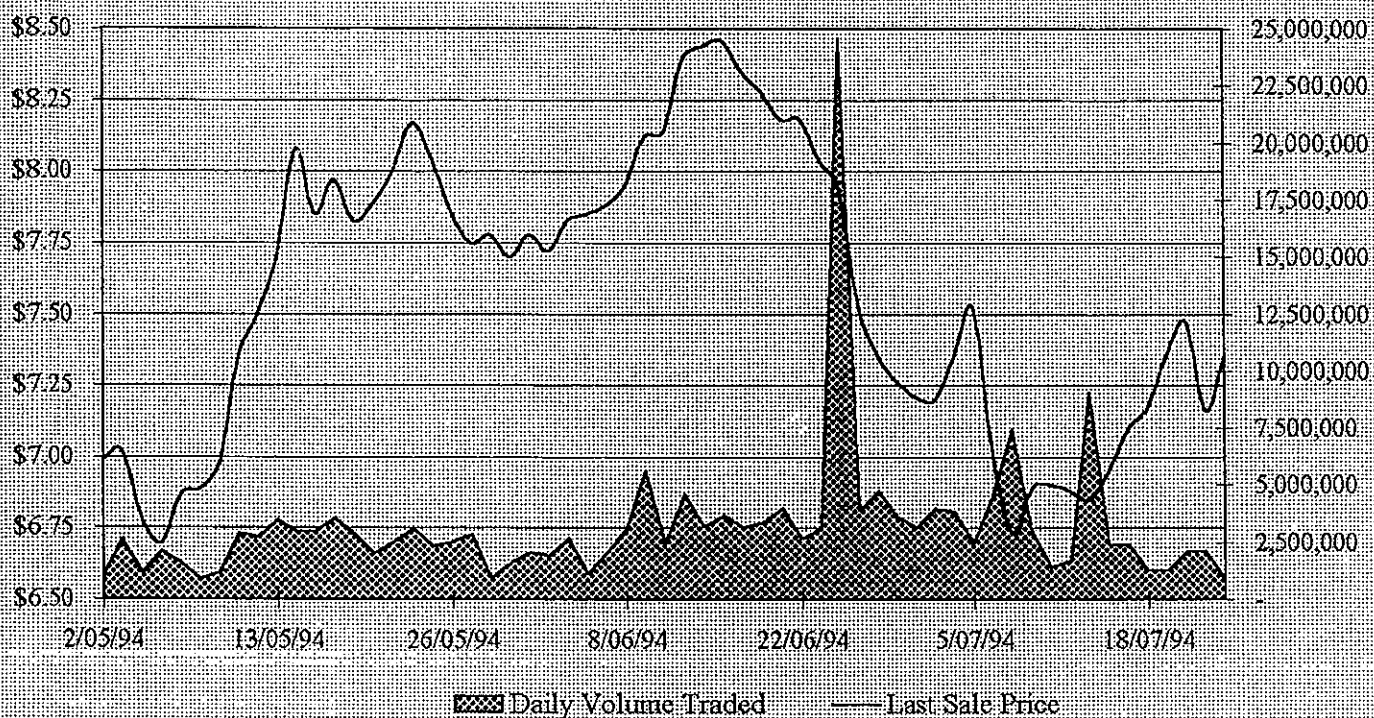


## Price/Volume since April 1993

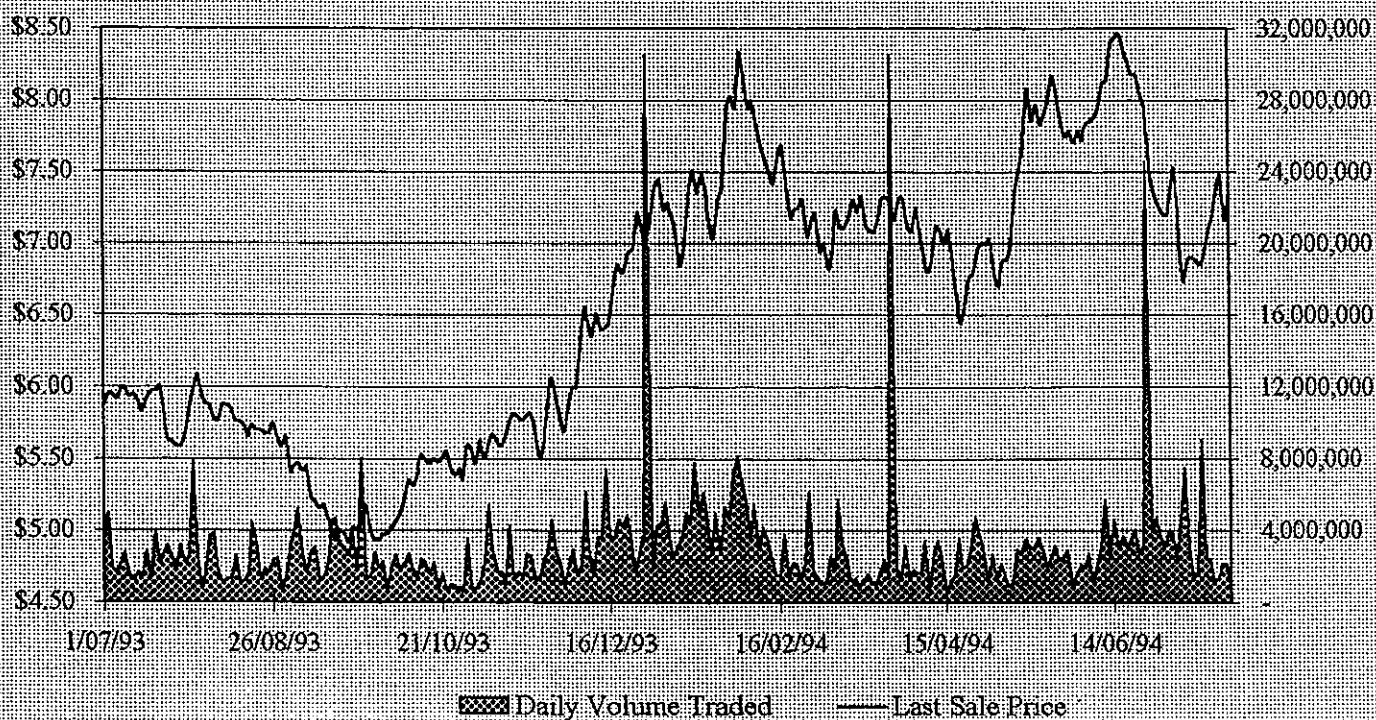


# WMCH Share Price Performance

## Price/Volume since May 1994

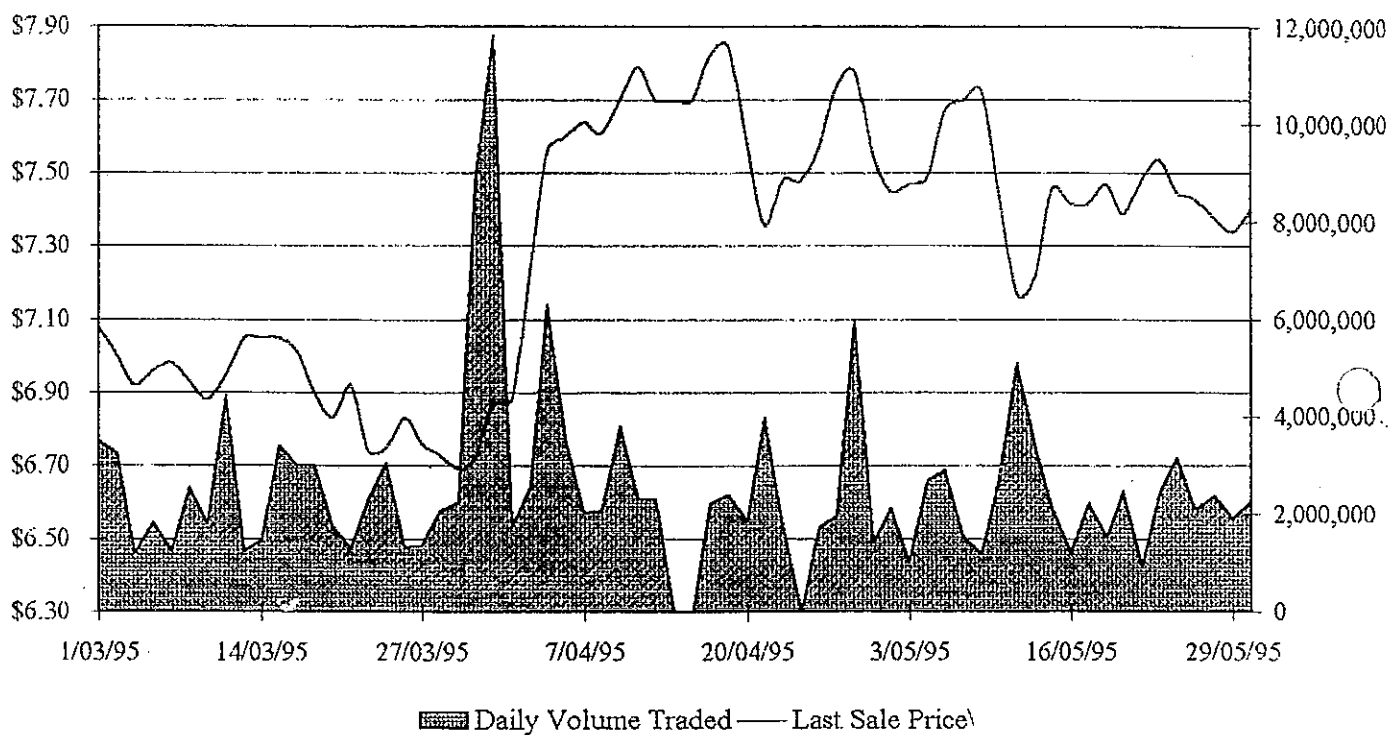


## Price/Volume since July 1993

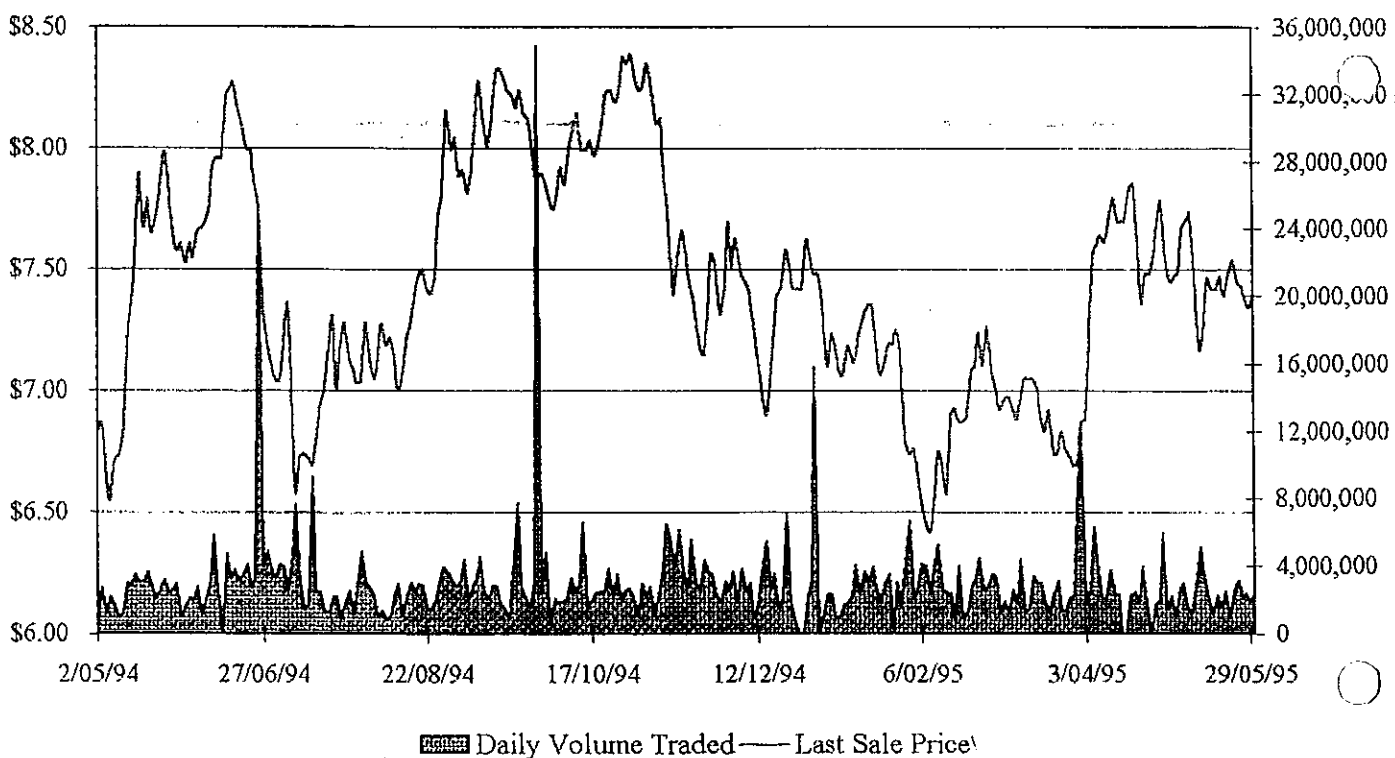


# WMCH Share Price Performance

## Price/Volume since March 1995

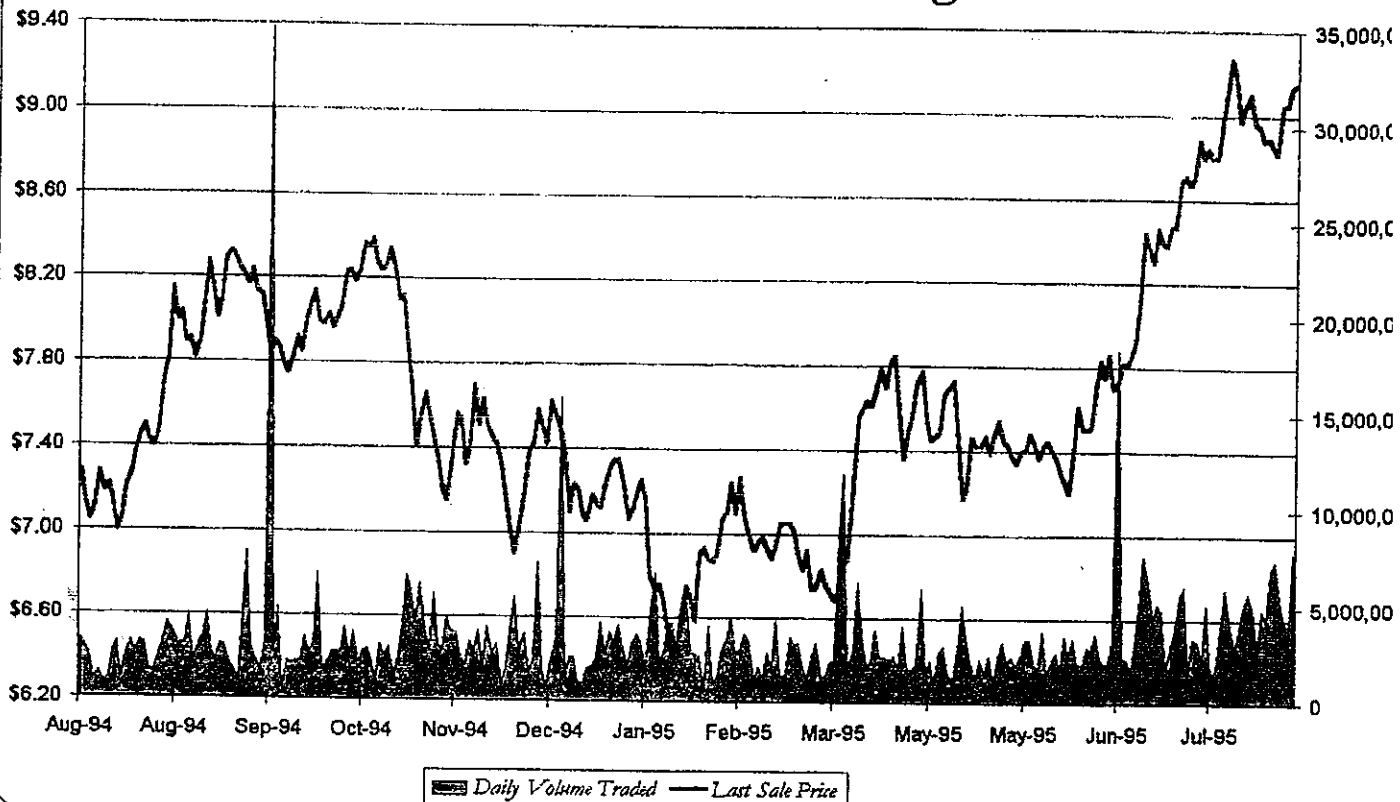


## Price/Volume since May 1994

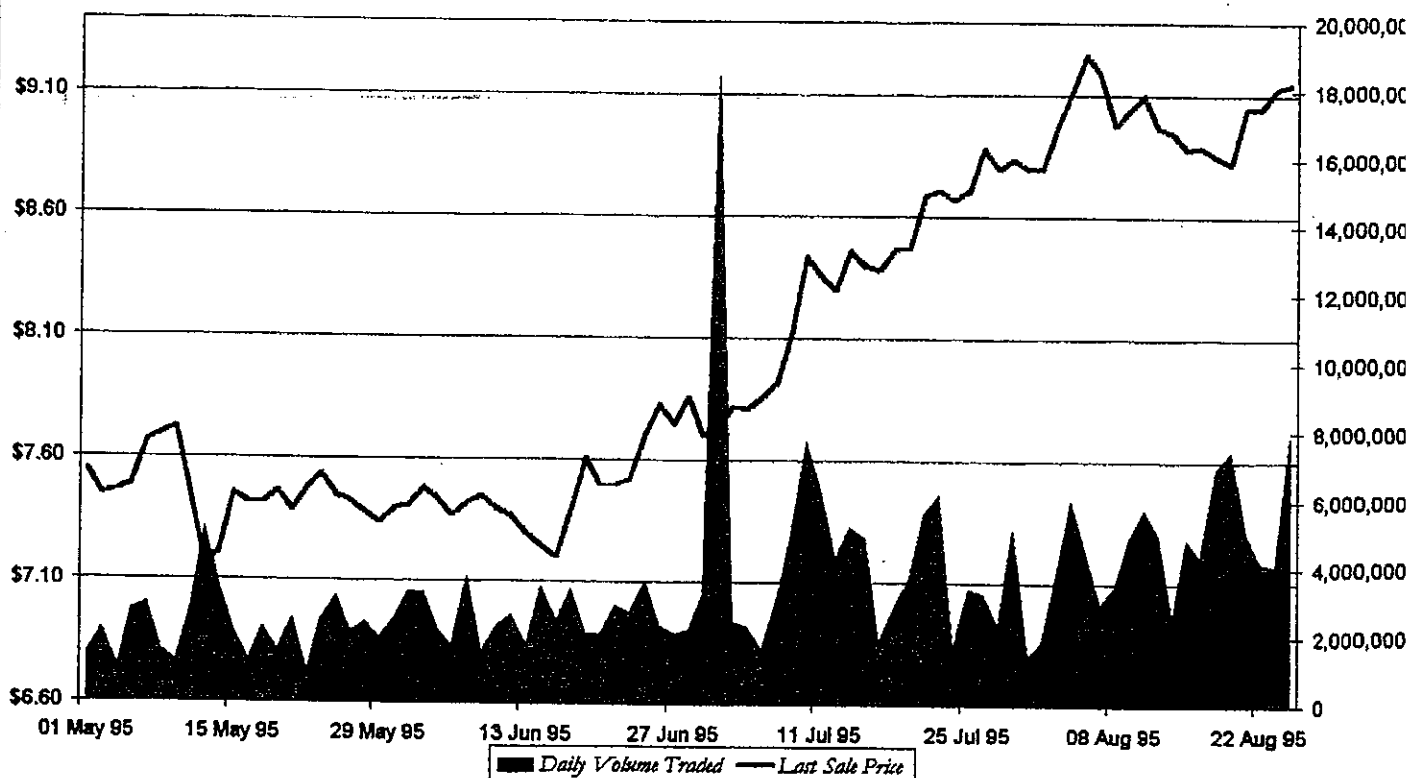


# Western Mining Share Price Performance

## WMC Price/Volume since August 1994

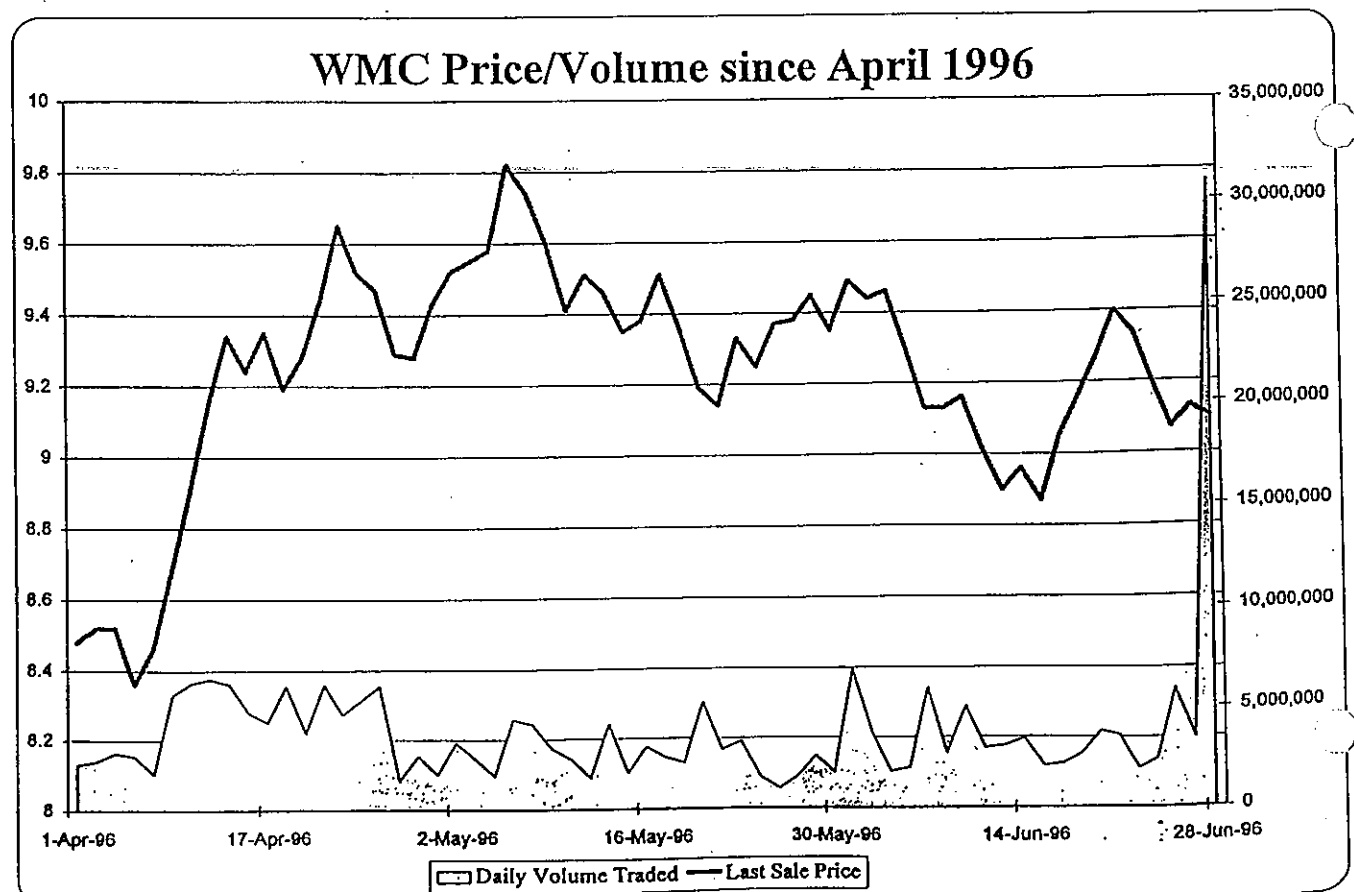
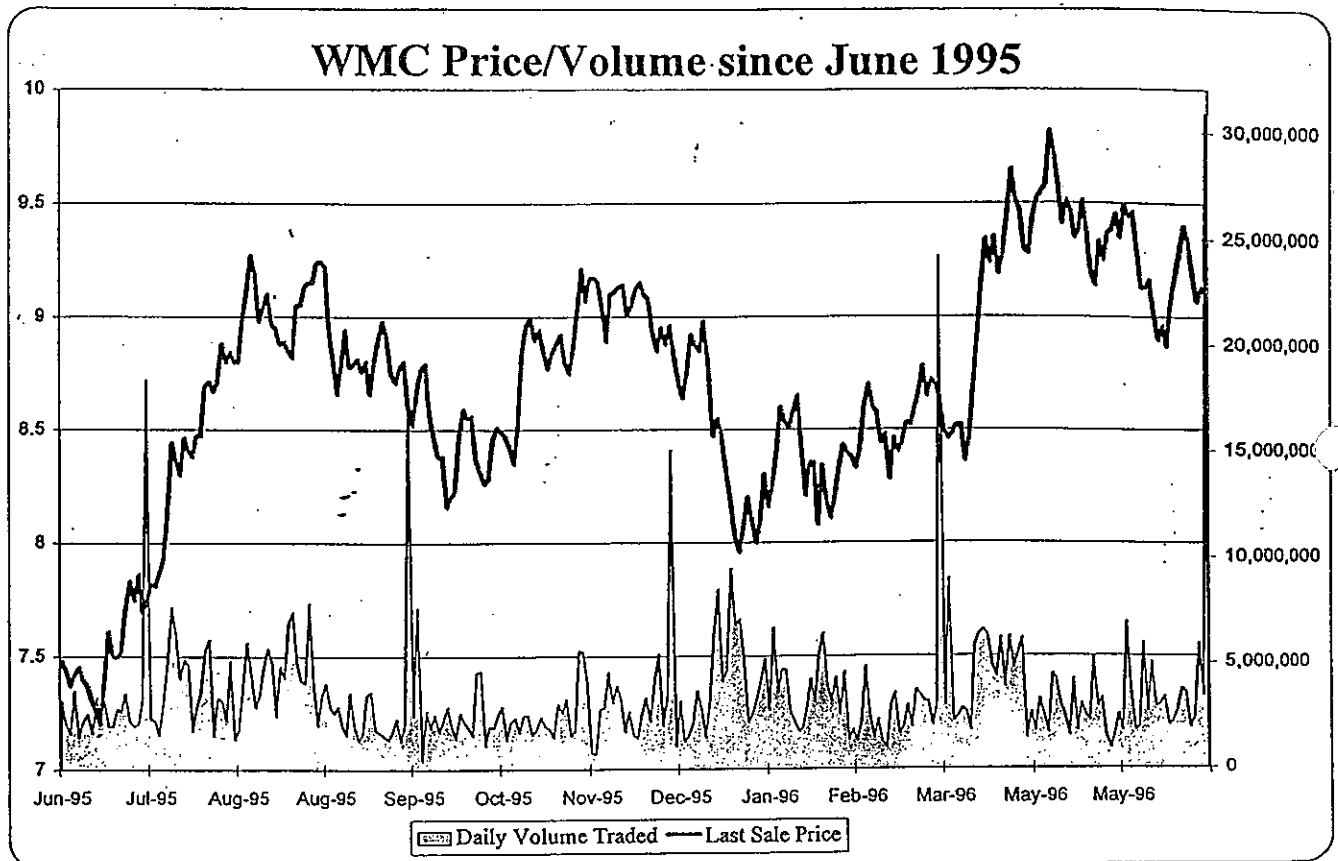


## WMC Price/Volume since May 1995



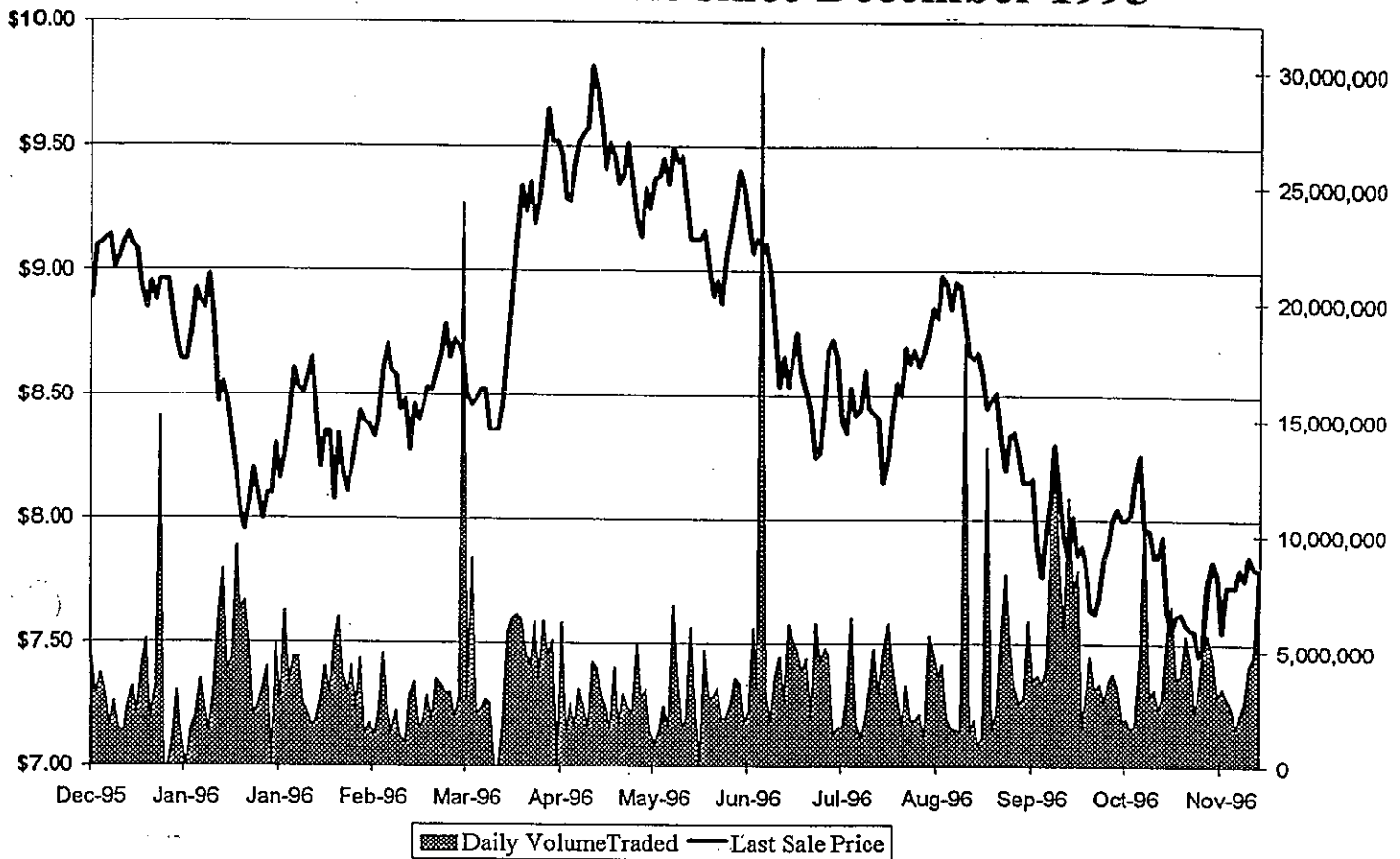
# WMC Limited

## Share Price Performance

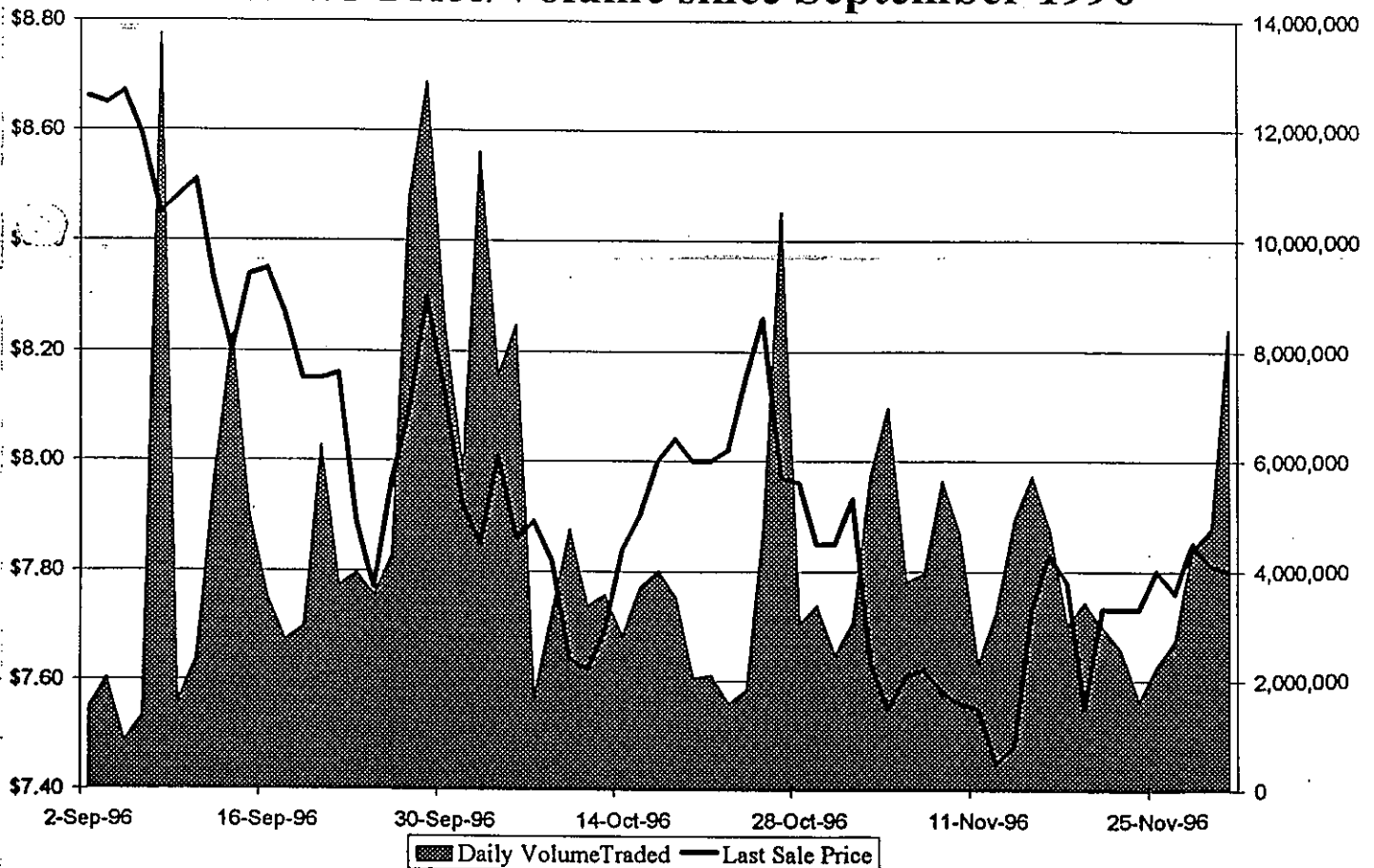




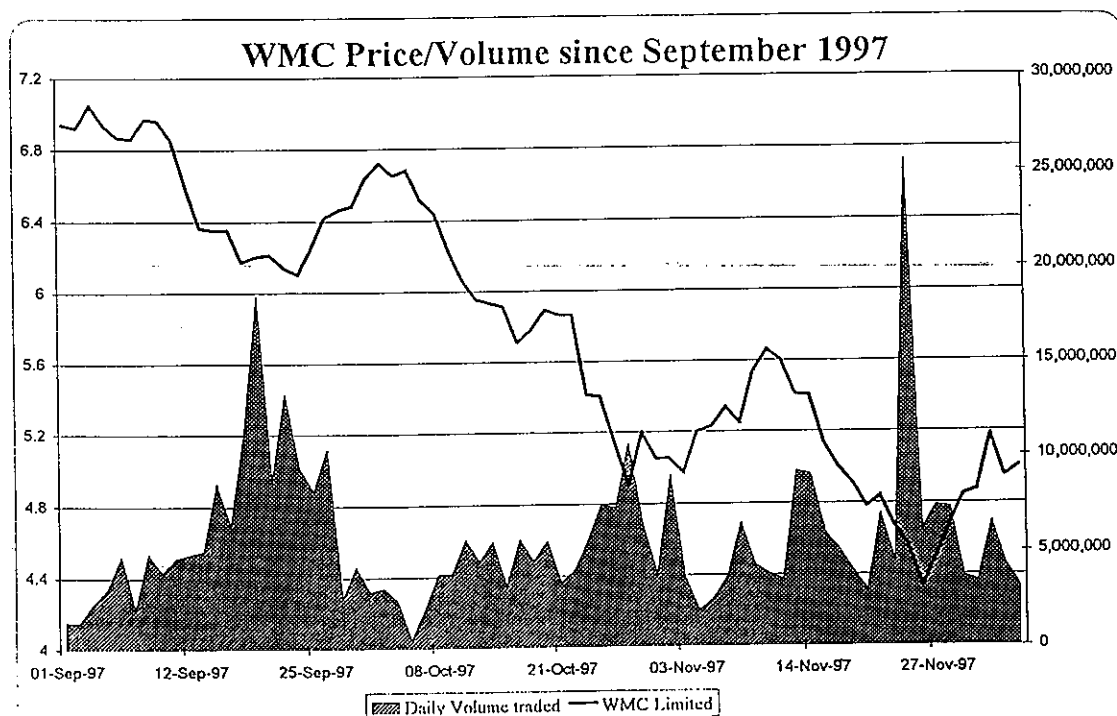
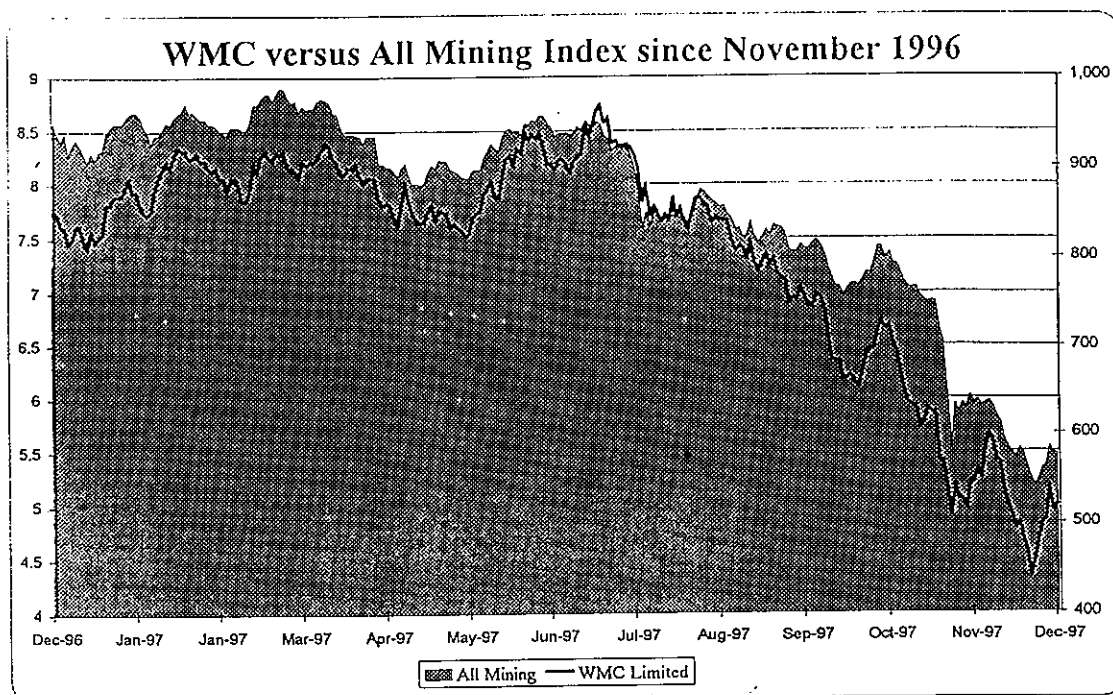
### WMC Price/Volume since December 1995



### WMC Price/Volume since September 1996



## WMC Limited Share Price Performance



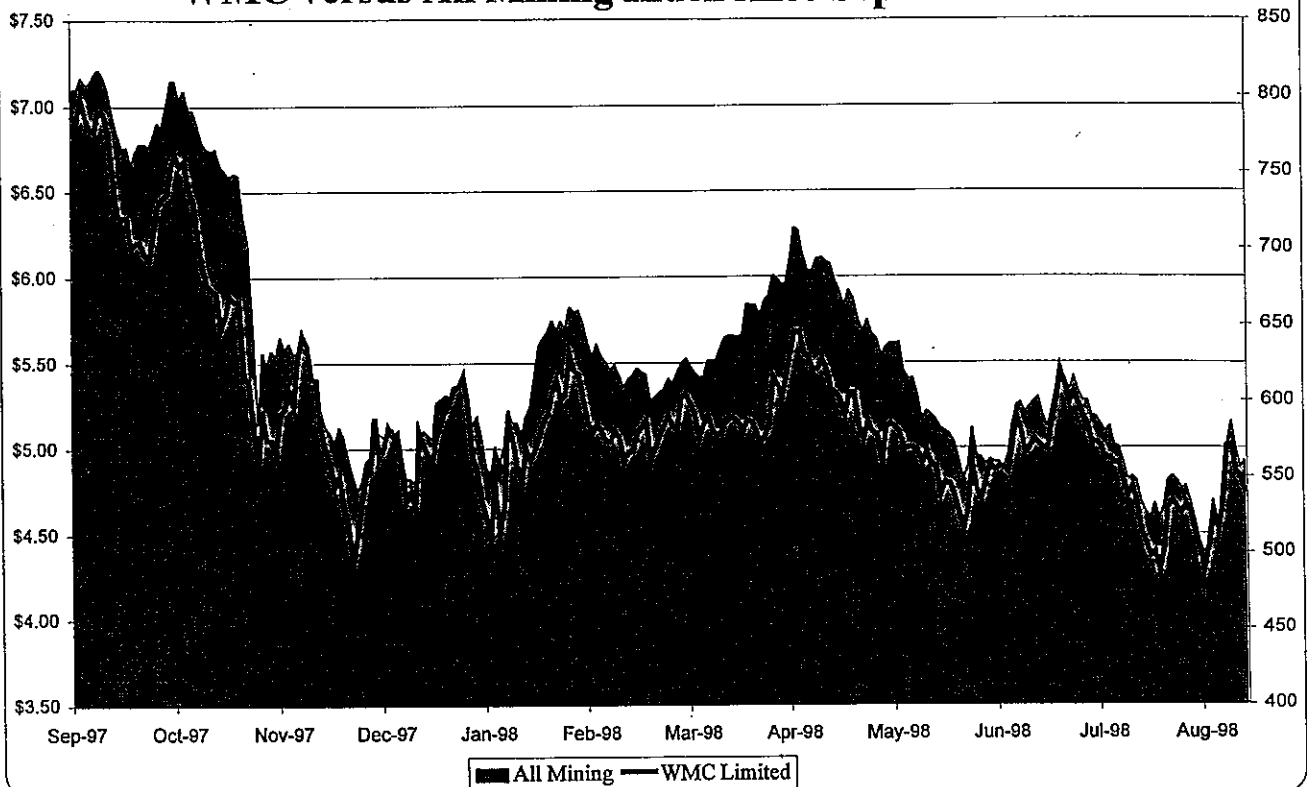
Source : Dunal Financial Systems

E. L. & C. Baillieu Corporate Finance  
December 1997

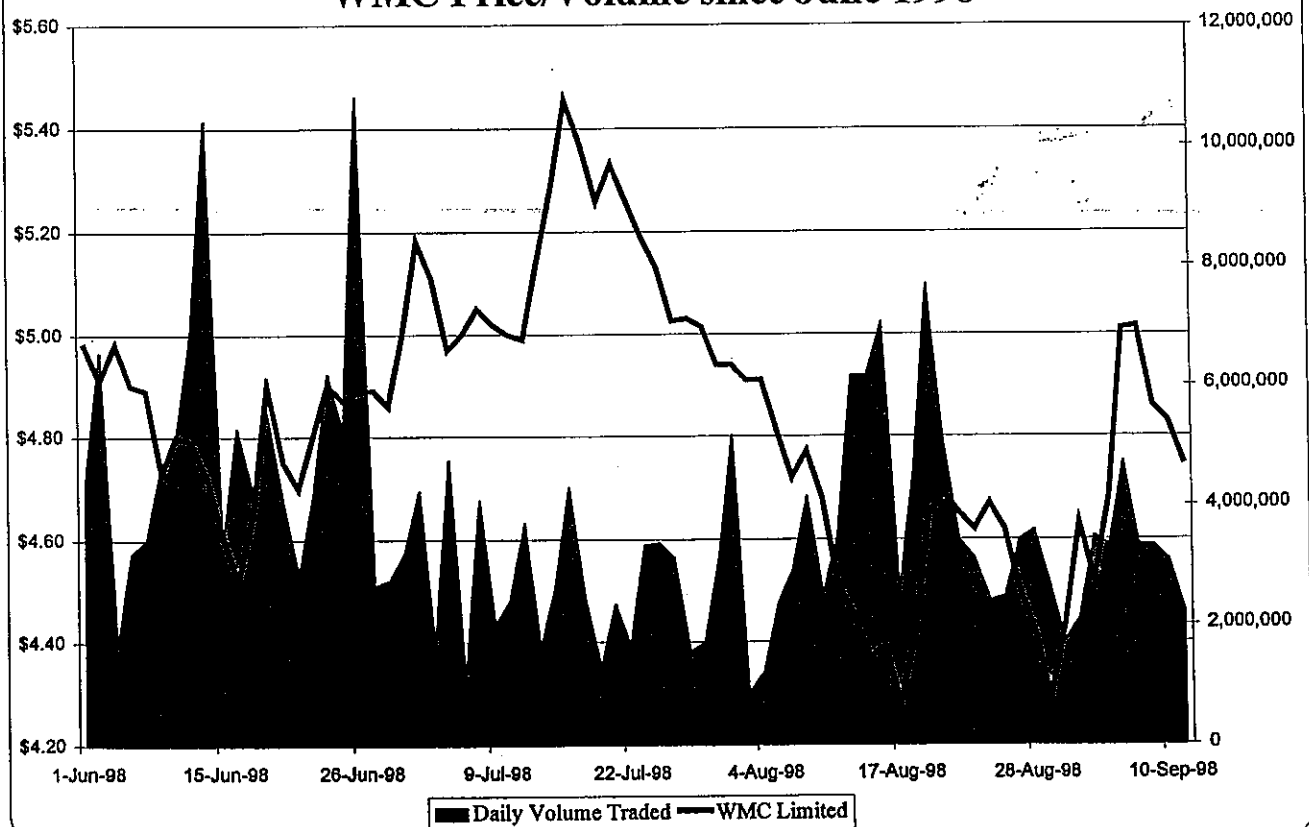
# WMC Limited

## Share Price Performance

**WMC versus All Mining Index since September 1997**

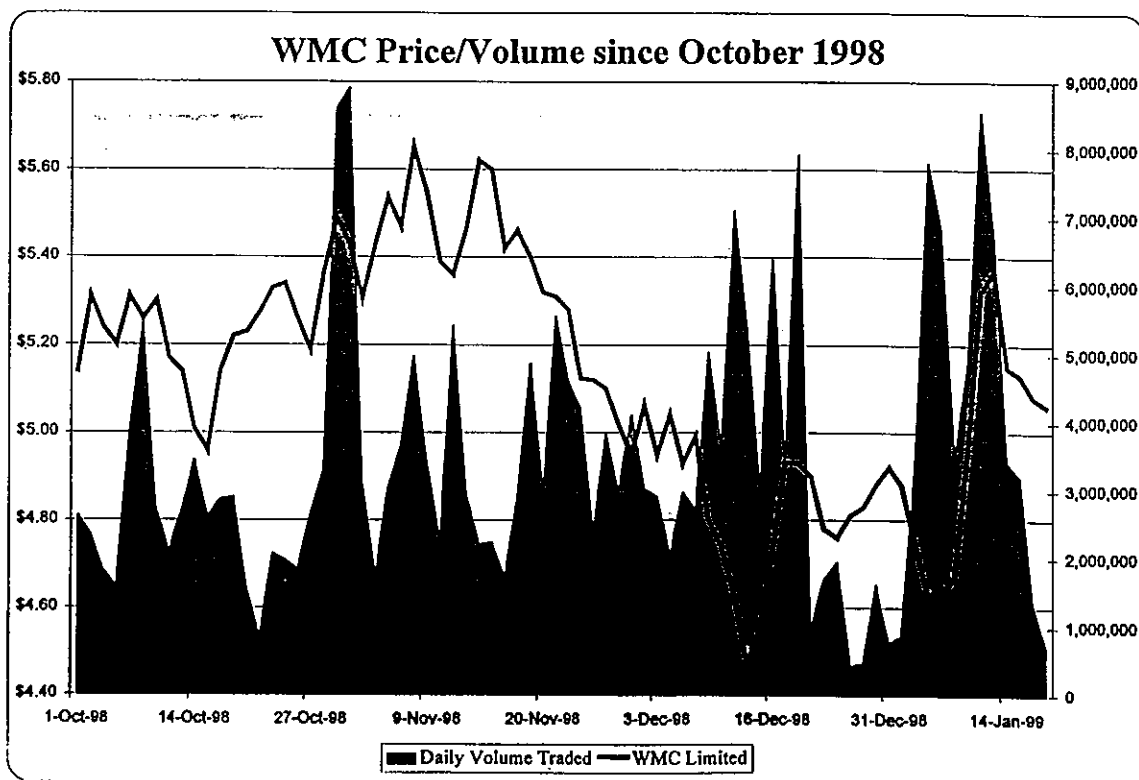
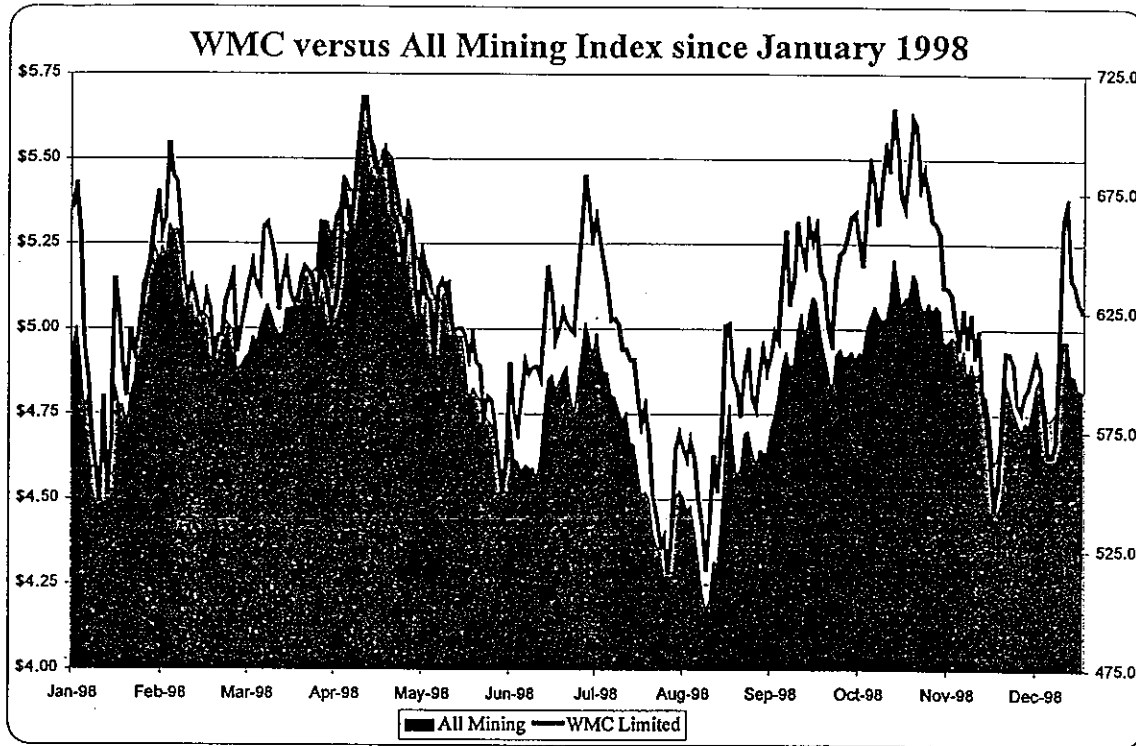


**WMC Price/Volume since June 1998**





## WMC Limited Share Price Performance



***WMC Group Cumulative Gold Production***

***Compiled by G.M. Ralph***

***WMC - 78(e)***

# RECORD OF TOTAL WMC GROUP CUMULATIVE GOLD PRODUCTION - OUNCES

YR ENDED	MT GOLDEN GOLD MINES INC	WESTERN GOLD MINES INC	COSMOPOL ITAN MINES INC	STEELE GOLD MINES INC	PARSHADON GOLD MINES INC	MOHAWK GOLD MINES INC	GOLD MINES GOLD MINES INC	CENTRAL GOLD MINES INC
1981	1,134							
1982	45,186							
1983	32,820							
1984	7,600	413						
1985	21,396		2,555	26,971	723	10,307	5,129	
1986	7,902		935	26,938	4,599	6,474	13,331	8,025
1987	18,126		469	31,056		7,373	20,258	15,029
1988	3,560			35,712		6,676	30,814	14,394
1989				33,135		2,946	34,712	41,624
1990				30,687		6,817	42,564	38,617
1991				21,660		8,199	37,464	50,390
1992				7,269		9,488	30,141	38,526
1993						7,002	19,022	27,089
1994						10,964	25,051	29,143
1995						12,621	27,582	25,011
1996						9,438	36,079	38,343
1997				19,826		10,316	41,206	35,691
1998				12,023		15,441	40,026	44,312
1999						15,492	41,337	44,924
2000						11,543	42,670	41,629
2001						9,679	46,881	49,091
2002						15,548	48,948	78,591
2003						17,199	56,908	77,410
2004						10,087	55,603	83,023
2005						4,906	119,531	92,137
2006						9,361	139,080	94,368
2007						9,028	142,043	95,722
2008						9,938	143,345	109,801
2009						4,183	145,217	101,115
2010						2,145	146,742	98,868
2011							147,379	106,165
2012							141,101	103,728
2013							142,843	97,697
2014							152,487	102,644
2015							198,535	123,430
2016							156,518	91,033
2017							150,863	86,982
2018							145,905	76,273
2019							137,321	59,432
2020							129,713	52,585
2021							142,288	49,138
2022							123,758	41,144
2023							162,051	30,948
2024							155,302	28,222
2025							144,812	76,595
2026							95,966	101,048
2027							84,281	85,874
2028							115,710	83,611
2029							107,335	77,194
2030							96,629	73,002
2031							150,549	79,672
2032							198,074	78,976
2033							194,302	80,153
2034							234,057	101,556
2035							222,020	116,547
2036							254,892	86,969
2037								87,537
2038								90,735
2039								95,228
2040								66,813
2041								54,820
2042								61,476
2043								78,067
2044								96,525
2045								119,622
2046								124,602
2047								193,628
2048								111,629
2049								109,724
2050								128,495
Totals	137,724	413	3,959	245,277	5,322	243,171	5,516,375	4,882,392

STATE	ALABAMA	ARIZONA	CALIFORNIA	FLORIDA	GEORGIA	ILLINOIS	INDIANA	MICHIGAN
1971								
1972								
1973								
1974								
1975								
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2011								
2012								
2013								
2014								
2015								
2016								
2017								
2018								
2019								
2020								
Totals	75,682	409	1,616	4,718	18,298	117,221	1,730	30,649

WMC.78attach

ITEM NO.	ITEM NAME	UNIT	QTY	PRICE	AMOUNT	TAX	TOTAL	REMARKS	
1	13,375	2,078							
2	20,189	6,398							
3	26,259	10,025							
4	34,956	11,220	14,128						
5	32,000	10,576	51,143						
6	34,342	5,743	56,808						
7	18,955	4,813	66,006						
8		6,005	79,157						
9		496	78,446						
10			81,006						
11			71,928						
12			64,355						
13			62,499						
14			52,480						
15			6,823						
16			328						
17			395						
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96									
97									
98									
99									
100									
Totals	180,076	57,354	685,502	5,266,241	12,810	1,618,973	76,376	130,588	15,140

WMC.78attach



YEAR	OPERATIONS	CHARGE	REVENUE	EXPENSE	NET	NET	NET
1971							1,134
1972							45,186
1973							32,820
1974							8,013
1975							67,081
1976							79,946
1977							109,474
1978							124,368
1979							150,928
1980							151,720
1981							148,379
1982							104,433
1983							64,982
1984							70,959
1985							68,214
1986							94,596
1987							112,482
1988							113,314
1989							118,497
1990							123,974
1991							144,430
1992							204,792
1993							247,335
1994							247,146
1995							307,844
1996							330,730
1997							328,471
1998							345,788
1999							324,448
2000							313,753
2001							317,873
2002							298,900
2003							248,653
2004							256,664
2005							322,360
2006							247,551
2007							237,845
2008							222,178
2009							196,753
2010							182,298
2011							191,426
2012							164,902
2013							192,999
2014							185,912
2015							222,492
2016							197,014
2017							170,155
2018							199,321
2019							186,927
2020							178,084
2021							290,840
2022							431,554
2023							514,944
2024							626,377
2025							632,014
2026							756,723
2027							584,115
2028	10,648	1,395					952,780
2029	31,850	2,022					1,047,792
2030	17,311		2,476	2,915		2,103	1,083,402
2031	20,538		1,690	3,496	41,429	18,126	859,243
2032	25,413			5,902	39,020	31,880	792,945
2033	23,070			6,357	17,063	22,851	870,611
2034	7,405			24,360		31,912	856,010
2035	4,590			27,059		25,988	803,789
2036	2,110			16,827		31,235	832,008
2037				3,448		33,214	1,149,649
2038						28,410	745,717
2039						47,111	797,444
2040						30,510	891,558
2041						69,967	64,293
2042						113,412	64,293
Totals	142,935	3,417	4,166	90,364	97,512	550,992	24,589,352

WMC.78attach

***WMC Equity In Group Cumulative  
Gold Production***

***Compiled by G.M. Ralph***

***WMC - 79(e)***



**RECORD OF WMC EQUITY IN GROUP CUMULATIVE GOLD PRODUCTION - OUNCES**

YEAR ENDED	MOUNT COOLON GOLD MINES NL	WESTERN GOLD MINE NL	COSMO-POLITAN MINES NL	TRITON GOLD MINES NL	CARSHAL-TON (BML) MINES NL	MORNING STAR GOLD MINES NL	GOLD MINES OF KALG., KLV KMA	CENTRAL NORSE-MAN GOLD CORP	COX'S FIND GOLD MINE	NAPOL-EON (BML) MINES NL	NELL GWYNN (BML) MINES NL
% Owned	20.0 > 3.0	31.6	90.0	20.7 > 26.1	21.0	25.0 > 13.8	30.0 > 10.18	81.3 > 50.5	75.00	30.00	16.00
MAR 1932	227										
1933	6,326										
1934	2,626										
1935	608	131									
1936	1,712		2,300	6,581	152	2,577	1,539				
1937	632		842	6,573	966	1,619	3,999	6,520	7,288	123	259
1938	1,450		422	7,578		1,843	6,077	12,211	11,478		
1939	2,848			8,714		1,669	9,244	11,695	12,569		
1940				6,859		501	10,414	33,820	8,522		
1941				6,352		2,859	12,769	31,376	7,307		
1942				4,484		1,394	11,239	40,942	8,204		
1943				1,505		1,674	9,042	31,302	1,393		
1944						1,190	5,707	22,010			
1945						1,458	7,515	23,679			
1946						1,679	8,275	20,321			
1947						1,255	10,824	27,799			
1948				5,175		1,372	12,362	25,876			
1949				3,138		2,054	12,008	22,369			
1950						2,060	12,401	22,678			
1951						1,535	12,801	21,014			
1952						1,336	14,064	24,781			
1953						2,146	14,684	39,673			
1954						2,373	17,072	39,077			
1955						1,392	13,901	41,910			
1956						677	32,273	46,511			
1957						1,292	37,552	47,637			
1958						1,246	36,931	48,320			
1959						1,371	37,270	55,428			
1960						577	37,756	51,043			
1961						296	38,153	49,909			
1962							38,319	53,592			
1963							36,686	52,362			
1964							37,139	49,317			
1965							39,647	51,814			
Jun-66	(15 months)						62,896	62,307			
1967							49,585	45,953			
1968							47,793	43,909			
1969							46,223	38,503			
1970							43,503	30,001			
1971							41,093	26,545			
1972							45,077	24,805			
1973							39,207	20,769			
1974							33,869	15,623			
1975							32,458	14,246			
1976							30,266	38,665			
1977							10,422	51,009			
1978							8,580	43,349			
1979							11,779	42,207			
1980							10,927	38,968			
1981							9,837	36,851			
1982							15,326	40,218			
1983							20,164	39,867			
1984							19,800	40,461			
1985							23,827	51,265			
1986							2,262	58,833			
1987							25,948	43,902			
1988								44,189			
1989								45,803			
1990								48,071			
1991								33,727			
1992								27,673			
1993								31,033			
1994								39,408			
1995								48,726			
1996								60,385			
1997								62,899			
1998	(18 months)							97,743			
1999								56,350			
2000								55,389			
2001								64,864			
2002											
	16,429	131	3,564	56,959	1,118	39,445	1,208,505	2,569,502	56,761	123	259

YEAR ENDED	THREE EIGHTHS MINE	LAKE VIEW SOUTH (GMK) LTD	VICTORIA GOLD DREDGING CO NL	MISTLE-TOE MINE	YILGANGIE QUEEN	NEW COOL-GARDIE GOLD MINES NL	CENTRAL VIC. GOLD DREDGING CO NL	GREAT WESTERN CONSOL'D NL	ST. IVES GOLD MINES (Kambalda)	KWINANA REFINERY	HILL 50 GOLD MINES NL
% Owned	100.00	30.00	55.8 > 44.5	100.00	100.00	62.0 > 52.0	60.0 > 58.0	14.00	100.00	100.00	38 > 100
MAR 1932											
1933											
1934											
1935											
1936											
1937											
1938	1,386	142									
1939	2,106	1,056	6,041								
1940	1,226	1,050	10,243	1,730							
1941		1,050	9,797								
1942		1,110	7,101			420					
1943		1,050	6,169			93					
1944		32	5,353								
1945			2,581								
1946			1,335								
1947			4,778								
1948			2,422								
1949					1,512						
1950					1,291	8,293	1,247				
1951					1,545	12,517	3,839				
1952					2,495	16,281	6,015				
1953					1,401	21,673	6,732	1,978			
1954					2,099	16,640	6,346	7,160			
1955					1,540	17,858	3,446	7,953			
1956					1,496	9,857	2,888	9,241			
1957					2,759		3,603	11,082			
1958					2,736		288	10,982			
1959					1,698			11,341			
1960					2,005			10,070			
1961					1,643			9,010			
1962					1,830			8,750			
1963					1,591			7,347			
1964					1,290			955			
1965					1,205			46			
Jun-66								55			
1967											
1968											
1969											
1970											
1971											
1972											
1973											
1974											
1975											453
1976											543
1977											
1978											
1979											
1980									2,398		
1981									6,954		42
1982									19,806		8,952
1983									57,674		10,652
1984									89,722		10,363
1985									101,073		12,019
1986									100,164		14,027
1987									126,535		18,563
1988									134,686	2,065	52,520
1989									225,524	3,890	56,534
1990									203,447	2,343	131,345
1991									294,063	2,613	190,419
1992									206,421	1,899	191,015
1993									265,786		180,213
1994									317,565		211,451
1995									371,710		174,175
1996									377,278		132,898
1997									433,265		104,800
1998									650,827		
1999									408,937		
2000									408,155		
2001									464,251		
2002											
	4,718	5,490	55,820	1,730	30,649	103,119	34,404	95,970	4,801,990	12,810	1,480,984

YEAR ENDED	KGO GREAT BOULDER	KGO SANDKING THEIL WELL MISSOURI	KGO LADY BOUNTIFUL	LANCE-FIELD GOLD OPS	VATU-KOULA JV	TAVUA BASIN MINING JV	STAWELL JV	AGNEW-LEINSTER GOLD OPS	GOODALL JV	CHIBOUG-AMAU MINES
% Owned	100.00	100.00	50.00	50 >100	10 >20	50.00	75.24	100.00	60.00	100.00
MAR 1932										
1933										
1934										
1935										
1936										
1937										
1938										
1939										
1940										
1941										
1942										
1943										
1944										
1945										
1946										
1947										
1948										
1949										
1950										
1951										
1952										
1953										
1954										
1955										
1956										
1957										
1958										
1959										
1960										
1961										
1962										
1963										
1964										
1965										
Jun-66										
1967										
1968										
1969										
1970										
1971										
1972										
1973										
1974										
1975										
1976										
1977										
1978										
1979										
1980										
1981		1,389								
1982	3,570	3,144		5,454						
1983	17,901	11,609		15,776	789					
1984	27,122	14,467		33,741	4,583					
1985	23,958	14,555		44,005	10,712		14,502			
1986	3,825	3,526		37,824	15,347		23,920			
1987		326	7,570	46,663	20,383	593	19,582	48,280		
1988		13,858		34,522	15,392	13,538	24,930	53,058	3,930	31,472
1989		21,004		61,841	16,455	30,111	25,962	98,526	41,792	69,757
1990		37,115		96,446	15,395	29,151	35,754	80,422	32,792	47,092
1991		9,595		90,843	8,788	15,562	42,391	110,182	27,687	42,673
1992				70,304			43,593	99,344	26,785	61,175
1993				53,412			20,351	117,007	4,712	20,808
1994				78,072				125,024		
1995				27,307				133,641		
1996								135,219		
1997								140,931		
1998								258,083		
1999								194,641		
2000								209,598		
2001								185,400		
2002										
	76,376	130,588	7,570	696,210	107,844	88,955	250,985	1,989,356	137,698	272,977

YEAR ENDED	SEABRIGHT OPS INC.	CARSON HILL OPS	HOG RANCH OPS	CAMP BIRD	SEABRIGHT EXPL'N	MARA ROSA GOLD PROJECT	JENIPAPO GOLD PROJECT	OLYMPIC DAM OPS	TOTAL EQUITY IN WMC MANAGED OPERATIONS
% Owned	100.00	86 > 100	100.00	76.00	50.60	38.3 > 100	75.00	51.0 > 100.0	
MAR 1932									227
1933									6,326
1934									2,626
1935									739
1936									14,861
1937									28,821
1938									42,587
1939									55,942
1940									74,365
1941									71,510
1942									74,894
1943									52,228
1944									34,292
1945									35,233
1946									31,610
1947									44,656
1948									47,207
1949									41,081
1950									47,970
1951									53,251
1952									64,972
1953									88,287
1954									90,767
1955									88,000
1956									102,943
1957									103,925
1958									100,503
1959									107,108
1960									101,451
1961									99,011
1962									102,491
1963									97,986
1964									88,701
1965									92,712
Jun-66									125,258
1967									95,538
1968									91,702
1969									84,726
1970									73,504
1971									67,638
1972									69,882
1973									59,976
1974									49,492
1975									47,157
1976									69,474
1977									61,431
1978									51,929
1979									53,986
1980									52,293
1981									55,073
1982									96,470
1983									174,432
1984									240,259
1985									295,916
1986									259,728
1987									358,345
1988	3,053	11,053	10,648	1,060					449,974
1989	6,834	29,206	31,850	1,537	1,253	1,115		1,073	770,067
1990	7,379	27,474	17,311		855	1,577	31,072	9,244	854,285
1991		1,309	20,538			4,427	29,265	16,259	940,341
1992			25,413			4,768	12,797	11,654	782,841
1993			23,070			18,270		19,339	734,001
1994			7,405			27,059		25,968	831,952
1995			4,590			16,827		31,235	808,211
1996			2,110			3,448		33,214	744,552
1997								28,410	770,305
1998								47,111	1,053,764
1999								30,510	690,438
2000								69,967	743,109
2001								113,412	827,927
2002								64,293	64,293
	17,266	69,042	142,935	2,597	2,108	77,491	73,134	501,689	15,689,552

## EQUITY IN NON MANAGED INTEREST:

Issue 03

YEAR ENDED	CONSOLIDATED EXPLOR. LTD WMC EQUITY ONLY	ALCOA HEDGES WMC EQUITY ONLY	EMPEROR G M WMC EQUITY ONLY	TOTAL WMC MANAGED AND WMC EQUITY IN NON MANAGED
% Owned	20.8 > 30.3	48.25 > 39.25	9.1	
MAR 1932				227
1933				6,326
1934				2,626
1935				739
1936				14,861
1937				28,821
1938				42,587
1939				55,942
1940				74,365
1941				71,510
1942				74,894
1943				52,228
1944				34,292
1945				35,233
1946				31,610
1947				44,656
1948				47,207
1949				41,081
1950				47,970
1951				53,251
1952				64,972
1953				88,287
1954				90,767
1955				88,000
1956				102,943
1957				103,925
1958				100,503
1959				107,108
1960				101,451
1961				99,011
1962				102,491
1963				97,986
1964				88,701
1965				92,712
Jun-66				125,258
1967				95,538
1968				91,702
1969				84,726
1970				73,504
1971				67,638
1972				69,882
1973				59,976
1974				49,492
1975				47,157
1976				69,474
1977				61,431
1978				51,929
1979				53,986
1980				52,293
1981				55,073
1982				96,470
1983				174,432
1984				240,259
1985				295,916
1986				259,728
1987				358,345
1988	10,220			460,194
1989	10,820	39,626		820,513
1990	11,215	73,394		938,894
1991	14,876	83,782	3,098	1,042,097
1992	9,881	83,170	9,076	884,968
1993	2,061	67,849		803,911
1994		63,877		895,829
1995		46,762		854,973
1996		42,900		787,452
1997		42,599		812,904
1998		66,829		1,120,593
1999		8,861		699,299
2000				743,109
2001				827,927
2002				64,293
	59,073	619,649	12,174	16,380,448

***WMC Percentage Interest in Group  
Gold Production***

***Compiled by G.M. Ralph***

***WMC - 80(b)***

**WMC PERCENTAGE INTEREST IN GROUP GOLD PRODUCTION AT YEAR END**  
(Used in the calculation of WMC Equity in Group Gold Production shown in table - WMC.79)

YEAR ENDED	MT.COOLON GOLD MINES NL	WESTERN GOLD MINE NL	COSMOPOL ITAN MINES NL	TRITON GOLD MINES NL	CARSHALTON (BML) MINES NL	MORNING STAR (GMA) MINES NL	GOLD MINES OF KALGOORLIE KLV & KMA	CENTRAL NORSEMAN GOLD CORP.
MAR 1932	20							
1933	14							
1934	8							
1935	8	31.6						
1936	8		90	24.4	21	25	30	
1937	8		90	24.4	21	25	30	81.25
1938	5		90	24.4		25	30	81.25
1939	3			24.4		25	30	81.25
1940				20.7		17	30	81.25
1941				20.7		17	30	81.25
1942				20.7		17	30	81.25
1943				20.7		17	30	81.25
1944						17	30	81.25
1945						13.3	30	81.25
1946						13.3	30	81.25
1947						13.3	30	72.5
1948				26.1		13.3	30	72.5
1949				26.1		13.3	30	50.48
1950						13.3	30	50.48
1951						13.3	30	50.48
1952						13.8	30	50.48
1953						13.8	30	50.48
1954						13.8	30	50.48
1955						13.8	25	50.48
1956						13.8	27	50.48
1957						13.8	27	50.48
1958						13.8	26	50.48
1959						13.8	26	50.48
1960						13.8	26	50.48
1961						13.8	26	50.48
1962							26	50.48
1963							26	50.48
1964							26	50.48
1965							26	50.48
JUN 1966							31.68	50.48
1967							31.68	50.48
1968							31.68	50.48
1969							31.68	50.48
1970							31.68	50.48
1971							31.68	50.48
1972							31.68	50.48
1973							31.68	50.48
1974							20.9	50.48
1975							20.9	50.48
1976							20.9	50.48
1977							10.86	50.48
1978							10.18	50.48
1979							10.18	50.48
1980							10.18	50.48
1981							10.18	50.48
1982							10.18	50.48
1983							10.18	50.48
1984							10.18	50.48
1985							10.18	50.48
1986							10.18	50.48
1987							10.18	50.48
1988								50.48
1989								50.48
1990								50.48
1991								50.48
1992								50.48
1993								50.48
1994								50.48
1995								50.48
1996								50.48
1997								50.48
1998								50.48

WMC.80attach

YEAR ENDED	COX'S FIND GOLD MINE	NAPOLEON (BML) MINES NL	NELL GWYNNE (BML) MINES NL	THREE EIGHTHS MINE	LAKE VIEW SOUTH (GMK) LTD	VICTORIA GOLD DREDGING CO NL	MISTLETOE MINE	YILGANGIE QUEEN	NEW COOLGARDIE GOLD MINES NL
MAR 1932									
1933									
1934									
1935									
1936									
1937	75	30	16						
1938	75			100	30				
1939	75			100	30	55.8			
1940	75			100	30	49.5	100		
1941	75				30	49.5			
1942	75				30	45.5		100	
1943	75				30	45.5		100	
1944					30	45.5			
1945						44.5			
1946						44.5			
1947						44.5			
1948						44.5			
1949								100	
1950								100	62
1951								100	62
1952								100	62
1953								100	62
1954								100	52
1955								100	52
1956								100	52
1957								100	
1958								100	
1959								100	
1960								100	
1961								100	
1962								100	
1963								100	
1964								100	
1965								100	
JUN 1966									
1967									
1968									
1969									
1970									
1971									
1972									
1973									
1974									
1975									
1976									
1977									
1978									
1979									
1980									
1981									
1982									
1983									
1984									
1985									
1986									
1987									
1988									
1989									
1990									
1991									
1992									
1993									
1994									
1995									
1996									
1997									
1998									

WMC.80attach



YEAR ENDED	CENTRAL VIC. GOLD DREDGING CO NL	GREAT WESTERN CONSOL'D NL	ST. IVES GOLD MINES (KAMBALDA)	KWINANA REFINERY	HILL 50 GOLD MINE NL	KGO GREAT BOULDER	KGO SANDKING THEIL WELL MISSOURI	KGO LADY BOUNTIFUL	LANCEFIELD GOLD OPERATIONS
MAR 1932									
1933									
1934									
1935									
1936									
1937									
1938									
1939									
1940									
1941									
1942									
1943									
1944									
1945									
1946									
1947									
1948									
1949									
1950	60								
1951	60								
1952	60								
1953	60	14							
1954	60	14							
1955	60	14							
1956	60	14							
1957	60	14							
1958	58	14							
1959		14							
1960		14							
1961		14							
1962		14							
1963		14							
1964		14							
1965		14							
JUN 1966		14							
1967									
1968									
1969									
1970									
1971									
1972									
1973									
1974									
1975					37.9				
1976					37.9				
1977									
1978									
1979									
1980			100						
1981			100		38.5		100		
1982			100		38.6	100	100		50
1983			100		35	100	100		50
1984			100		35	100	100		100
1985			100		35	100	100		100
1986			100		38	100	100		100
1987			100		41.5		100	50	100
1988			100	100	97.7		100		100
1989			100	100	100		100		100
1990			100	100	100		100		100
1991			100	100	100		100		100
1992			100	100	100				100
1993			100		100				100
1994			100		100				100
1995			100		100.00				100
1996			100		100.00				Closed
1997			100		100.00				
1998			100		Sold				

WMC.80attach

YEAR ENDED	VATUKOULA JV	TAVUA BASIN MINING JV	STAWELL JV	AGNEW LEINSTER GOLD OPERATIONS	GOODALL JV	CHIBOUG AMAU MINES	SEABRIGHT OPERATIONS INC.	CARSON HILL OPERATIONS	HOG RANCH OPERATIONS	CAMP BIRD
MAR 1932										
1933										
1934										
1935										
1936										
1937										
1938										
1939										
1940										
1941										
1942										
1943										
1944										
1945										
1946										
1947										
1948										
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1951										
1952										
1953										
1954										
1955										
1956										
1957										
1958										
1959										
1960										
1961										
1962										
1963										
1964										
1965										
JUN 1966										
1967										
1968										
1969										
1970										
1971										
1972										
1973										
1974										
1975										
1976										
1977										
1978										
1979										
1980										
1981										
1982										
1983	10									
1984	10									
1985	20		75.24							
1986	20		75.24							
1987	20	50	75.24	100						
1988	20	50	75.24	100	60	100	100	86	100	76
1989	20	50	75.24	100	60	100	100	100	100	76
1990	20	50	75.24	100	60	100	100	100	100	
1991	20	50	75.24	100	60	100		100	100	
1992			75.24	100	60	100			100	
1993			75.24	100	60	100			100	
1994				100					100	
1995				100					100	
1996				100					Sold	
1997				100						
1998				100						

WMC.80attach

YEAR ENDED	SEABRIGHT EXPL'N	MARA ROSA GOLD PROJECT	JENIPAPO GOLD PROJECT	OLYMPIC DAM OPERATIONS	COSOLIDATED EXPLORATION NON WMC MANAGED	ALCOA OF AUST. NON WMC MANAGED	EMPEROR G M NON WMC MANAGED
MAR 1932							
1933							
1934							
1935							
1936							
1937							
1938							
1939							
1940							
1941							
1942							
1943							
1944							
1945							
1946							
1947							
1948							
1949							
1950							
1951							
1952							
1953							
1954							
1955							
1956							
1957							
1958							
1959							
1960							
1961							
1962							
1963							
1964							
1965							
JUN 1966							
1967							
1968							
1969							
1970							
1971							
1972							
1973							
1974							
1975							
1976							
1977							
1978							
1979							
1980							
1981							
1982							
1983							
1984							
1985							
1986							
1987							
1988					20.8		
1989	50.6	38.25		51	20.8	43.7	
1990	50.6	75	75	51	23.8	44.7	
1991		75	75	51	26.8	48.08	
1992		75	75	51	26.8	48.25	9.1
1993		75		100	30.3	48.25	
1994		100		100		48.25	
1995		100		100		39.25	
1996		100		100		39.25	
1997		Closed		100		39.25	
1998				100		39.25	

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# EQUITY IN NON MANAGED INTERESTS

YEAR ENDED	CONSOLIDATED EXPLOR. LTD WMC EQUITY ONLY	ALCOA HEDGES WMC EQUITY ONLY	EMPEROR G M WMC EQUITY ONLY	TOTAL WMC MANAGED AND WMC EQUITY IN NON MANAGED
% Owned	20.8 > 30.3	48.25 > 39.25	9.1	
MAR 1932				227
1933				6,326
1934				2,626
1935				739
1936				14,861
1937				28,821
1938				42,587
1939				55,942
1940				74,365
1941				71,510
1942				74,894
1943				52,228
1944				34,292
1945				35,233
1946				31,610
1947				44,656
1948				47,207
1949				41,081
1950				47,970
1951				53,251
1952				64,972
1953				88,287
1954				90,767
1955				88,000
1956				102,943
1957				103,925
1958				100,503
1959				107,108
1960				101,451
1961				99,011
1962				102,491
1963				97,986
1964				88,701
1965				92,712
Jun-66				125,258
1967				95,538
1968				91,702
1969				84,726
1970				73,504
1971				67,638
1972				69,882
1973				59,976
1974				49,492
1975				47,157
1976				69,474
1977				61,431
1978				51,929
1979				53,986
1980				52,293
1981				55,073
1982				96,470
1983				174,432
1984				240,259
1985				295,916
1986				259,728
1987				358,345
1988	10,220			460,194
1989	10,820	39,626		820,513
1990	11,215	73,394		938,894
1991	14,876	83,782	3,098	1,042,097
1992	9,881	83,170	9,076	884,968
1993	2,061	67,849		803,911
1994		63,877		895,829
1995		46,762		854,973
1996		42,900		787,452
1997		42,599		812,904
1998		66,829		1,120,593
1999		8,861		699,299
2000				743,109
2001				827,927
2002				64,293
	59,073	619,649	12,174	16,380,448

WMC.79attc



## GROUP HISTORICAL INFORMATION

**Name:** WMC Resources Ltd **Ref No.** WMC - 81(e)  
**Compiled by:** G. M. Ralph **Date:** 01.10.98  
**Source:** Group Annual Reports **Page:** 1 of 24  
**Subject:** Record of WMC's Equity in Group Mineral Production

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The attached tabulations show WMC's Equity in all minerals and metals produced by the Group since inception.

		TOTAL OUTPUT	WMC'S EQUITY
GOLD	ounces	24,589,352	16,380,448
SILVER	ounces	8,075,268	6,371,580
TALC	tonnes	6,302,711	3,947,988
NICKEL	tonnes	1,945,620	1,884,428
IRON ORE	tonnes	5,408,136	2,683,608
RUTILE	tonnes	16,346	16,346
ZIRCON	tonnes	6,607	6,607
PHOSPHATE	tonnes	325,820	325,820
DI-AM PHOS	tonnes	1,701,190	1,701,190
MONO-AM PHOS	tonnes	160,660	160,660
COPPER	tonnes	1,439,534	1,333,228
URANIUM	tonnes	29,495	26,631
LEAD	tonnes	6,079	6,079
ZINC	tonnes	12,622	12,622
ALUMINA	tonnes	66,668,000*	34,973,000
ALUMINIUM	tonnes	1,940,700*	1,024,822
PETROLEUM	mill bbls	41.9	41.9
NATURAL GAS	mill cft	62,105	62,105

An annual production summary is contained in the attachment. More detailed figures for each operation are contained in the their respective files. The information has been derived from various annual and quarterly reports of the respective entities. In some cases amendments have been made to include corrections noted in subsequent reports. Although there may be some minor variations between the attached lists and the records maintained at operations it is thought appropriate to accept the attached figures as 'Official' since they have been published and, as such, constitute 'the public record'. It is another matter if I have made errors in collation - if you note any please let me know.

\* Data for 2001 and 2002 not available.

(e) 2002 data added 31.07.03

# RECORD OF WMC EQUITY IN GROUP MINERAL PRODUCTION (Note 1)

YEAR	GOLD Australia Overseas	SILVER Central Norseman Olympic Dam	TALC TSI Europe	NICKEL Kambalda Windara Mt Keith	IRON ORE Koolanooka	RUTILE Jurien Bay	ZIRCON Jurien Bay	PHOSPHATE Phosphate Hill	DIAM PHOS Phosphate Hill	MORGAN PHOS Phosphate Hill	COPPER Warracoon Rg Chibougamau Olympic Dam Nifty	URANIUM Olympic Dam	LEAD Gays River	ZINC Gays River	ALUMINA AWAC	ALUMINIUM AWAC	PETROLIUM Australia USA	WAT. QRS Australia USA
1932	227																	
1933	5,326																	
1934	2,626																	
1935	739																	
1936	14,691																	
1937	23,821																	
1938	42,657																	
1939	55,942																	
1940	74,365																	
1941	71,510																	
1942	74,824																	
1943	52,228																	
1944	34,282																	
1945	35,233																	
1946	31,610																	
1947	44,659																	
1948	47,207																	
1949	41,051																	
1950	47,970																	
1951	53,251																	
1952	64,972																	
1953	83,287																	
1954	90,787																	
1955	88,000																	
1956	102,943																	
1957	103,023																	
1958	103,023																	
1959	107,129																	
1960	107,129																	
1961	107,129																	
1962	107,129																	
1963	107,129																	
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1997	107,129																	
1998	107,129																	
1999	107,129																	
2000	107,129																	
2001	107,129																	
2002	107,129																	
2003	107,129																	
2004	107,129																	
2005	107,129																	
TOTAL	16,380,448	8,371,580	3,847,598	1,884,428	2,883,608	18,548	6,807	325,820	1,701,180	160,660	1,333,228	28,831	6,079	12,622	34,973	1,024,822	41,908	62,103

Note 1: For more details refer to the production tabulations for each mineral at each location in the respective WMC.GH files.

Note 2: Production for 1983 is for an 18 month period, is from July 1987 to December 1988. This follows the change in year-end from June to December.

Note 3: From 1982 to 1987 production was phosphates. From 1988 production was in the form of Di-Ammonium phosphate and Mono-ammonium phosphate.

Note 4: Since the formation of AWAC from 1 Jan 1988 and WMC's 40% equity in it, WMC's equity in alumina and aluminium production is as reported.

Note 5: Alumina and aluminium production to end of September Quarter only. Doninger separated RMC Resources and Alumina Ltd in December.

Compiled by G M Ralph, 1.10.98  
Updated 30.07.03

WMC.GH10ch.xls

# WMC GROUP SILVER PRODUCTION

Issue 02

YEAR ENDED	CENTRAL NORSEMAN		OLYMPIC DAM		TOTAL
	Total ounces	WMC share (2) ounces	Total ounces	WMC share (3) ounces	WMC share ounces
Mar-37	n.a.	n.a.			n.a.
1938	44,811	36,409			36,409
1939	n.a.	n.a.			n.a.
1940	31,196	25,347			25,347
1941	30,258	24,585			24,585
1942	34,076	27,687			27,687
1943	24,720	20,085			20,085
1944	19,104	15,522			15,522
1945	18,657	15,159			15,159
1946	n.a.	n.a.			n.a.
1947	26,338	19,095			19,095
1948	33,517	24,300			24,300
1949	32,490	16,401			16,401
1950	31,798	16,052			16,052
1951	40,536	20,463			20,463
1952	47,198	23,826			23,826
1953	53,581	27,048			27,048
1954	56,926	28,736			28,736
1955	52,234	26,368			26,368
1956	47,362	23,908			23,908
1957	46,121	23,282			23,282
1958	49,608	25,042			25,042
1959	54,323	27,422			27,422
1960	47,803	24,131			24,131
1961	52,110	26,305			26,305
1962	55,839	28,188			28,188
1963	48,705	24,586			24,586
1964	50,937	25,713			25,713
1965	58,740	29,652			29,652
1966(5)	88,350	44,599			44,599
1967	78,150	39,450			39,450
1968	79,218	39,989			39,989
1969	66,491	33,565			33,565
1970	52,174	26,337			26,337
1971	46,960	23,705			23,705
1972	36,471	18,411			18,411
1973	27,674	13,970			13,970
1974	22,948	11,584			11,584
1975	17,855	9,013			9,013
1976	27,196	13,729			13,729
1977	30,954	15,626			15,626
1978	25,534	12,890			12,890
1979	25,967	13,108			13,108
1980	24,557	12,396			12,396
1981	20,524	10,361			10,361
1982	22,971	11,596			11,596
1983	17,462	8,815			8,815
1984	19,899	10,045			10,045
1985	43,501	21,959			21,959
1986	73,058	36,880			36,880
1987	60,525	30,553			30,553
1988	53,984	27,251			27,251
1989	36,758	18,555			18,555
1990	30,015	15,152	42,283	21,564	36,716
1991	19,243	9,714	402,035	205,038	214,752
1992	13,419	6,774	467,192	238,268	245,042
1993	15,626	7,888	392,583	245,410	253,298
1994	26,762	13,509	423,374	423,374	436,883
1995	30,652	15,473	314,513	315,513	330,986
1996	27,248	13,755	381,479	381,479	395,234
1997	28,487	14,380	346,842	346,842	361,222
1998(4)	42,420	21,414	482,000	482,000	503,414
1999	24,064	12,148	245,100	245,100	257,248
2000	22,708	11,463	625,143	625,143	636,606
2001	27,117	13,689	912,859	912,859	926,548
2002(6)			643,935	643,935	643,935
TOTAL	2,395,930	1,285,054	5,679,338	5,086,525	6,371,579

Note 1: The figures shown are as published in the CNGC and WMC Annual Reports.

Note 2: WMC's equity in CNGC was 81.25% from 1935 to 1946, 72.5% in 1947 and 1948 and 50.48% from 1949 to the present.

Note 3: WMC's equity in ODO was 51% until 31 March 1993 after which it rose to 100%.

Note 4: Production for 1998 is for an 18 month period, ie from July 1997 to December 1998.

This follows the change in year-end from June to December.

Note 5: production for 1966 is for a 15 month period, ie april 1965 to june 1966

This follows the change in year-end from march to june.

Note 6: CNGC sold during Jan 2003 to Croesus Ltd.

# WMC GROUP TALC PRODUCTION

Issue 02

YEAR	THREE SPRINGS			FINNMINERALS		TOTAL
	Talc Mined	Talc Sold	WMC's Share	Talc Milled	WMC's share	WMC's Share
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
1961	14,718	4,180	2,090			2,090
1962	9,393	5,170	2,585			2,585
1963	6,733	4,771	2,386			2,386
1964	5,134	5,792	2,896			2,896
1965	7,237	4,957	2,479			2,479
1966 (3)	13,548	10,612	5,306			5,306
1967	10,655	7,915	3,958			3,958
1968	17,771	19,727	9,864			9,864
1969	29,666	21,619	10,810			10,810
1970	42,099	36,053	18,027			18,027
1971	38,818	31,062	15,531			15,531
1972 (4)	30,898	28,029	14,015			14,015
1973	29,953	33,171	16,586			16,586
1974	39,516	46,660	23,330			23,330
1975	47,733	45,541	22,771			22,771
1976	51,462	55,259	27,630			27,630
1977	54,185	58,079	29,040			29,040
1978	77,152	67,951	33,976			33,976
1979	75,393	71,767	35,884			35,884
1980	126,740	84,577	42,289			42,289
1981	65,979	79,300	39,650			39,650
1982	42,959	73,572	36,786			36,786
1983	88,480	85,440	42,720			42,720
1984	127,400	117,000	58,500			58,500
1985	151,400	146,900	73,450			73,450
1986	146,400	163,900	81,950			81,950
1987 (5)	180,800	148,500	148,500			148,500
1988	147,100	165,200	165,200			165,200
1989	160,600	132,000	132,000			132,000
1990	172,093	162,000	162,000			162,000
1991	131,996	147,044	147,044			147,044
1992	161,277	125,419	125,419			125,419
1993	131,197	120,553	120,553			120,553
1994	111,545	122,866	122,866			122,866
1995	91,651	122,487	122,487			122,487
1996 (6)	151,337	159,510	159,510	136,809	68,405	227,915
1997 (7)	160,908	150,217	150,217	364,669	182,335	332,552
1998 (8)	256,783	203,549	203,549	657,578	386,997	590,546
1999	146,685	162,771	162,771	492,280	246,140	408,911
2000	130,900	130,879	130,879	495,390	247,695	378,574
2001 (9)						108,920
TOTAL	3,486,294	3,361,999	2,707,497	2,146,726	1,131,571	3,947,988

Note 1: The figures shown are as published in TST & WMC Annual Reports. See Quarterly Reports for detail.

Note 2: From 1949 to 1960 production amounted to 30,247 tonnes (from W A Mines Department Reports).

Note 3: Figures for 1966 are for a 15 month year.

Note 4: Prior to 1972 production figures have been converted from tons to tonnes at x 1.016 factor

Note 5: WMC held a 50% interest in TST until 11 Feb1987 after which it was 100%.

Note 6: WMC acquired a 50% interest in Finnminerals Oy in February 1996.

Note 7: Westmin milled talc production to 1997 included with TST. From 1998 it is included in Finnminerals.

Note 8: Production for 1998 is for an 18 month period, ie from July 1997 to Dec 1998. (Change of Fin Year)

Note 9: Production for 2001 is up to date of sale of Mondo Minerals (Jan) and Three Springs (Sept).

Note10: Figures in *italics* are estimates.

Compiled by G M Ralph, 1.10.98

Updated: 05.08.03



# WMC GROUP TOTAL NICKEL PRODUCTION

Year	Kambalda					Windarra					Great Boulder					Leinster					Mt Keith					TOTAL GROUP				
	Treated Ore	Head Grade	Cont NI ex KNO tonnes	Cont NI ex Purch tonnes	Cont NI Total tonnes	Treated Ore	Head Grade % NI	Cont NI Total tonnes	Cont NI WMC share tonnes	Treated Ore	Head Grade % NI	Cont NI tonnes	Treated Ore	Head Grade % NI	Cont NI tonnes	Treated Ore	Head Grade % NI	Cont NI tonnes	Treated Ore	Head Grade % NI	Cont NI tonnes	Treated Ore	Head Grade % NI	Cont NI Total tonnes	Cont NI WMC share tonnes					
1967	3,982	3.80	95		95																									
1968	131,164	4.30	3,893		3,893																									
1969	194,813	4.20	6,183		6,183																									
1970	616,909	3.50	17,578	135	17,713																									
1971	1,087,170	3.70	31,733	2,089	33,822																									
1972	1,091,234	3.50	31,520	1,598	33,118																									
1973	1,245,000	3.06	31,110	2,390	33,500																									
1974	1,409,000	3.00	35,490	2,270	37,760																									
1975	1,396,000	2.93	34,932	2,233	37,165	599,600	1.68	6,556	3,278	68,900	2.13	1,185																		
1976	1,444,500	2.93	35,443	2,525	37,968	1,096,500	1.62	12,966	6,483	131,500	1.82	1,947																		
1977	1,479,100	2.69	33,340	2,251	35,591	1,025,300	1.39	11,136	5,568			319																		
1978	1,376,400	3.22	37,332	2,305	39,637	753,300	1.75	10,595	5,298																					
1979	1,245,400	3.24	33,841	2,730	36,571	11,490	2.06	201	101																					
1980	1,285,500	2.89	30,729	2,535	33,264																									
1981	1,414,700	2.85	33,805	2,870	36,675																									
1982	1,416,000	2.94	34,010	3,200	43,530	31,400	1.63	410	205																					
1983	1,361,000	3.47	40,920	2,610	43,530	415,100	1.47	4,700	2,350																					
1984	1,373,000	3.43	43,470		43,470	389,400	1.44	4,740	3,880																					
1985	1,381,000	3.21	40,710		40,710	558,500	1.28	5,360	5,360																					
1986	1,196,500	3.16	33,450	1,100	35,550	451,100	1.78	6,990	6,990																					
1987	1,233,000	3.46	37,790		39,690	622,000	1.60	6,990	6,300																					
1988	1,231,000	2.96	34,139		34,139	410,000	1.71	7,455	7,455																					
1989	1,462,000	2.54	33,737		33,737	29,717	1.48	5,088	5,088																					
1990	1,283,000	2.55	29,717		29,717	486,000	1.11	3,336	3,336																					
1991	1,301,000	2.75	32,041		32,041	369,000	1.37	5,088	5,088																					
1992	1,053,000	2.86	27,247		27,247	30,000	1.21	3,484	3,484																					
1993	1,124,000	3.07	32,107		32,107		1.06	246	246																					
1994	1,184,000	2.92	31,568		31,568																									
1995	1,230,000	3.10	34,066		34,066																									
1996	1,230,000	3.31	37,460		37,460																									
1997	1,119,000	3.02	30,368		30,368																									
1998/97	2,010,500	2.65	48,800		48,800																									
1999	388,700	3.36	11,100		11,100																									
2000	539,600	3.84	19,202		19,202																									
2001	601,470	3.38	18,653		18,653																									
2002	688,470	3.76	23,225		23,225																									
TOTAL	39,807,112		1,070,804	34,741	1,105,545	8,048,290	1.16	93,443	67,992	200,400	1.72	3,451	24,757,356	1.67	412,659	82,179,314	0.40	329,522	154,992,472	1.26	1,945,620	1,884,428								

Note 1. The figure used in this compilation are those appearing in WMC Annual Reports (with corrections noted in subsequent years) and for that reason, and because of rounding, may vary from mine-site figures.  
Note 2. Pre 1972 figures have been converted from tons (2240 pounds) to tonnes by multiplying by 1.0160469.  
Note 3. The grade shown in the TOTAL row is not Head Grade but the Recovered Grade, ie tonnes Cont NI / tonnes Treated x 100.  
Note 4. The figures for 1998 are to 30 June only.  
Note 5. The Treated Tonnes at Kambalda includes purchased ore whereas the Contained Nickel has been separated for KNO ore and Purchased ore.  
Note 6. Kambalda's Cumulative Contained Nickel Production (including that from Purchased Ore) passed the one million tonnes mark late in December 1997 (1,001,005 tonnes on 31 December 1997)  
Note 7. Production for 1998 is for an 18 month period, ie from July 1997 to Dec 1998. This follows the change in year-end from June to December.

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## WMC GROUP IRON ORE PRODUCTION

YEAR	PRODUCTION		RAILED TO GERALDTON tonnes	SHIPPED TO JAPAN	
	Crushed	Lump Ore		Total	WMC share
	tonnes	tonnes		tonnes	tonnes
1966	324,557	220,482	205,241	118,877	59,439
1967	907,231	631,114	632,659	612,290	306,145
1968	975,513	641,136	643,442	587,894	293,947
1969	893,874	648,132	647,160	585,574	292,787
1970	986,352	684,234	683,923	609,580	304,790
1971	1,019,095	684,816	670,000	665,000	332,500
1972	991,662	647,222	670,000	640,000	320,000
1973	1,016,000	669,000	670,000	765,000	382,500
1974	918,000	582,000	670,000	697,000	348,500
1975				86,000	43,000
TOTAL	8,032,284	5,408,136	5,492,425	5,367,215	2,683,608

Note 1: The figures shown are as in WMC Annual Reports.

For more detailed figure refer Quarterly Reports.

Note 2: Figures in *italics* are estimates.

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Compiled by G M Ralph, 1.01.98

## WMC MINERAL SANDS PRODUCTION

YEAR	Primary Plant		Secondary Plant		Sales	
	Sand Processed	Hd Grade	Rutile	Zircon	Rutile	Zircon
	tonnes	%	tonnes	tonnes	tonnes	tonnes
1976	1,962,300	8.88	9,600	2,583	6,124	1,037
1977	698,900	18.50	6,746	4,024	5,193	453
TOTAL	2,661,200		16,346	6,607	11,317	1,490

Note: The figures shown are as in WMC Annual Reports.  
For more detailed figures refer to Quarterly Reports.

WMC.GHI.MS.Prod.xls

Compiled by G M Ralph, 1.10.98

# WMC GROUP COPPER PRODUCTION

Issue 02

YEAR	WARBURTON RANGE				CHIBOUGAMAU				OLYMPIC DAM				NIFTY				TOTAL GROUP			
	Mined tonnes	Grade % Cu	Cont Cu tonnes	Cont Cu tonnes	Treated tonnes	Grade % Cu	Cont Cu tonnes	Cont Cu tonnes	Treated tonnes	Hd Grade % Cu	Cont Cu tonnes	Cont Cu tonnes	Treated tonnes	Grade % Cu	Cont Cu tonnes	Cont Cu tonnes	Treated tonnes	Cont Cu tonnes	Cont Cu tonnes	WMC Cu tonnes
1966	183	36.0	66														183	66		66
1988				3,558	227,700	1.56			21,000								248,700	3,558		3,558
1989				8,809	560,000	1.60			1,130,000	3.57	16,868	8,603					1,690,000	25,677		17,412
1990				4,478	307,000	1.49			1,528,000	3.07	37,801	19,279					1,835,000	42,279		23,757
1991				4,255	304,000	1.44			1,714,000	3.25	48,249	24,606					2,018,000	52,504		28,861
1992				6,937	501,000	1.39			1,930,000	3.22	62,082	31,662					2,431,000	69,019		38,599
1993				2,241	179,000	1.29			2,385,000	3.05	69,502	44,046					2,564,000	71,743		46,287
1994									2,390,000	2.95	66,684	66,684					2,961,000	70,952		70,952
1995									2,378,000	3.02	68,541	68,541					2,866,000	76,646		76,646
1996									3,210,000	3.01	83,050	83,050					3,707,000	93,142		93,142
1997									3,003,000	3.00	75,444	75,444					4,080,000	86,882		86,882
1998(3)									5,036,000	2.77	114,700	114,700					5,913,000	129,700		129,700
1999									6,743,300	2.69	138,300	138,300					6,743,300	138,300		138,300
2000									8,900,900	2.53	200,423	200,423					8,900,900	200,423		200,423
2001									7,335,736	2.47	200,523	200,523					7,335,736	200,523		200,523
2002									8,792,324	2.58	178,120	178,120					8,792,324	178,120		178,120
TOTAL	183		66	30,278	2,078,700				56,497,260		1,360,287	1,253,981				48,903	62,086,143	1,439,534		1,333,228

Note 1: The figures shown are as published in the WMC Annual Reports. For more detailed figures refer to the Quarterly Reports.

Note 2: WMC held a 51% interest in ODO until 31 March 1993 after which it increased to 100%.

Note 3: Production for 1998 is for an 18 month period, ie from July 1997 to Dec 1998. This follows the change in year-end from June to December.

Compiled by G M Ralph, 1.10.98  
2002 figures added on 31.07.03

WMC.GHI.Cu.Prod.xls

## WMC GROUP URANIUM OXIDE PRODUCTION

Issue 02

YEAR	OLYMPIC DAM			
	Ore Treated	Grade U <sub>3</sub> O <sub>8</sub>	Total U <sub>3</sub> O <sub>8</sub>	WMC's share (2)
	tonnes	kg/t	tonnes	tonnes
1988	21,000			
1989	1,130,000	1.26	912	465
1990	1,528,000	0.98	1,005	513
1991	1,714,000	1.13	1,482	756
1992	1,930,000	1.07	1,369	698
1993	2,385,000	0.83	1,370	842
1994	2,390,000	0.79	1,289	1,289
1995	2,378,000	0.71	1,084	1,084
1996	3,120,000	0.76	1,652	1,652
1997	3,003,000	0.86	1,758	1,758
1998(3)	5,036,000	0.78	2,545	2,545
1999	6,743,300	0.86	3,221	3,221
2000	8,900,900	0.73	4,539	4,539
2001	7,335,736	0.72	4,379	4,379
2002	8,792,324	0.69	2,890	2,890
TOTAL	56,407,260		29,495	26,631

Note 1: The figures shown are as published in the WMC Annual Reports.

For more detailed figures refer to the Quarterly Reports.

Note 2: WMC held a 51% interest in ODO until 31 March 1993 after which it increased to 100%.

Note 3: Production for 1998 is for an 18 month period, ie from July 1997 to Dec 1998. This follows the change in year-end from June to December.

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Compiled by G M Ralph, 1.10.98

2002 figures added 31.07.03

## WMC GROUP LEAD PRODUCTION

YEAR	GAYS RIVER		
	Ore Treated	Grade	Cont Pb
	tonnes	% Pb	tonnes
1990	56,000	3.8	1,987
1991	132,000	3.34	4,000
1992	3,000	3.48	92
TOTAL	191,000		6,079

Note: The figures shown are as published in the WMC Annual Reports.  
For more detailed figures refer to the Quarterly Reports.

WMC.GHI.Pb.Prod.xls

Compiled by G M Ralph, 1.10.98

## WMC GROUP ZINC PRODUCTION

YEAR	GAYS RIVER		
	Ore Treated	Grade	Contained Zn
	tonnes	% Zn	tonnes
1990	56,000	6.39	2,912
1991	132,000	8.08	9,555
1992	3,000	6.15	155
TOTAL	191,000		12,622

Note: The figures shown are as published in the WMC Annual Reports.  
For more detailed figures refer to the Quarterly Reports.

WMC.GHI.Zn.Prod.xls

Compiled by G M Ralph, 1.10.98

## WMC GROUP ALUMINA-ALUMINIUM PRODUCTION

YEAR	AWAC PRODUCTION		WMC EQUITY	
	Alumina	Aluminium	Alumina	Aluminium
	'000 tonnes	tonnes	'000 tonnes	tonnes
1995	8,568	329,000	3,427	131,600
1996	10,000	313,500	4,050	125,400
1997	10,000	316,500	4,001	126,600
1998	12,233	326,200	4,893	130,480
1999	12,615	311,500	5,046	124,600
2000	13,252	344,000	5,244	129,400
2001	n/a	n/a	4,703	146,280
2002	n/a	n/a	3,609	110,462
TOTAL	66,668	1,940,700	34,973	1,024,822

The AWAC enterprise took effect from 1 January, 1995 prior to which WMC's interest was that of a shareholder and equity in Alcoa's production was not reported in WMC's Annual Report.

The figures shown have been derived from WMC Annual Reports.

For more detailed figures refer WMC Quarterly Reports or AWAC.

WMC.GHI.AI.Prod.xls

Compiled by G M Ralph, 4.5.00  
2002 figures (to Sept) added 31.07.03



## WMC GROUP PETROLEUM AND GAS PRODUCTION

YEAR	AUSTRALASIA		GREENHILL PET (1)		TOTAL	
	Petroleum	Natural Gas	Petroleum	Natural Gas	Petroleum	Natural Gas
	000's bbls	millions cft	000's bbls	millions cft	000's bbls	millions cft
1985	37				37	
1986	201				201	
1987	221				221	
1988	827				827	
1989	1,355		347	127	1,702	127
1990	2,640		1,139	1,279	3,779	1,279
1991	2,901		2,725	8,659	5,626	8,659
1992	3,242		3,324	9,483	6,566	9,483
1993	2,683		3,503	10,614	6,186	10,614
1994	1,958		3,292	11,862	5,250	11,862
1995	2,666		2,891	7,665	5,557	7,665
1996	1,966		2,566	8,325	4,532	8,325
1997	203	377	1,221	3,714	1,424	4,091
TOTAL	20,900	377	21,008	61,728	41,908	62,105

Note 1: GPC's Oil and Gas figures are on a Net Revenue Interest basis.

Note 2: WMC sold its petroleum interests early in 1997.

WMC.GHI.Pet.Prod.xls

Compiled by G M Ralph, 1.10.98

## WMC GROUP FERTILIZER PRODUCTION AND SALES

Issue 02

YEAR	Phosphate Production tonnes	Phosphate Sales tonnes	Hi-Fert Sales tonnes	Phosphate Production tonnes	Di-Am Phos Production tonnes	Mono-Am Phos Production tonnes	Profit/Loss before I&T \$ 000's
1981-82	143,500	101,500					
1982-83	121,200	129,500					
1983-84	4,400	18,180					
1984-85	3,500						
1985-86(1)	42,360						
1986-87(2)	10,860						
1987-88						-4.8	-4.8
1988-89						-1.7	-1.7
1989-90						-3	-3
1990-91			192,600				-1.2
1991-92			225,100				6.7
1992-93			242,000				5
1993-94			302,000				2.1
1994-95			357,000				-4.5
1995-96			403,000				1.2
1996-97			520,000				7.1
1998 (3)			533,600				5.7
1999			582,900	?	5,143		-2.1
2000			558,600	975,038	326,262		-59.8
2001			716,100	1,892,578	651,498	57,947	-59.9
2002			611,000	2,024,580	718,287	102,713	-27.9
Total	325,820	249,180	3,916,800	4,892,196	1,701,190	160,660	-137.1

Notes: (1) WMC acquired a 50% interest in Hi-Fert Pty Ltd in Dec 1985  
 (2) Hi-Fert became a wholly owned subsidiary of WMC in Nov 1986  
 (3) In 1998 WMC changed its Financial Year from June to December

Compiled by G M Ralph on 14.03.01

Updated 31.07.03

WMC.GHI.Fert.xls

## WMC EQUITY IN GROUP MINERAL PRODUCTION

YEAR	GOLD Australia Overseas	SILVER Central Noreseman Olympic Dam	TALC TST Europe	NICKEL Kambalda Windarra Gt.Boulder Leinster Mt. Keith	IRON ORE Koolanooka	RUTILE Jurien Bay	ZIRCON Jurien Bay	PHOSPATE Phosphate Hill	COPPER Warburton Rg Chibougamau Olympic Dam Nifty	URANIUM Olympic Dam	LEAD Gays River	ZINC Gays River	PETROL'M Australia USA	NAT.GAS Australia USA
	ounces	ounces	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	000 barrels	million cuft
1932	227													
1933	6,326													
1934	2,626													
1935	739													
1936	14,861													
1937	28,821	n.a.												
1938	42,587	36,409												
1939	55,942	n.a.												
1940	74,365	25,347												
1941	71,510	24,585												
1942	74,894	27,687												
1943	52,228	20,085												
1944	34,292	15,522												
1945	35,233	15,159												
1946	31,610	n.a.												
1947	44,656	19,095												
1948	47,207	24,300												
1949	41,081	16,401												
1950	47,970	16,052												
1951	53,251	20,463												
1952	64,972	23,826												
1953	88,287	27,048												
1954	90,767	28,736												
1955	88,000	26,368												
1956	102,943	23,908												
1957	103,925	23,282												
1958	100,503	25,042												
1959	107,108	27,422												
1960	101,451	24,131												
1961	99,011	26,305	2,730											
1962	102,491	28,188	3,000											
1963	97,986	24,586	2,386											
1964	88,701	25,713	2,896											
1965	92,712	29,652	2,479											
1966	125,258	44,599	5,306		59,439				66					
1967	95,538	39,450	3,958	95	306,145									
1968	91,702	39,989	9,864	3,893	293,947									
1969	84,726	33,565	10,810	6,183	292,787									
1970	73,504	26,337	18,027	17,578	304,790									
1971	67,638	23,705	15,749	31,733	332,500									
1972	69,882	18,411	14,225	31,520	320,000									
1973	59,976	13,970	16,500	31,110	382,500									
1974	49,492	11,584	23,350	35,490	348,500									
1975	47,157	9,013	22,650	39,395	43,000									
1976	69,474	13,729	27,650	43,873		6,124	1,037							
1977	61,431	15,626	29,050	39,227		5,193	453							
1978	51,929	12,890	34,000	42,630										
1979	53,986	13,108	35,900	33,841										
1980	52,293	12,396	42,000	30,729										

**WMC Equity In Group Mineral Production (Appendix V) contd.**

YEAR	GOLD Australia Overseas	SILVER Central Norseman Olympic Dam	TALC TST Europe	NICKEL Kambalda Windarra Gt.Boulder Leinster Mt. Keith	IRON ORE Koolanooka	RUTILE Jurien Bay	ZIRCON Jurien Bay	PHOSPATE Phosphate Hill	COPPER Warburton Rg Chibougamau Olympic Dam Nifty	URANIUM Olympic Dam	LEAD Gays River	ZINC Gays River	PETROL'M Australia USA	NAT.GAS Australia USA
	ounces	ounces	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	000 barrels	million cuft
1981	55,073	10,361	39,650	34,010										
1982	96,470	11,596	36,785	36,360				143,500						
1983	174,432	8,815	42,720	43,490				121,200						
1984	240,259	10,045	58,500	47,350				4,400						
1985	295,916	21,959	73,450	46,070				3,500					37	
1986	259,728	36,880	81,950	40,440				42,360					201	
1987	358,345	30,553	148,500	44,090				10,860					221	
1988	460,194	27,251	165,200	41,594					3,588				827	
1989	820,513	18,555	132,000	37,570					17,412	465			1,702	127
1990	938,894	36,716	162,000	46,762					23,757	513	1,987	2,912	3,779	1,279
1991	1,042,097	214,752	132,000	54,010					28,861	756	4,000	9,555	5,626	8,659
1992	884,968	245,042	161,000	48,979					38,599	698	92	155	6,566	9,483
1993	803,911	253,298	131,000	52,705					46,287	842			6,186	10,614
1994	895,829	436,883	112,000	58,451					70,952	1,289			5,250	11,862
1995	854,973	330,986	92,000	83,505					76,646	1,084			5,557	7,665
1996	787,452	395,234	219,405	94,805					93,142	1,652			4,532	8,325
1997	812,904	361,222	343,335	104,667					86,882	1,758			1,424	4,091
1998 <sup>(a)</sup>	1,120,593	482,000	463,231	175,400					129,700	2,545				
TOTAL	14,045,820	3,885,829	2,917,252	1,477,555	2,683,608	11,317	1,490	325,820	615,862	11,602	6,079	12,622	41,908	62,105

Note 1: For more details refer to the production tabulations for each mineral at each location in the respective WMC.GHI files.

Note 2: Production for 1998 is for an 18 month period, ie from July 1997 to December 1998. This follows the change in year-end from June to December.

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**RECORD OF WMC EQUITY IN GROUP CUMULATIVE GOLD PRODUCTION - OUNCES**

YEAR ENDED	MOUNT COOLON GOLD MINES NL	WESTERN GOLD MINE NL	COSMO-POLITAN MINES NL	TRITON GOLD MINES NL	CARSHAL-TON (BML) MINES NL	MORNING STAR GOLD MINES NL	GOLD MINES OF KALG., KLV KMA	CENTRAL NORSE-MAN GOLD CORP	COX'S FIND GOLD MINE	NAPOL-EON (BML) MINES NL	NELL GWYNN (BML) MINES NL
% Owned	20.0 > 3.0	31.6	90.0	20.7 > 26.1	21.0	25.0 > 13.8	30.0 > 10.18	81.3 > 50.5	75.00	30.00	16.00
MAR 1932	227										
1933	6,326										
1934	2,626										
1935	608	131									
1936	1,712		2,300	6,581	152	2,577	1,539				
1937	632		842	6,573	966	1,619	3,999	6,520	7,288	123	259
1938	1,450		422	7,578		1,843	6,077	12,211	11,478		
1939	2,848			8,714		1,669	9,244	11,695	12,569		
1940				6,859		501	10,414	33,820	8,522		
1941				6,352		2,859	12,769	31,376	7,307		
1942				4,484		1,394	11,239	40,942	8,204		
1943				1,505		1,674	9,042	31,302	1,393		
1944						1,190	5,707	22,010			
1945						1,458	7,515	23,679			
1946						1,679	8,275	20,321			
1947						1,255	10,824	27,799			
1948				5,175		1,372	12,362	25,876			
1949				3,138		2,054	12,008	22,369			
1950						2,060	12,401	22,678			
1951						1,535	12,801	21,014			
1952						1,336	14,064	24,781			
1953						2,146	14,684	39,673			
1954						2,373	17,072	39,077			
1955						1,392	13,901	41,910			
1956						677	32,273	46,511			
1957						1,292	37,552	47,637			
1958						1,246	36,931	48,320			
1959						1,371	37,270	55,428			
1960						577	37,756	51,043			
1961						296	38,153	49,909			
1962							38,319	53,592			
1963							36,686	52,362			
1964							37,139	49,317			
1965							39,647	51,814			
Jun-66 (15 months)							62,896	62,307			
1967							49,585	45,953			
1968							47,793	43,909			
1969							46,223	38,503			
1970							43,503	30,001			
1971							41,093	26,545			
1972							45,077	24,805			
1973							39,207	20,769			
1974							33,869	15,623			
1975							32,458	14,246			
1976							30,266	38,665			
1977							10,422	51,009			
1978							8,580	43,349			
1979							11,779	42,207			
1980							10,927	38,968			
1981							9,837	36,851			
1982							15,326	40,218			
1983							20,164	39,867			
1984							19,800	40,461			
1985							23,827	51,265			
1986							2,262	58,833			
1987							25,948	43,902			
1988								44,189			
1989								45,803			
1990								48,071			
1991								33,727			
1992								27,673			
1993								31,033			
1994								39,408			
1995								48,726			
1996								60,385			
1997								62,899			
Jun-98 (12 months)								67,703			
	16,429	131	3,564	56,959	1,118	39,445	1,208,505	2,362,859	56,761	123	259

YEAR ENDED	THREE EIGHTHS MINE	LAKE VIEW SOUTH (GMK) LTD	VICTORIA GOLD DREDGING CO NL	MISTLE-TOE MINE	YILGANGIE QUEEN	NEW COOL-GARDIE GOLD MINES NL	CENTRAL VIC. GOLD DREDGING CO NL	GREAT WESTERN CONSOL'D NL	ST. IVES GOLD MINES (Kambalda)	KWINANA REFINERY	HILL 50 GOLD MINES NL
% Owned	100.00	30.00	55.8 > 44.5	100.00	100.00	62.0 > 52.0	60.0 > 58.0	14.00	100.00	100.00	38 > 100
MAR 1932											
1933											
1934											
1935											
1936											
1937											
1938	1,386	142									
1939	2,106	1,056	6,041								
1940	1,226	1,050	10,243	1,730							
1941		1,050	9,797								
1942		1,110	7,101		420						
1943		1,050	6,169		93						
1944		32	5,353								
1945			2,581								
1946			1,335								
1947			4,778								
1948			2,422								
1949					1,512						
1950					1,291	8,293	1,247				
1951					1,545	12,517	3,839				
1952					2,495	16,281	6,015				
1953					1,401	21,673	6,732	1,978			
1954					2,099	16,640	6,346	7,160			
1955					1,540	17,858	3,446	7,953			
1956					1,496	9,857	2,888	9,241			
1957					2,759		3,603	11,082			
1958					2,736		288	10,982			
1959					1,698			11,341			
1960					2,005			10,070			
1961					1,643			9,010			
1962					1,830			8,750			
1963					1,591			7,347			
1964					1,290			955			
1965					1,205			46			
Jun-66								55			
1967											
1968											
1969											
1970											
1971											
1972											
1973											
1974											
1975											453
1976											543
1977											
1978											
1979											
1980											
1981									2,398		
1982									6,954		42
1983									19,806		8,952
1984									57,674		10,652
1985									89,722		10,363
1986									101,073		12,019
1987									100,164		14,027
1988									126,535		18,563
1989									134,686	2,065	52,520
1990									225,524	3,890	58,534
1991									203,447	2,343	131,345
1992									294,063	2,613	190,419
1993									206,421	1,899	191,015
1994									265,786		160,213
1995									317,565		211,451
1996									371,710		174,175
1997									377,278		132,898
Jun-98									433,265		104,800
									435,424		
	4,718	5,490	55,820	1,730	30,649	103,119	34,404	95,970	3,769,495	12,810	1,480,984

YEAR ENDED	KGO GREAT BOULDER	KGO SANDKING THEIL WELL MISSOURI	KGO LADY BOUNTIFUL	LANCE-FIELD GOLD OPS	VATU-KOULA JV	TAVUA BASIN MINING JV	STAWELL JV	AGNEW-LEINSTER GOLD OPS	GOODALL JV	CHIBOUG-AMAU MINES
% Owned	100.00	100.00	50.00	50 > 100	10 > 20	50.00	75.24	100.00	60.00	100.00
MAR 1932										
1933										
1934										
1935										
1936										
1937										
1938										
1939										
1940										
1941										
1942										
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Jun-66										
1967										
1968										
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1971										
1972										
1973										
1974										
1975										
1976										
1977										
1978										
1979										
1980										
1981		1,389								
1982	3,570	3,144		5,454						
1983	17,901	11,609		15,776	789					
1984	27,122	14,467		33,741	4,583					
1985	23,958	14,555		44,005	10,712		14,502			
1986	3,825	3,526		37,824	15,347		23,920			
1987		326	7,570	46,663	20,363	593	19,582	48,280		
1988		13,858		34,522	15,392	13,538	24,930	53,058	3,930	31,472
1989		21,004		61,841	16,455	30,111	25,962	98,526	41,792	69,757
1990		37,115		96,446	15,395	29,151	35,754	80,422	32,792	47,092
1991		9,595		90,843	8,788	15,562	42,391	110,182	27,687	42,673
1992				70,304			43,593	99,344	26,785	61,175
1993				53,412			20,351	117,007	4,712	20,808
1994				78,072				125,024		
1995				27,307				133,641		
1996								135,219		
1997								140,931		
Jun-98								158,801		
	76,376	130,588	7,570	696,210	107,844	88,955	250,985	1,300,435	137,698	272,977

YEAR ENDED	SEABRIGHT OPS INC.	CARSON HILL OPS	HOG RANCH OPS	CAMP BIRD	SEABRIGHT EXPL'N	MARA ROSA GOLD PROJECT	JENIPAPO GOLD PROJECT	OLYMPIC DAM OPS	TOTAL EQUITY IN WMC MANAGED OPERATIONS
% Owned	100.00	86 > 100	100.00	76.00	50.60	38.3 > 100	75.00	51.0 > 100.0	
MAR 1932									227
1933									6,326
1934									2,626
1935									739
1936									14,861
1937									28,821
1938									42,587
1939									55,942
1940									74,365
1941									71,510
1942									74,894
1943									52,228
1944									34,292
1945									35,233
1946									31,610
1947									44,656
1948									47,207
1949									41,081
1950									47,970
1951									53,251
1952									64,972
1953									88,287
1954									90,767
1955									88,000
1956									102,943
1957									103,925
1958									100,503
1959									107,108
1960									101,451
1961									99,011
1962									102,491
1963									97,986
1964									88,701
1965									92,712
Jun-66									125,258
1967									95,538
1968									91,702
1969									84,726
1970									73,504
1971									67,638
1972									69,882
1973									59,976
1974									49,492
1975									47,157
1976									69,474
1977									61,431
1978									51,929
1979									53,986
1980									52,293
1981									55,073
1982									96,470
1983									174,432
1984									240,259
1985									295,916
1986									259,728
1987									358,345
1988	3,053	11,053	10,648	1,060					449,974
1989	6,834	29,206	31,850	1,537	1,253	1,115		1,073	770,067
1990	7,379	27,474	17,311		855	1,577	31,072	9,244	854,285
1991		1,309	20,538			4,427	29,265	16,259	940,341
1992			25,413			4,768	12,797	11,654	782,841
1993			23,070			18,270		19,339	734,001
1994			7,405			27,059		25,968	831,952
1995			4,590			16,827		31,235	808,211
1996			2,110			3,448		33,214	744,552
1997								28,410	770,305
Jun-98								33,868	695,796
	17,266	69,042	142,935	2,597	2,108	77,491	73,134	210,264	13,005,817



# EQUITY IN NON MANAGED INTERESTS

YEAR ENDED	CONSOLIDATED EXPLOR. LTD WMC EQUITY ONLY	ALCOA HEDGES WMC EQUITY ONLY	EMPEROR G M WMC EQUITY ONLY	TOTAL WMC MANAGED AND WMC EQUITY IN NON MANAGED
% Owned	20.8 > 30.3	48.25 > 39.25	9.1	
MAR 1932				227
1933				6,326
1934				2,626
1935				739
1936				14,861
1937				28,821
1938				42,587
1939				55,942
1940				74,365
1941				71,510
1942				74,894
1943				52,228
1944				34,292
1945				35,233
1946				31,610
1947				44,656
1948				47,207
1949				41,081
1950				47,970
1951				53,251
1952				64,972
1953				88,287
1954				90,767
1955				88,000
1956				102,943
1957				103,925
1958				100,503
1959				107,108
1960				101,451
1961				99,011
1962				102,491
1963				97,986
1964				88,701
1965				92,712
Jun-66				125,258
1967				95,538
1968				91,702
1969				84,726
1970				73,504
1971				67,638
1972				69,882
1973				59,976
1974				49,492
1975				47,157
1976				69,474
1977				61,431
1978				51,929
1979				53,986
1980				52,293
1981				55,073
1982				96,470
1983				174,432
1984				240,259
1985				295,916
1986				259,728
1987				358,345
1988	10,220			460,194
1989	10,820	39,626		820,513
1990	11,215	73,394		938,894
1991	14,876	83,782	3,098	1,042,097
1992	9,881	83,170	9,076	884,968
1993	2,061	67,849		803,911
1994		63,877		895,829
1995		46,762		854,973
1996		42,900		787,452
1997		42,599		812,904
Jun-98		50,421		746,217
	59,073	594,380	12,174	13,671,444

The 1995-96 figure is rounded.

# WMC GROUP SILVER PRODUCTION

YEAR ENDED	CENTRAL NORSEMAN		OLYMPIC DAM		TOTAL
	Total ounces	WMC share (2) ounces	Total ounces	WMC share (3) ounces	WMC share ounces
Mar-37	n.a.	n.a.			n.a.
1938	44,811	36,409			36,409
1939	n.a.	n.a.			n.a.
1940	31,196	25,347			25,347
1941	30,258	24,585			24,585
1942	34,076	27,687			27,687
1943	24,720	20,085			20,085
1944	19,104	15,522			15,522
1945	18,657	15,159			15,159
1946	n.a.	n.a.			n.a.
1947	26,338	19,095			19,095
1948	33,517	24,300			24,300
1949	32,490	16,401			16,401
1950	31,798	16,052			16,052
1951	40,536	20,463			20,463
1952	47,198	23,826			23,826
1953	53,581	27,048			27,048
1954	56,926	28,736			28,736
1955	52,234	26,368			26,368
1956	47,362	23,908			23,908
1957	46,121	23,282			23,282
1958	49,608	25,042			25,042
1959	54,323	27,422			27,422
1960	47,803	24,131			24,131
1961	52,110	26,305			26,305
1962	55,839	28,188			28,188
1963	48,705	24,586			24,586
1964	50,937	25,713			25,713
1965	58,740	29,652			29,652
Jun-66	88,350	44,599			44,599
1967	78,150	39,450			39,450
1968	79,218	39,989			39,989
1969	66,491	33,565			33,565
1970	52,174	26,337			26,337
1971	46,960	23,705			23,705
1972	36,471	18,411			18,411
1973	27,674	13,970			13,970
1974	22,948	11,584			11,584
1975	17,855	9,013			9,013
1976	27,196	13,729			13,729
1977	30,954	15,626			15,626
1978	25,534	12,890			12,890
1979	25,967	13,108			13,108
1980	24,557	12,396			12,396
1981	20,524	10,361			10,361
1982	22,971	11,596			11,596
1983	17,462	8,815			8,815
1984	19,899	10,045			10,045
1985	43,501	21,959			21,959
1986	73,058	36,880			36,880
1987	60,525	30,553			30,553
1988	53,984	27,251			27,251
1989	36,758	18,555			18,555
1990	30,015	15,152	42,283	21,564	36,716
1991	19,243	9,714	402,035	205,038	214,752
1992	13,419	6,774	467,192	238,268	245,042
1993	15,626	7,888	392,583	245,410	253,298
1994	26,762	13,509	423,374	423,374	436,883
1995	30,652	15,473	314,513	315,513	330,986
1996	27,248	13,755	381,479	381,479	395,234
1997	28,487	14,380	346,842	346,842	361,222
Jun-98	n.a.	n.a.	359,878	359,878	n.a.
TOTAL	2,279,621	1,226,341	3,130,179	2,537,366	3,763,707

Note 1: The figures shown are as published in the CNGC and WMC Annual Reports.

Note 2: WMC's equity in CNGC was 81.25% from 1935 to 1946, 72.5% in 1947 and 1948 and 50.48% from 1949 to the present.

Note 3: WMC's equity in ODO was 51% until 31 March 1993 after which it rose to 100%.

## WMC GROUP TALC PRODUCTION

YEAR	THREE SPRINGS			FINNMINERALS		TOTAL
	Talc Mined	Talc Sold	WMC's Share	Talc Mined	WMC's share	WMC's Share
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
1961	14,781	5,460	2,730			2,730
1962	9,393	6,000	3,000			3,000
1963	6,673	4,771	2,386			2,386
1964	5,134	5,792	2,896			2,896
1965	7,237	4,957	2,479			2,479
1966	13,548	10,612	5,306			5,306
1967	10,655	7,915	3,958			3,958
1968	17,772	19,727	9,864			9,864
1969	29,668	21,619	10,810			10,810
1970	42,101	36,053	18,027			18,027
1971	38,610	31,497	15,749			15,749
1972	31,000	28,449	14,225			14,225
1973	30,000	33,000	16,500			16,500
1974	39,500	46,700	23,350			23,350
1975	47,700	45,300	22,650			22,650
1976	51,500	55,300	27,650			27,650
1977	54,200	58,100	29,050			29,050
1978	77,200	68,000	34,000			34,000
1979	75,400	71,800	35,900			35,900
1980	126,700	84,000	42,000			42,000
1981	66,000	79,300	39,650			39,650
1982	42,960	73,570	36,785			36,785
1983	88,480	85,440	42,720			42,720
1984	127,400	117,000	58,500			58,500
1985	151,400	146,900	73,450			73,450
1986	146,400	163,900	81,950			81,950
1987	180,800	148,500	148,500			148,500
1988	147,100	165,200	165,200			165,200
1989	160,600	132,000	132,000			132,000
1990	172,093	162,000	162,000			162,000
1991	131,996	132,000	132,000			132,000
1992	161,277	161,000	161,000			161,000
1993	131,197	131,000	131,000			131,000
1994	111,545	112,000	112,000			112,000
1995	91,651	92,000	92,000			92,000
1996	151,337	151,000	151,000	136,809	68,405	219,405
1997	160,908	161,000	161,000	364,669	182,335	343,335
Jun-98	180,389	180,000	180,000	421,146	210,573	390,573
TOTAL	2,951,916	3,038,862	2,383,281	922,624	461,312	2,844,593

Note 1: The figures shown are as published in the WMC Annual Reports.

For more detailed figures refer to the Quarterly Reports.

Note 2: WMC held a 50% interest in TST until 11 Feb 1987 after which it was 100%.

Note 3: WMC acquired a 50% interest in Finnminerals Oy in February 1996.

Note 4: The figures in *italics* are estimates.

# WMC GROUP TOTAL NICKEL PRODUCTION

Year	Kambalda					Windarra				Great Boulder			Leinster			Mt Keith			TOTAL GROUP			
	Treated Ore	Head Grade	Cont Ni ex KNO	Cont Ni ex Purch	Cont Ni Total	Treated Ore	Head Grade	Cont Ni Total	Cont Ni WMC share	Treated Ore	Head Grade	Cont Ni	Treated Ore	Head Grade	Cont Ni	Treated Ore	Head Grade	Cont Ni	Treated Ore	Head Grade	Cont Ni Total	Cont Ni WMC share
	tonnes	% Ni	tonnes	tonnes	tonnes	tonnes	% Ni	tonnes	tonnes	tonnes	% Ni	tonnes	tonnes	% Ni	tonnes	tonnes	% Ni	tonnes	tonnes	% Ni	tonnes	tonnes
1967	3,982	3.80	95		95														3,982	2.39	95	95
1968	131,164	4.30	3,893		3,893														131,164	2.97	3,893	3,893
1969	194,813	4.20	6,183		6,183														194,813	3.17	6,183	6,183
1970	616,909	3.50	17,578	135	17,713														616,909	2.87	17,713	17,578
1971	1,087,170	3.70	31,733	2,089	33,822														1,087,170	3.11	33,822	31,733
1972	1,091,234	3.50	31,520	1,598	33,118														1,091,234	3.03	33,118	31,520
1973	1,245,000	3.06	31,110	2,390	33,500														1,245,000	2.69	33,500	31,110
1974	1,409,000	3.00	35,490	2,270	37,760														1,409,000	2.68	37,760	35,490
1975	1,396,000	2.93	34,932	2,233	37,165	599,600	1.68	6,556	3,278	68,900	2.13	1,185							2,064,500	2.18	44,906	39,395
1976	1,444,500	2.93	35,443	2,525	37,968	1,096,500	1.62	12,966	6,483	131,500	1.82	1,947							2,672,500	1.98	52,881	43,873
1977	1,479,100	2.69	33,340	2,251	35,591	1,025,300	1.39	11,136	5,568			319							2,504,400	1.88	47,046	39,227
1978	1,376,400	3.22	37,332	2,305	39,637	753,300	1.75	10,595	5,298										2,129,700	2.36	50,232	42,630
1979	1,245,400	3.24	33,841	2,730	36,571	11,490	2.06	201	101										1,256,890	2.93	36,772	33,942
1980	1,285,500	2.89	30,729	2,535	33,264														1,285,500	2.59	33,264	30,729
1981	1,414,700	2.85	33,805	2,870	36,675	31,400	1.63	410	205										1,446,100	2.56	37,085	34,010
1982	1,416,000	2.94	34,010	3,200	37,210	415,100	1.47	4,700	2,350										1,831,100	2.29	41,910	36,360
1983	1,361,000	3.47	40,920	2,610	43,530	431,100	1.44	4,740	2,570										1,792,100	2.69	48,270	43,490
1984	1,373,000	3.43	43,470		43,470	389,400	1.28	3,880	3,880										1,762,400	2.69	47,350	47,350
1985	1,381,000	3.21	40,710		40,710	370,500	1.78	5,360	5,360										1,751,500	2.63	46,070	46,070
1986	1,196,500	3.16	33,450	1,100	35,550	556,500	1.60	6,990	6,990										1,753,000	2.43	42,540	40,440
1987	1,233,000	3.46	37,790	1,900	39,690	451,100	1.71	6,300	6,300										1,684,100	2.73	45,990	44,090
1988	1,231,000	2.96	34,139		34,139	622,000	1.48	7,455	7,455										1,853,000	2.24	41,594	41,594
1989	1,462,000	2.54	33,737		33,737	410,000	1.11	3,336	3,336				55,000	2.17	497				1,927,000	1.95	37,570	37,570
1990	1,283,000	2.55	29,717		29,717	486,000	1.37	5,088	5,088				838,000	2.08	11,957				2,607,000	1.79	46,762	46,762
1991	1,301,000	2.75	32,041		32,041	369,000	1.21	3,484	3,484				1,233,000	2.05	18,485				2,903,000	1.86	54,010	54,010
1992	1,053,000	2.86	27,247		27,247	30,000	1.06	246	246				1,351,000	2.09	21,486				2,434,000	2.01	48,979	48,979
1993	1,124,000	3.07	32,107		32,107								1,056,000	2.38	20,598				2,180,000	2.42	52,705	52,705
1994	1,184,000	2.92	31,568		31,568								1,510,000	2.25	26,883				2,694,000	2.17	58,451	58,451
1995	1,230,000	3.10	34,066		34,066								1,780,000	2.20	28,048	5,419,000	0.61	21,391	8,429,000	0.99	83,505	83,505
1996	1,230,000	3.31	37,460		37,460								1,779,000	2.03	27,668	7,954,000	0.60	29,677	10,963,000	0.86	94,805	94,805
1997	1,119,000	3.02	30,368		30,368								2,088,000	2.16	37,599	9,946,000	0.60	36,700	13,153,000	0.80	104,667	104,667
1998	1,313,000	2.71	32,049		32,049								2,186,000	2.21	39,921	10,168,000	0.65	41,989	13,667,000	0.83	113,959	113,959
<b>TOTAL</b>	<b>36,911,372</b>	<b>2.76</b>	<b>981,873</b>	<b>34,741</b>	<b>1,017,614</b>	<b>8,048,290</b>	<b>1.16</b>	<b>93,443</b>	<b>67,992</b>	<b>200,400</b>	<b>1.72</b>	<b>3,451</b>	<b>13,876,000</b>	<b>1.68</b>	<b>233,142</b>	<b>33,487,000</b>	<b>0.39</b>	<b>129,757</b>	<b>92,523,062</b>	<b>1.60</b>	<b>1,477,407</b>	<b>1,416,215</b>

Note 1. The figure used in this compilation are those appearing in WMC Annual Reports (with corrections noted in subsequent years) and for that reason, and because of rounding, may vary from mine-site figures.

Note 2. Pre 1972 figures have been converted from tons (2240 pounds) to tonnes by multiplying by 1.0160469.

Note 3. The grade shown in the TOTAL row is not Head Grade but the Recovered Grade, ie tonnes Cont Ni / tonnes Treated x 100.

Note 4. The figures for 1998 are to 30 June only.

Note 5. The Treated Tonnes at Kambalda includes purchased ore whereas the Contained Nickel has been separated for KNO ore and Purchased ore.

Note 6. Kambalda's Cumulative Contained Nickel Production (including that from Purchased Ore) passed the one million tonnes mark early in the second quarter of Calendar 1998.

## WMC GROUP IRON ORE PRODUCTION

YEAR	PRODUCTION		RAILED TO GERALDTON tonnes	SHIPPED TO JAPAN	
	Crushed	Lump Ore		Total	WMC share
	tonnes	tonnes		tonnes	tonnes
1966	324,557	220,482	205,241	118,877	59,439
1967	907,231	631,114	632,659	612,290	306,145
1968	975,513	641,136	643,442	587,894	293,947
1969	893,874	648,132	647,160	585,574	292,787
1970	986,352	684,234	683,923	609,580	304,790
1971	1,019,095	684,816	670,000	665,000	332,500
1972	991,662	647,222	670,000	640,000	320,000
1973	1,016,000	669,000	670,000	765,000	382,500
1974	918,000	582,000	670,000	697,000	348,500
1975				86,000	43,000
TOTAL	8,032,284	5,408,136	5,492,425	5,367,215	2,683,608

Note 1: The figures shown are as in WMC Annual Reports.

For more detailed figure refer Quarterly Reports.

Note 2: Figures in *italics* are estimates.

## WMC MINERAL SANDS PRODUCTION

YEAR	Primary Plant		Secondary Plant		Sales	
	Sand Processed	Hd Grade	Rutile	Zircon	Rutile	Zircon
	tonnes	%	tonnes	tonnes	tonnes	tonnes
1976	1,962,300	8.88	9,600	2,583	6,124	1,037
1977	698,900	18.50	6,746	4,024	5,193	453
TOTAL	2,661,200		16,346	6,607	11,317	1,490

Note: The figures shown are as in WMC Annual Reports.  
For more detailed figures refer to Quarterly Reports.

WMC.GHI.MS.Prod.xls

Compiled by G M Ralph, 1.10.98

## WMC GROUP COPPER PRODUCTION

YEAR	WARBURTON RANGE			CHIBOUGAMAU			OLYMPIC DAM				NIFTY			TOTAL GROUP		
	Mined tonnes	Grade % Cu	Cont Cu tonnes	Treated tonnes	Grade % Cu	Cont Cu tonnes	Treated tonnes	Hd Grade % Cu	Cont Cu tonnes	WMC Cu tonnes	Treated tonnes	Grade % Cu	Cont Cu tonnes	Treated tonnes	Cont Cu tonnes	WMC Cu tonnes
1966	183	36.0	66											183	66	66
1988				227,700	1.56	3,558	21,000							248,700	3,558	3,558
1989				560,000	1.60	8,809	1,130,000	3.57	16,868	8,603				1,690,000	25,677	17,412
1990				307,000	1.49	4,478	1,528,000	3.07	37,801	19,279				1,835,000	42,279	23,757
1991				304,000	1.44	4,255	1,714,000	3.25	48,249	24,606				2,018,000	52,504	28,861
1992				501,000	1.39	6,937	1,930,000	3.22	62,082	31,662				2,431,000	69,019	38,599
1993				179,000	1.29	2,241	2,385,000	3.05	69,502	44,046				2,564,000	71,743	46,287
1994							2,390,000	2.95	66,684	66,684	571,000	3.96	4,268	2,961,000	70,952	70,952
1995							2,378,000	3.02	68,541	68,541	488,000	2.90	8,105	2,866,000	76,646	76,646
1996							3,210,000	3.01	83,050	83,050	497,000	3.20	10,092	3,707,000	93,142	93,142
1997							3,003,000	3.00	75,444	75,444	1,077,000	3.16	11,438	4,080,000	86,882	86,882
Jun-98							3,314,727	2.81	80,109	80,109	955,979	3.47	15,045	4,270,706	95,154	95,154
TOTAL	183		66	2,078,700		30,278	23,003,727		608,330	502,024	3,588,979	13	48,948	28,671,406	687,622	581,316

Note 1: The figures shown are as published in the WMC Annual Reports. For more detailed figures refer to the Quarterly Reports.

Note 2: WMC held a 51% interest in ODO until 31 March 1993 after which it increased to 100%.

## WMC GROUP URANIUM OXIDE PRODUCTION

YEAR	OLYMPIC DAM			
	Ore Treated	Grade U <sub>3</sub> O <sub>8</sub>	Total U <sub>3</sub> O <sub>8</sub>	WMC's share (2)
	tonnes	kg/t	tonnes	tonnes
1988	21,000			
1989	1,130,000	1.26	912	465
1990	1,528,000	0.98	1,005	513
1991	1,714,000	1.13	1,482	756
1992	1,930,000	1.07	1,369	698
1993	2,385,000	0.83	1,370	842
1994	2,390,000	0.79	1,289	1,289
1995	2,378,000	0.71	1,084	1,084
1996	3,120,000	0.76	1,652	1,652
1997	3,003,000	0.86	1,758	1,758
Jun-98	3,314,727	0.78	1,635	1,635
TOTAL	22,913,727		13,556	10,692

Note 1: The figures shown are as published in the WMC Annual Reports.

For more detailed figures refer to the Quarterly Reports.

Note 2: WMC held a 51% interest in ODO until 31 March 1993 after which it increased to 100%.



## WMC GROUP LEAD PRODUCTION

YEAR	GAYS RIVER		
	Ore Treated	Grade	Cont Pb
	tonnes	% Pb	tonnes
1990	56,000	3.8	1,987
1991	132,000	3.34	4,000
1992	3,000	3.48	92
TOTAL	191,000		6,079

Note: The figures shown are as published in the WMC Annual Reports.  
For more detailed figures refer to the Quarterly Reports.

WMC.GHI.Pb.Prod.xls

Compiled by G M Ralph, 1.10.98

## WMC GROUP ZINC PRODUCTION

YEAR	GAYS RIVER		
	Ore Treated	Grade	Contained Zn
	tonnes	% Zn	tonnes
1990	56,000	6.39	2,912
1991	132,000	8.08	9,555
1992	3,000	6.15	155
TOTAL	191,000		12,622

Note: The figures shown are as published in the WMC Annual Reports.  
For more detailed figures refer to the Quarterly Reports.

WMC.GHI.Zn.Prod.xls

Compiled by G M Ralph, 1.10.98

## WMC GROUP PETROLEUM AND GAS PRODUCTION

YEAR	AUSTRALASIA		GREENHILL PET (1)		TOTAL	
	Petroleum 000's bbls	Natural Gas millions cft	Petroleum 000's bbls	Natural Gas millions cft	Petroleum 000's bbls	Natural Gas millions cft
1985	37				37	
1986	201				201	
1987	221				221	
1988	827				827	
1989	1,355		347	127	1,702	127
1990	2,640		1,139	1,279	3,779	1,279
1991	2,901		2,725	8,659	5,626	8,659
1992	3,242		3,324	9,483	6,566	9,483
1993	2,683		3,503	10,614	6,186	10,614
1994	1,958		3,292	11,862	5,250	11,862
1995	2,666		2,891	7,665	5,557	7,665
1996	1,966		2,566	8,325	4,532	8,325
1997	203	377	1,221	3,714	1,424	4,091
TOTAL	20,900	377	21,008	61,728	41,908	62,105

Note 1: GPC's Oil and Gas figures are on a Net Revenue Interest basis.

Note 2: WMC sold its petroleum interests early in 1997.

WMC.GHI.Pet.Prod.xls

Compiled by G M Ralph, 1.10.98

**WMC LIMITED FINANCIAL RESULTS 1934-1998**

Financial Year	S'holders Equity \$million	Total \$million	Op Profit Note (1) \$million	Divs \$million
1934	0.3	0.3		
1935	0.4	0.6		
1936	0.7	0.9		
1937	0.7	0.9	0.03	
1938	0.7	0.8	-0.02	
1939	0.7	0.8	0.00	
1940	0.7	0.8	0.00	
1941	0.7	0.8	0.00	
1942	0.7	0.8	0.00	
1943	0.7	0.7	0.09	0.03
1944	0.7	0.7	0.19	0.20
1945	0.7	0.7	0.09	0.03
1946	0.7	0.7	0.06	0.06
1947	0.8	1.0	0.18	0.06
1948	0.9	1.6	0.18	0.16
1949	1.9	4.1	0.10	0.14
1950	3.6	5.7	0.35	0.14
1951	3.8	6.2	0.35	0.14
1952	4.1	6.7	0.41	0.28
1953	4.7	7.6	0.90	0.28
1954	5.0	8.4	0.61	0.28
1955	5.9	9.4	0.62	0.33
1956	6.1	8.9	0.80	0.33
1957	6.2	10.4	0.75	0.38
1958	7.0	10.2	0.71	0.38
1959	7.5	11.0	0.92	0.38
1960	7.8	11.5	0.67	0.38
1961	8.1	12.2	0.66	0.38
1962	9.6	13.7	0.73	0.38
1963	11.1	15.5	0.74	0.38
1964	18.1	23.5	0.69	0.38
1965	20.1	24.5	0.64	0.64
1966	20.9	27.8	0.69	0.95
1967	24.9	33.3	0.77	0.74
1968	42.3	49.0	2.3	0.85
1969	66.9	88.6	2.6	1.10
1970	88.0	146.3	14.0	1.10
1971	159.1	215.4	22.6	4.40
1972	194.2	250.1	14.4	8.5
1973	186.9	278.3	16.6	14.5
1974	188.3	322.1	14.4	14.5
1975	190.9	400.2	14.4	11.8
1976	214.7	445.8	11.8	9.0
1977	276.0	523.4	22.1	12.0
1978	276.0	554.1	10.1	6.2
1979	347.7	631.7	34.0	14.5
1980	573.6	975.8	77.0	35.9
1981	597.3	1,035.0	75.0	35.9
1982	666.0	1,139.4	18.3	6.6
1983	650.2	1,125.4	10.7	5.5
1984	826.2	1,256.2	30.1	12.1
1985	955.7	1,978.4	40.4	20.9
1986	925.7	1,465.5	27.9	22.5
1987	1,199.1	1,978.4	233.4	56.2
1988	2,153.5	3,109.0	294.0	193.6
1989	2,358.2	3,491.1	345.0	245.7
1990	2,615.4	3,956.1	422.6	257.5
1991	3,004.5	4,085.2	361.9	221.9
1992	2,977.7	3,999.1	21.2	104.3
1993	3,050.0	4,137.8	88.3	96.4
1994	3,187.9	4,687.9	125.0	78.4
1995		6,116.2	320.8	221.9
1996		6,975.5	386.2	244.9
1997		7,238.8	297.2	146.6
(2) 1998		9,048.6	169.2	114.3
Total			3,494.0	2,227.4

Notes:

- (1) Figures for 1975-78 are on a Group Consolidated basis.  
From 1979 on they are on an Equity Account basis
- (2) In 1998 the Financial Year end changed from July to December  
The figures given are for the 18 months, July 1997 to Dec 1998.

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## **APPENDIX VII**

### **EXPLORATION EXPENDITURE**

As mentioned in *Overview*, there has been great difficulty in assembling a reliable record of ExDiv's expenditure over the years, let alone exploration expenditure by operations and projects. A great deal of work done by R C (Richard) Schodde in 2001 and 2002 resulted in the major tabulations which follow. Also included is various information from other sources.

Subsequently earlier partial assessments in K-Reports were discovered in the Central Technical Records of ExDiv and these are listed below. While time did not permit further work at this time, they may be of benefit to future researchers.

- |           |   |
|-----------|---|
| I W Levy  | ESTIMATES OF WMC'S EXPLORATION INVESTMENTS<br>1955 - 1980 K-REPORT 3765 August 1982                           |
| I W Levy  | EXPLORATION EXPENDITURES IN THE KAMBALDA REGION<br>AND DISCOVERY COSTS K-REPORT 3767 October 1982             |
| Various   | A CRITICAL REVIEW OF WMC'S EXPLORATION AND GOLD<br>MINING ACTIVITIES IN VICTORIA K-REPORT 3766<br>August 1988 |
| D F Evans | HISTORICAL REVIEW OF EASTERN REGION EXPLORATION<br>1971 - 1989 K-REPORT 3242 December 1989                    |

Expenditure information, although on a somewhat different basis, is also given in Brian W Mackenzie and Michael D Doggett EXPLORATION PERFORMANCE OF WESTERN MINING CORPORATION 1955 - 1994, Final Report submitted in December 1996.

Tabulation by Richard Schodde of major exploration results is also included.

**WMC'S ESTIMATED EXPENDITURES ON GRASSROOTS EXPLORATION : 1955-2002**  
**CASH EXPENDITURES : MILLIONS OF AUSTRALIAN DOLLARS OF THE DAY**

Year ending June	Minerals						Petroleum	Total	Minerals		
	Gold	Nickel	Copper	Base			Min+Pet		Australia	Overseas	Total
				Metals	Diamonds	Other					
1955	0.010	0.002		0.001				0.013	0.013	-	0.013
1956	0.009	0.001		0.001				0.011	0.011	-	0.011
1957	0.006	-		0.011				0.017	0.017	-	0.017
1958	0.010	-		0.030				0.040	0.040	-	0.040
1959	0.006	-		0.023				0.029	0.029	-	0.029
1960	0.015	-		0.006				0.021	0.021	-	0.021
1961	0.018	-		0.002				0.020	0.020	-	0.020
1962	0.042	-		0.002				0.044	0.044	-	0.044
1963	0.329	-		0.078				0.407	0.407	-	0.407
1964	0.245	0.001		0.144				0.390	0.390	-	0.390
1965	0.122	0.008		0.151				0.281	0.281	-	0.281
1966	0.095	0.128		0.222				0.445	0.445	-	0.445
1967	0.049	0.805		0.537				1.391	1.391	-	1.391
1968	0.005	1.165		0.733				1.903	1.903	-	1.903
1969	0.003	1.349		0.743				2.095	2.095	-	2.095
1970	0.008	1.330		0.894				2.232	2.232	-	2.232
1971	0.027	1.520		0.808				2.355	2.355	-	2.355
1972	0.036	1.653		0.851				2.540	2.540	-	2.540
1973	0.162	1.500	-	1.100	-	-	0.100	2.862	2.762	-	2.762
1974	0.30	1.40	-	1.70	-	-	0.60	4.00	3.40	-	3.40
1975	0.80	2.00	-	1.40	-	0.20	0.60	5.00	4.40	-	4.40
1976	0.90	1.20	-	2.10	-	0.40	0.20	4.80	4.60	-	4.60
1977	0.30	1.80	-	3.10	-	0.30	2.70	8.20	5.50	-	5.50
1978	0.20	1.20	-	3.30	-	0.30	7.50	12.50	5.00	-	5.00
1979	0.60	0.20	-	4.30	-	0.20	1.10	6.40	5.30	-	5.30
1980	2.60	0.40	1.10	1.50	1.10	3.70	3.30	13.70	10.40	-	10.40
1981	6.4	0.8	2.1	1.8	2.10	1.8	6.8	21.8	15.0	-	15.0
1982	3.5	0.3	3.0	2.5	1.10	1.3	17.6	29.3	11.7	-	11.7
1983	3.6	0.5	2.5	2.5	0.90	0.9	16.1	27.0	10.9	-	10.9
1984	5.7	0.4	1.0	3.4	1.20	1.7	25.7	39.1	13.4	-	13.4
1985	8.7	0.3	3.5	2.6	1.30	0.2	19.9	36.5	16.1	0.5	16.6
1986	15.2	0.2	0.3	0.7	0.80	0.8	17.1	35.1	15.3	2.7	18.0
1987	17.2	0.4	5.3	0.3	1.60	0.2	7.6	32.6	21.3	3.7	25.0
1988	36.1	0.5	2.3	0.1	0.80	-	10.9	50.7	31.7	8.1	39.8
1989	65.5	1.0	2.9	0.3	0.90	3.6	23.8	98.0	34.9	39.3	74.2
1990	53.1	2.3	1.3	1.3	4.30	4.8	34.1	101.2	34.8	32.3	67.1
1991	41.2	4.6	3.0	-	1.90	8.0	37.7	96.4	37.1	21.6	58.7
1992	41.3	9.4	6.2	7.9	1.00	3.2	23.9	92.9	45.2	23.8	69.0
1993	22.9	9.1	10.3	2.5	1.00	1.0	20.8	67.6	29.2	17.6	46.8
1994	23.0	5.4	12.8	-	1.00	4.4	17.3	63.9	22.6	24.0	46.6
1995	25.2	5.3	18.7	-	1.00	5.5	20.2	75.9	29.0	26.7	55.7
1996	38.7	11.7	24.0	-	1.10	3.4	14.2	93.1	22.8	56.1	78.9
1997	44.1	6.4	11.8	-	-	7.4	-	69.7	27.2	42.5	69.7
H2 1997	24.8	3.9	5.4	-	-	1.8	-	35.9	12.3	23.6	35.9
calender 1998	33.3	7.1	8.9	-	-	3.1	-	52.4	22.7	29.7	52.4
calender 1999	21.9	4.4	13.3	-	-	3.6	-	43.2	9.7	33.5	43.2
calender 2000	16.6	10.7	15.3	-	-	7.3	-	49.9	10.3	39.6	49.9
calender 2001	9.6	35.9	11.0	-	-	0.6	-	57.1	14.0	43.1	57.1
calender 2002	3.4	14.1	3.3	-	-	-	-	20.8	9.7	11.1	20.8
TOTAL July 55 -Dec 2000	554.9	102.4	155.0	49.6	23.1	69.1	329.8	1,283.9	528.8	425.3	954.1

**WMC'S ESTIMATED EXPENDITURES ON GRASSROOTS EXPLORATION : 1955-2002**  
**CASH EXPENDITURES : constant 2003 Dollars (A\$ million)**

Year ending June	Minerals						Petroleum	Total	Minerals			Inflation Index
	Gold	Nickel	Copper	Base Metals				Min+Pet	Australia	Overseas	Total	2003=1
					Diamonds	Other						
1955	0.12	0.02		0.01				0.157	0.16	-	0.16	12.06
1956	0.10	0.01		0.01				0.125	0.12	-	0.12	11.35
1957	0.07	-		0.12				0.188	0.19	-	0.19	11.07
1958	0.11	-		0.33				0.437	0.44	-	0.44	10.92
1959	0.06	-		0.25				0.311	0.31	-	0.31	10.74
1960	0.16	-		0.06				0.217	0.22	-	0.22	10.34
1961	0.18	-		0.02				0.202	0.20	-	0.20	10.08
1962	0.43	-		0.02				0.446	0.45	-	0.45	10.13
1963	3.31	-		0.78				4.096	4.10	-	4.10	10.06
1964	2.41	0.01		1.42				3.840	3.84	-	3.84	9.85
1965	1.15	0.08		1.43				2.656	2.66	-	2.66	9.45
1966	0.87	1.18		2.04				4.090	4.09	-	4.09	9.19
1967	0.44	7.17		4.78				12.384	12.38	-	12.38	8.90
1968	0.04	10.11		6.36				16.516	16.52	-	16.52	8.68
1969	0.03	11.35		6.25				17.628	17.63	-	17.63	8.41
1970	0.06	10.80		7.26				18.118	18.12	-	18.12	8.12
1971	0.21	11.59		6.16				17.954	17.95	-	17.95	7.62
1972	0.26	11.94		6.15				18.351	18.35	-	18.35	7.22
1973	1.07	9.90	-	7.26	-	-	0.66	18.896	18.24	-	18.24	6.60
1974	1.72	8.02	-	9.73	-	-	3.44	22.90	19.47	-	19.47	5.73
1975	3.99	9.96	-	6.97	-	1.00	2.99	24.91	21.92	-	21.92	4.98
1976	3.97	5.29	-	9.26	-	1.76	0.88	21.16	20.28	-	20.28	4.41
1977	1.19	7.16	-	12.33	-	1.19	10.74	32.61	21.87	-	21.87	3.98
1978	0.73	4.39	-	12.08	-	1.10	27.45	45.75	18.30	-	18.30	3.66
1979	2.02	0.67	-	14.51	-	0.67	3.71	21.59	17.88	-	17.88	3.37
1980	7.83	1.21	3.31	4.52	3.31	11.15	9.94	41.28	31.33	-	31.33	3.01
1981	17.28	2.16	5.67	4.86	5.67	4.86	18.36	58.9	40.51	-	40.51	2.70
1982	8.57	0.73	7.35	6.12	2.69	3.18	43.10	71.8	28.65	-	28.65	2.45
1983	8.06	1.12	5.60	5.60	2.02	2.02	36.07	60.5	24.42	-	24.42	2.24
1984	12.29	0.86	2.16	7.33	2.59	3.67	55.41	84.3	28.89	-	28.89	2.16
1985	17.58	0.61	7.07	5.25	2.63	0.40	40.21	73.7	32.53	1.01	33.54	2.02
1986	28.15	0.37	0.56	1.30	1.48	1.48	31.67	65.0	28.34	5.00	33.34	1.85
1987	29.37	0.68	9.05	0.51	2.73	0.34	12.98	55.7	36.38	6.32	42.70	1.71
1988	57.46	0.80	3.66	0.16	1.27	-	17.35	80.7	50.45	12.89	63.35	1.59
1989	96.98	1.48	4.29	0.44	1.33	5.33	35.24	145.1	51.67	58.19	109.86	1.48
1990	73.27	3.17	1.79	1.79	5.93	6.62	47.06	139.6	48.02	44.57	92.59	1.38
1991	55.09	6.15	4.01	-	2.54	10.70	50.41	128.9	49.61	28.88	78.49	1.34
1992	54.69	12.45	8.21	10.46	1.32	4.24	31.65	123.0	59.86	31.52	91.38	1.32
1993	29.78	11.84	13.40	3.25	1.30	1.30	27.05	87.9	37.98	22.89	60.87	1.30
1994	29.36	6.89	16.34	-	1.28	5.62	22.08	81.6	28.85	30.64	59.49	1.28
1995	30.72	6.46	22.80	-	1.22	6.70	24.62	92.5	35.35	32.55	67.90	1.22
1996	46.00	13.91	28.53	-	1.31	4.04	16.88	110.7	27.10	66.68	93.78	1.19
1997	52.26	7.58	13.98	-	-	8.77	-	82.6	32.23	50.37	82.60	1.19
H2 1997	29.28	4.60	6.37	-	-	2.12	-	42.4	14.52	27.86	42.38	1.18
calender 1998	39.16	8.35	10.47	-	-	3.65	-	61.6	26.69	34.93	61.62	1.18
calender 1999	25.36	5.10	15.40	-	-	4.17	-	50.0	11.23	38.80	50.03	1.16
calender 2000	18.40	11.86	16.96	-	-	8.09	-	55.3	11.42	43.90	55.32	1.11
calender 2001	10.16	38.00	11.64	-	-	0.64	-	60.4	14.82	45.63	60.45	1.06
calender 2002	3.50	14.51	3.40	-	-	-	-	21.4	9.98	11.42	21.40	1.03
TOTAL July 55-Dec 2000	791.7	218.0	207.0	167.2	40.6	104.2	570.0	2,098.7	991.7	537.0	1,528.7	



Author : Richard Schodde - WMC December 2003. Excel File .... *WMC Explor expenditures - as per the Gold Book.xls*  
note that this file contains a detailed breakdown by Commodity & Location and has data on minesite exploration

note : Exploration expenditures includes "Regional" exploration (mainly by ExDiv) and excludes "Additional" exploration by the various Business Units (looking for additional new orebodies near their existing operations), "Extensional" exploration at the Operations or any "Advanced Projects"

The above figures may differ slightly from the "headline" exploration expenditures as given in the high level accounts in the Annual Reports and 10 Year Summaries.  
Have tried to make the numbers consistent with WMC's "Gold Book" data

Differences arise because the .....

1967-71 Headline exploration figures (as reported in the 5 Year Summaries) refer to the Capitalised Value of exploration (which is an asset), not the cash outlay (which is an expenditure)

Also, between 1972-79, the Headline Cashflow figure included Depreciation (a non cash-item !) on capital, rather than actual cash expenditures on new equipment (resulting in possible error of +/- \$0.5m pa)

Headline figures includes advanced-project related or "Evaluation Exploration" expenditures (1997-2000)  
Headline figures include the cost of acquiring exploration properties (\$1.2m in 1976, \$26.8m in 1985, \$6.0m in 1987 and \$36.4m in 1988). These are mainly associated with Petroleum projects

note : For "OTHER", the figures for 1994-onwards include Base metals. Prior to this, Base Metals were reported separately. The 1988 & 1993 figures are approximate only (RCS estimates)

For "COPPER", expenditures prior to 1973 were included under Base Metals

For "DIAMONDS", the Exploration Division exited this commodity in 1996

For "PETROLEUM", the Company sold all its oil & gas assets in 1996

note: The "INFLATION INDEX" refers to the factor required to bring historical expenditures into today's dollars

Source : 1955-2002 : WMC Annual Reports

1988-2002 : Six Monthly "Gold Book" for Analysts

1982-1993 : Management Report prepared by Melb Accounts circa 1994

1973-1991 : Management Report by Ken Tranter + Maurice Grasso Melb Accounts circa 1993

1955-1978: Management Report compiled by Ian Levy based on existing ExDiv records

Where ever possible I have used the more recent report as the primary source

**MINERAL DISCOVERIES MADE BY WMC : 1955-2000**

Deposit Name	Country	Metal	Discovery Year	Discovery Group	Mining Style	Current Status	Deposit Size	Pre-Mined Resource	Contained Metal
CROWN-MARAROA	Australia	Au	1955	ExDiv	Both UG & OP	Closed Mine	Major	6690kt @ 12.98g/t Au	2361 koz
DARLING RANGES (CAMP)	Australia	Bauxite	1958	ExDiv	Open pit	Operating Mine	Supergiant	na	
KAMBALDA NI CAMP	Australia	Ni,Cu,Co,PGE	1966	ExDiv	Both UG & OP	Operating Mine	Giant	57.8mt @ 2.73% Ni	1578 kt Ni
FISHER	Australia	Ni,Au	1966	ExDiv	Underground	Closed Mine	Moderate	1651kt @ 2.65% Ni	44 kt Ni
JAN	Australia	Ni	1966	ExDiv	Underground	Closed Mine	Moderate	1074kt @ 3.29% Ni	35 kt Ni
JUAN	Australia	Ni,Co,Cu	1966	ExDiv	Underground	Closed Mine	Major	8026kt @ 4.03% Ni	323 kt Ni
LUNNON	Australia	Ni	1966	ExDiv	Underground	Closed Mine	Major	4539kt @ 3.26% Ni	148 kt Ni
DURKIN	Australia	Ni	1967	ExDiv	Underground	Closed Mine	Major	3148kt @ 3.87% Ni	122 kt Ni
GIBB	Australia	Ni	1967	ExDiv	Underground	Closed Mine	Minor	84kt @ 1.72% Ni	1 kt Ni
EDWIN	Australia	Ni	1968	ExDiv	Underground	Closed Mine	Minor	141kt @ 5.27% Ni	7 kt Ni
GELLATLY	Australia	Ni	1968	ExDiv	Underground	Closed Mine	Minor	na	
JOHN	Australia	Ni	1968	ExDiv	Not known	Closed Mine	Minor	na	
MCMAHON	Australia	Ni,Au	1968	ExDiv	Underground	Closed Mine	Moderate	1186kt @ 3.06% Ni	40 kt Ni
WEST DOORA	Australia	Cu	1968	ExDiv	Not known	Undeveloped Deposit	Minor	na	
CRUICKSHANK	Australia	Ni	1969	ExDiv	Not known	Closed Mine	Minor	na	
GORDON	Australia	Ni,Au	1969	ExDiv	Underground	Closed Mine	Minor	na	
HUNT	Australia	Ni,Cu,Au	1970	ExDiv	Underground	Closed Mine	Moderate	1399kt @ 3.09% Ni	43 kt Ni
JOY	Australia	Ni	1970	ExDiv	Not known	Prospect	Prospect	na	
LORETO	Australia	Ni,Cu	1970	ExDiv	Underground	Closed Mine	Moderate	na	
MT CLIFFORD	Australia	Ni	1970	ExDiv	Not known	Feasibility Study	Moderate	724kt @ 1.1% Ni	8 kt Ni
FOSTER	Australia	Ni,Au,Co,Cu	1971	ExDiv	Underground	Closed Mine	Moderate	2613kt @ 2.79% Ni	73 kt Ni
KEN	Australia	Ni	1971	ExDiv	Underground	Closed Mine	Minor	na	
LONG	Australia	Ni,Co,Cu	1971	ExDiv	Underground	Care and Maintenance	Major	6513kt @ 3.97% Ni	259 kt Ni
CAMERON	Australia	Ni,Au	1972	ExDiv	Not known	Closed Mine	Minor	na	
YEELIRRIE MINE	Australia	U3O8	1972	ExDiv	Open Pit	Stalled-environmental / po	Major	35mt @ 1.5 kg/t U3O8	53 kt U3O8
47000S	Australia	Ni	1973	ExDiv	Not known	Not Known	Unknown	na	
50000S	Australia	Ni	1973	ExDiv	Not known	Not Known	Unknown	na	
CORKTREE WELL	Australia	Au	1973	ExDiv	Not known	Not Known	Minor	na	
EAST COOEE	Australia	Ni	1973	ExDiv	Underground	Advanced Exploration	Moderate	na	
VICTOR	Australia	Ni,Au,Co,Cu	1973	ExDiv	Underground	Closed Mine	Moderate	1146kt @ 4.53% Ni	52 kt Ni
ALPHA ISLAND	Australia	Ni,Co,Cu	1974	ExDiv	Not known	Not Known	Moderate	na	
DUKE	Australia	Ni	1974	ExDiv	Not known	Not Known	Minor	na	
BINDAH	Australia	Au	1975 ??	ExDiv	Not known	Closed Mine	Minor	na	
DOUGLAS	Australia	Ni	1975	ExDiv	Not known	Not Known	Unknown	na	
EAST BLUEBUSH	Australia	Ni,Cu	1975	ExDiv	Not known	Not Known	Small Workings	na	
								2939mt @ 1.28% Cu	
OLYMPIC DAM	Australia	Cu,U3O8,Au	1975	ExDiv	Underground	Operating Mine	Supergiant	+ 0.47g/t Au 0.42 kg/t U3O8	72300 kt Cu-equiv
SIBERIA	Australia	Au	1975 ??	ExDiv	Not known	Closed Mine	Minor	na	
STOCKWELL	Australia	Ni	1975	ExDiv	Not known	Closed Mine	Moderate	na	

# MINERAL DISCOVERIES MADE BY WMC : 1955-2000

Deposit Name	Country	Metal	Discovery Year	Discovery Group	Mining Style	Current Status	Deposit Size	Pre-Mined Resource	Contained Metal
BETA ISLAND	Australia	Ni,Co,Cu	1977	ExDiv	Not known	Not Known	Moderate	na	
LANFRANCHI	Australia	Ni,Co,Cu	1978	ExDiv	Not known	Operating Mine	Moderate	1471kt @ 2.53% Ni	37 kt Ni
BULONG	Australia	Ni,Co	1979	ExDiv	Open Pit	Operating Mine	Giant	140mt @ 1.0% Ni	1405 kt Ni
CURRAWONG	Australia	Cu,Zn,Pb	1979	ExDiv	Underground	Closed Mine	Moderate	na	
ST IVES AU CAMP	Australia	Au	1979	ExDiv	Both UG & OP	Operating Mine	Giant	97.3mt @ 3.76g/t Au	11770 koz
HUNT (GOLD)	Australia	Au	1979	ExDiv	Underground	Operating Mine	Minor	668kt @ 2.53g/t Au	54 koz
WIRRDIA WELL	Australia	Cu	1979	ExDiv	Not known	Prospect	Prospect	na	
NW FOSTER	Australia	Ni,Co,Cu	1980	Ops	Underground	Closed Mine	Moderate	na	
REPULSE	Australia	Au	1980	Ops	Underground	Closed Mine	Minor	na	
SAND KING	Australia	Au	1980	Ops	Not known	Closed Mine	Minor	na	
SCHMITZ	Australia	Ni,Co,Cu	1980	Ops	Not known	Operating Mine	Moderate	517kt @ 4.89% Ni	25 kt Ni
VICTORY	Australia	Au	1980	Ops	Underground	Closed Mine	Major	11.2 mt @ 4.12g/t Au	1484 koz
WILGA	Australia	Cu,Pb,Zn	1980	ExDiv	Underground	Closed Mine	Moderate	na	
BLAIR	Australia	Ni,Co,Cu	1981	Ops	Both UG & OP	Past producer--under stud	Moderate	1091kt @ 3.27% Ni	36 kt Ni
MCCOMISH	Australia	Ni	1981	Ops	Not known	Closed Mine	Minor	na	
DEFIANCE	Australia	Au	1982	Ops	Open Pit	Closed Mine	Moderate	3406kt @ 3.25g/t Au	356 koz
ORCHIN	Australia	Au	1982	Ops	Open Pit	Closed Mine	Moderate	2467kt @ 3.07g/t Au	243 koz
CAVE ROCKS	Australia	Au	1983	Ops	Open Pit	Closed Mine	Moderate	1165kt @ 5.75g/t Au	215 koz
NIFTY CU MINE	Australia	Cu	1983	ExDiv	Open Pit	Operating Mine	Major	148.3mt @ 1.30% Cu	1928 kt Cu
NORTH ORCHIN	Australia	Au	1983	Ops	Open Pit	Closed Mine	Minor	231kt @ 3.41g/t Au	25 koz
ORION	Australia	Au	1983	Ops	Open Pit	Closed Mine	Minor	386kt @ 3.19 g/t Au	40 koz
GOODALL MINE	Australia	Au	1984	ExDiv	Open Pit	Closed Mine	Moderate	4404kt @ 2.39g/t Au	339 koz
NORTH ORCHIN EXT	Australia	Au	1984	Ops	Not known	Operating Mine	Minor	na	
JUNCTION	Australia	Au	1985	Ops	Both UG & OP	Operating Mine	Major	8441 @ 6.09g/t Au	1652 koz
POONA	Australia	Cu,Au	1985	ExDiv	Both UG & OP	Closed Mine	Minor	192kt @ 4.4%Cu + 1.6g/t Au	11 kt Cu-equiv
REDEEMER	Australia	Au	1985	ExDiv	Both UG & OP	Operating Mine	Major	24.5mt @ 4.66g/t Au	3671 koz
REVENGE	Australia	Au	1985	Ops	Both UG & OP	Closed Mine	Moderate	4267kt @ 4.23g/t Au	582 koz
BEASLEY CREEK	Australia	Au	1986	ExDiv	Open Pit	Closed Mine	Minor	na	
BRITANIA	Australia	Au	1986	Ops	Both UG & OP	Closed Mine	Moderate	882kt @ 9.30g/t Au	264 koz
LANCEFIELD DEEPS	Australia	Au	1986	Ops	Underground	Closed Mine	Moderate	na	
SCOTIA	Australia	Au	1986	Ops	Underground	Closed Mine	Moderate	845kt @ 5.83g/t Au	158 koz
THEIL WELL	Australia	Au	1986	Ops	Both UG & OP	Closed Mine	Minor	69kt @ 6.31g/t Au	14 koz
DELTA ISLAND	Australia	Au	1987	Ops	Open Pit	Closed Mine	Minor	792kt @ 2.32g/t Au	59 koz
JASPER HILLS	Australia	Au	1987	Ops	Not known	Advanced Exploration	Moderate	na	
JENIPAPO	Brazil	Au	1987	ExDiv	Open Pit	Closed Mine	Minor	301kt @ 9.35g/t Au	93 koz
SOUTH DELTA	Australia	Au	1987	Ops	Not known	Closed Mine	Minor	na	
YANDAN - SOUTH HILL	Australia	Au,Ag	1987	ExDiv	Open Pit	Closed Mine	Moderate	9451kt 2 1.59g/t Au	482 koz
ALVINHO	Brazil	Au	1988 ??	ExDiv	Open Pit	Closed Mine	Minor	9kt @ 6.92g/t Au	2 koz
CARRAPICHO	Brazil	Au	1988	ExDiv	Underground	Undeveloped Deposit	Minor	32kt @ 18.52g/t Au	19 koz

# MINERAL DISCOVERIES MADE BY WMC : 1955-2000

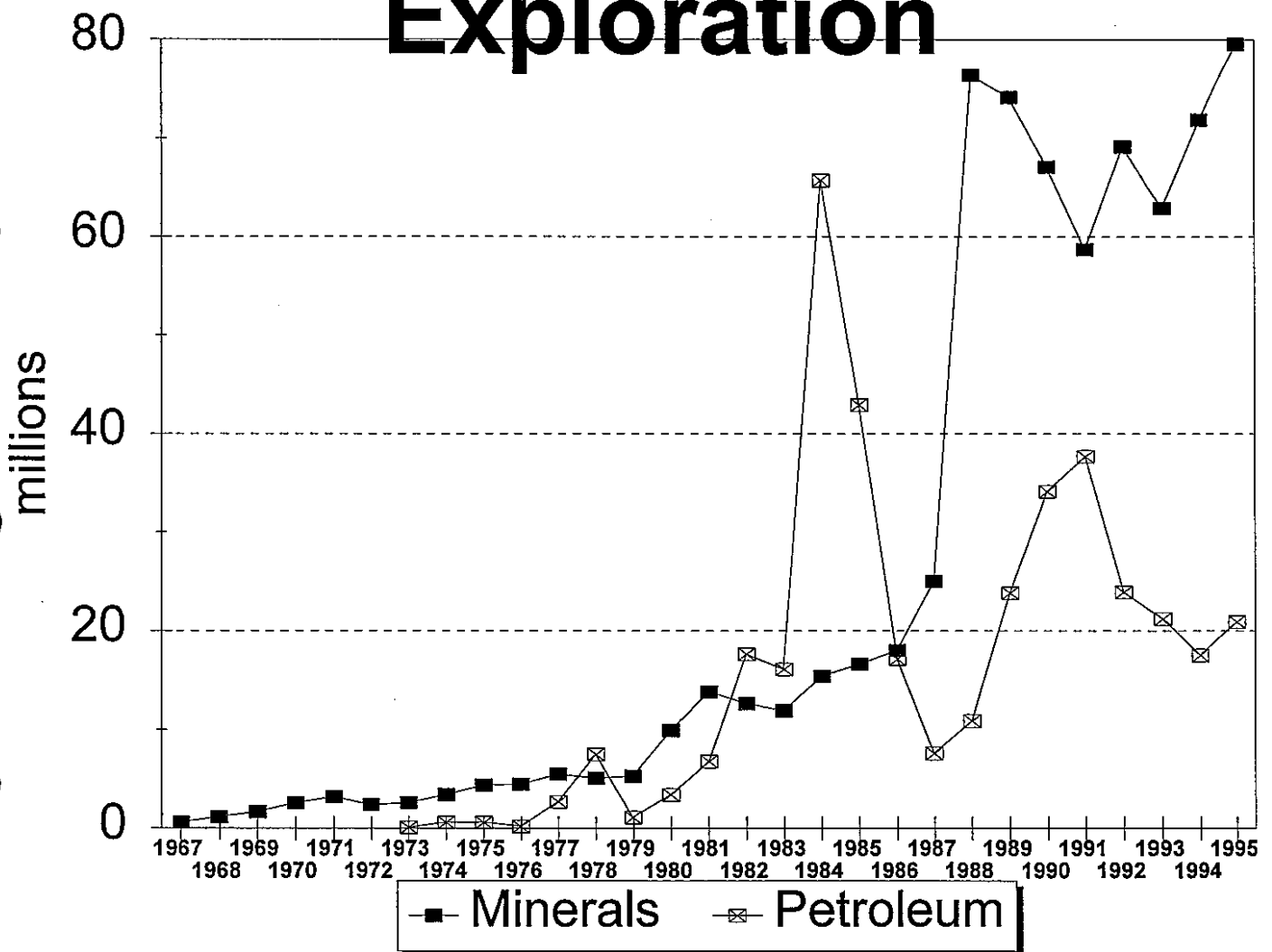
Deposit Name	Country	Metal	Discovery Year	Discovery Group	Mining Style	Current Status	Deposit Size	Pre-Mined Resource	Contained Metal
DELIVERER	Australia	Au	1988	ExDiv	Underground	Undeveloped Deposit	Minor	17kt @ 11.22g/t Au	6 koz
FERREIRA	Brazil	Au	1988 ??	ExDiv	Open Pit	Closed Mine	Minor	5kt @ 15g/t Au	3 koz
MINNIE MOXHAM	Australia	Au,Sb	1988	ExDiv	Both UG & OP	Undeveloped Deposit	Moderate	na	
NORTHCOTE	Australia	Au	1988	ExDiv	Open Pit	Advanced Exploration	Moderate	1238kt @ 3.41g/t Au	136 koz
PILGRIM	Australia	Au	1988	Ops	Not known	Undeveloped Deposit	Minor	128kt @ 6.44g/t Au	27 koz
RIO PRETO	Brazil	Au	1988	ExDiv	Underground	Undeveloped Deposit	Minor	68kt @ 4.86g/t Au	11 koz
SIRIUS	Australia	Au	1988	Ops	Open Pit	Closed Mine	Moderate	893kt @ 2.77g/t Au	80 koz
ZACARIUS	Brazil	Au	1988	ExDiv	Open Pit	Closed Mine	Minor	356kt @ 4.78 g/t Au	55 koz
JOAO	Brazil	Au	1989	ExDiv	Open Pit	Closed Mine	Minor	9kt @ 8.01g/t Au	2 koz
MARINERS	Australia	Ni,Co,Cu	1989	Ops	Underground	Care and Maintenance	Moderate	1255kt @ 3.27% Ni	41 kt Ni
MT DIMER	Australia	Au,Ag	1989	ExDiv	Both UG & OP	Past producer--under stud	Moderate	779kt @ 6.57g/t Au	165 koz
POSSE	Brazil	Au,Cu	1989	ExDiv	Open Pit	Operating Mine	Minor	794kt @ 2.18g/t Au	56 koz
BLUE LODGE	Australia	Au	1990	Ops	Open Pit	Closed Mine	Minor	337kt @ 3.21g/t Au	35 koz
BOOMER	Australia	Au	1990	Ops	Open Pit	Closed Mine	Moderate	na	
LIFEBOAT	Australia	Au	1990	Ops	Open Pit	Closed Mine	Minor	235kt @ 2.14g/t Au	16 koz
WALFORD CREEK PROSPECT	Australia	Pb,Zn,Ag	1990	ExDiv	Not known	Undeveloped Deposit	Minor	na	
ELEVEN BELLS	Australia	Au	1990 ??	ExDiv	Open Pit	Not Known	Minor	na	
ERNEST HENRY	Australia	Cu,Au	1991	ExDiv	Open Pit	Operating Mine	Major	179mt @ 1.11%Cu + 0.37g/t Au	2631 kt Cu-equiv
MIITEL	Australia	Ni,Cu,Co	1991	Ops	Not known	Operating Mine	Moderate	1143kt @ 3.67% Ni	42 kt Ni
THUNDERER	Australia	Au	1991	Ops	Open Pit	Undeveloped Deposit	Minor	530kt @ 3.36g/t Au	57 koz
THUNDERER EAST	Australia	Au	1991	Ops	Open Pit	Undeveloped Deposit	Minor	na	
WESTERN QUEEN	Australia	Au	1991	ExDiv	Both UG & OP	Operating Mine	Moderate	1220kt @ 2.75g/t Au	108 koz
VALFRIDO	Brazil	Au	1991	ExDiv	Open Pit	Undeveloped Deposit	Minor	163kt @ 3.69g/t Au	19 koz
VITAL	Brazil	Au	1991	ExDiv	Open Pit	Closed Mine	Minor	43kt @ 4.8g/t Au	7 koz
ANGELIM	Brazil	Au	1992	ExDiv	Open Pit	Closed Mine	Minor	1.4kt @ 8.77g/t Au	0 koz
BULLEN	Australia	Au	1992	Ops	Underground	Operating Mine	Moderate	476kt @ 18.33g/t Au	280 koz
INTREPIDE	Australia	Au	1992	Ops	Open Pit	Closed Mine	Moderate	4729kt @ 2.41g/t Au	367 koz
PROGRESS	Australia	Ni	1992	Ops	Underground	Undeveloped Deposit	Moderate	1320kt @ 3.0% Ni	40 kt Ni
TAMPAKAN	Philippines	Cu,Au	1992	ExDiv	Open Pit	Stalled-environmental / po	Giant	900mt @ 0.7% Cu + 0.3g/t Au	8100 kt Cu-equiv
APOLLO	Australia	Au	1993	Ops	Both UG & OP	Advanced Exploration	Minor	483kt @ 3.61g/t Au	56 koz
ARGO	Australia	Au	1993	Ops	Open Pit	Past producer--under stud	Moderate	5197kt @ 5.15g/t Au	861 koz
CORONET	Australia	Ni,Cu,Co	1993	Ops	Underground	Not Known	Moderate	589kt @ 2.93% Ni	17 kt Ni
LONE PINE	Australia	Au	1993	Ops	Not known	Not Known	Minor	na	
NAUTILUS	Australia	Au	1993	Ops	Not known	Prospect	Prospect	na	
REDOUTABLE	Australia	Au	1993	Ops	Open Pit	Closed Mine	Moderate	1364kt @ 3.03g/t Au	133 koz
BONSAI	Australia	Au	1993	ExDiv	Open Pit	Undeveloped Deposit	Minor	170kt @ 6.90g/t au	38 koz
FURIOSO	Chile	Au	1993	ExDiv	Open Pit	Closed Mine	Moderate	??	300 koz
BOA VISTA	Brazil	Ni,Cu	1994	ExDiv	Underground	Prospect	Minor	na	
HARLEQUIN	Australia	Au	1994	Ops	Underground	Operating Mine	Moderate	563kt @ 11.96g/t Au	216 koz

# MINERAL DISCOVERIES MADE BY WMC : 1955-2000

Deposit Name	Country	Metal	Discovery Year	Discovery Group	Mining Style	Current Status	Deposit Size	Pre-Mined Resource	Contained Metal
HELMUT	Australia	Ni, Co, Cu	1994	Ops	Underground	Operating Mine	Moderate	1578kt @ 2.35% Ni	37 kt Ni
WEST REVENGE	Australia	Au	1995	Ops	Open Pit	Undeveloped Deposit	Minor	150kt @ 2.90g/t Au	14 koz
AFRICA PALEO	Australia	Au	1996	Ops	Open Pit	Closed Mine	Minor	35kt @ 7.03 g/t Au	8 koz
LAVRINHA	Brazil	Au	1996	ExDiv	Open Pit	Closed Mine	Moderate	12000kt @ 0.95g/t Au	367 koz
LEVIATHAN	Australia	Au	1996	Ops	Open Pit	Operating Mine	Moderate	642kt @ 2.39g/t Au	49 koz
MELIADINE CAMP	Canada	Au	1996	ExDiv	Both UG & OP	Advanced Exploration	Giant	22.1mt @ 6.33g/t Au	4507 koz
SANTA ANA	Australia	Au	1996	Ops	Open Pit	Operating Mine ( unsure if	Moderate	1213kt @ 3.06g/t Au	119 koz
SERTAO	Brazil	Au	1996	ExDiv	Open pit	Operating Mine	Moderate	229kt @ 18.78g/t Au	138 koz
DIANA	Australia	Au	1997	Ops	Open Pit	Advanced Exploration	Minor	144kt @ 3.80g/t Au	18 koz
IRWIN HILLS	Australia	Ni, Co	1997	ExDiv	Open Pit	Advanced Exploration	Major	63mt @ 0.8% Ni	504 kt Ni
MARS	Australia	Au	1997	Ops	Open Pit	Feasibility Study	Minor	616kt @ 3.15g/t Au	62 koz
PINNACE	Australia	Au	1997	Ops	Open Pit	Closed Mine	Minor	201kt @ 2.79g/t Au	18 koz
MANAT	Philippines	Au	1997	ExDiv	Open Pit	Advanced Exploration	Moderate	??	272 koz
BAHAMA	Australia	Au	1998	Ops	Open Pit	Advanced Exploration	Minor	293kt @ 3.02g/t Au	28 koz
AGAMENMON	Australia	Au	1998	Ops	Open Pit	Feasibility Study	Minor	348kt @ 3.38g/t Au	38 koz
HARMONY	Australia	Ni	1998	Ops	Open Pit	Operating Mine	Major	9400kt @ 1.81% Ni	170 kt Ni
MINOTAUR	Australia	Au	1998	Ops	Open Pit	Feasibility Study	Minor	311kt @ 3.57g/t Au	36 koz
CARANA	Brazil	Au	1999	ExDiv	Open Pit	Undeveloped Deposit	Moderate	9000kt @ 0.5g/t Au	145 koz
FORMIDABLE	Australia	Au	1999	Ops	Open Pit	Advanced Exploration	Minor	665kt @ 2.04g/t Au	44 koz
MUNDA	Australia	Au	1999	Ops	Open Pit	Advanced Exploration	Minor	na	
PHOEBE	Australia	Au	1999	Ops	Both UG & OP	Advanced Exploration	Minor	313kt @ 3.09g/t Au	31 koz
PISTOL CLUB	Australia	Au	1999	Ops	Not known	Advanced Exploration	Minor	200kt @ 3.52g/t Au	23 koz
BASS	Australia	Au	2000	Ops	Open Pit	Advanced Exploration	Small Workings	na	
WEST MUSGRAVE	Australia	Ni, Cu, Co, PGE, ,	2000	ExDiv	Open Pit	Advanced Exploration	Giant	no resource published yet	
Total				138 discoveries excluding double counting on camps				Total GOLD	25568 koz
								Total NICKEL	3780 kt Ni
								Total COPPER	84970 kt Cu-equiv

Source: WMC Global Deposit Data Base Dec 2003

# Exploration



# EXPLORATION EXPENDITURE

## 1973 - 1991

YEAR	MINERAL								TOTAL MINERALS	PETROLEUM		TOTAL PETRL'M	CASH TOTAL EXPL'N	PROFIT TOTAL EXPL'N				
	GOLD		NICKEL		DIAMONDS		COPPER			BASE METALS					OTHER			
	AUST.	O/SEAS	AUST.	O/SEAS	AUST.	O/SEAS	AUST.	O/SEAS		AUST.	O/SEAS				AUST.	O/SEAS		
1973	0.0		1.5		0.0		0.0		1.1		0.0		2.6	0.1	0.0	0.1	2.7	2.2
1974	0.3		1.4		0.0		0.0		1.7		0.0		3.4	0.6	0.0	0.6	4.0	2.5
1975	0.8		2.0		0.0		0.0		1.4		0.2		4.4	0.6	0.0	0.6	5.0	4.1
1976	0.9		1.2		0.0		0.0		2.1		0.4		4.6	0.2	0.0	0.2	4.8	4.1
1977	0.3		1.8		0.0		0.0		3.1		0.3		5.5	2.7	0.0	2.7	8.2	4.1
1978	0.2		1.2		0.0		0.0		3.3		0.3		5.0	7.5	0.0	7.5	12.5	11.4
1979	0.6		0.2		0.0		0.0		4.3		0.2		5.3	1.1	0.0	1.1	6.4	4.8
1980	2.6		0.4		0.6		1.1		1.5		3.7		9.9	3.3	0.0	3.3	13.2	8.5
1981	6.4		0.8		0.9		2.1		1.8		1.8		13.8	6.8	0.0	6.8	20.6	10.2
1982	3.5		0.3		1.1		3.0		2.5		1.3		11.7	17.6	0.0	17.6	29.3	20.9
1983	3.6		0.5		0.9		2.5		2.5		0.9		10.9	16.1	0.0	16.1	27.0	20.5
1984	5.7		0.4		1.2		1.0		3.4		1.7		13.4	65.7	0.0	65.7	79.1	27.1
1985	8.5	0.2	0.3		1.3		3.5		2.3	0.3	0.2		16.6	42.9	0.0	42.9	59.5	46.0
1986	12.5	2.7	0.2		0.8		0.3		0.7		0.8		18.0	17.1	0.0	17.1	35.1	24.7
1987	15.4	1.8	0.4		1.6		3.4	1.9	0.3		0.2		25.0	4.9	2.7	7.6	32.6	23.5
1988	59.6	9.8	1.4		0.8	1.4	2.4		0.6		0.4		76.4	7.3	3.6	10.9	87.3	57.3
1989	29.8	29.6	1.0		0.9	6.1	2.9		0.3		0.0	3.6	74.2	23.8	0.0	23.8	98.0	63.8
1990	21.7	31.4	2.3		1.6	2.7	0.4	0.9	1.3		4.8		67.1	14.9	19.2	34.1	101.2	111.9
1991	28.5	17.0	9.2		1.0	1.3	1.4		0.0		3.6	3.2	65.2	20.4	28.0	48.4	113.6	119.8
Total	200.9	92.5	26.5	0.0	12.7	11.5	24.0	2.8	34.2	0.3	20.8	6.8	433.0	253.6	53.5	307.1	740.1	574.9

Note : 1985 Petroleum Exploration includes \$18.2m unrecovered Rig costs and \$4.8m for MESA Acquisition.  
1984 Petroleum Exploration includes \$40.0m for MESA Acquisition.  
1991 is the forecast as at January 1991.

TABLE A

EXPLORATION EXPENDITURE  
CAPITALISED IN BALANCE SHEET  
AS AT 31 DECEMBER 1990

	<u>\$ MILL</u>
Canadian Regional	30.5
Carson Hill	1.9
Hog Ranch	5.1
Denver Recon.	6.6
Reno Recon.	6.9
Camp Bird	21.0
Centurion	4.5
Callahan - US	2.3
Other - U.S.	1.2
Brazil	19.5
Gold - Aust minor projects	19.8
Nickel - LNO, KNO	2.8
Talc	0.8
Ex-Div Minerals (less Diamonds, Nifty)	63.2
CNGC gold	17.9
Chile	1.5
Liberia	10.3
Philippines	2.6
Hill 50 Gold	7.6
Goodall	3.4
Diamonds	4.6
Nifty & Throssel Range	24.2
Kingston	14.4
Miscellaneous	<u>3.7</u>
Total Minerals	<u>269.4</u>
 Greenhill	 27.8
Petroleum - Australia	118.9 ✕
Petroleum - Malaysia	<u>6.3</u>
Total Petroleum	<u>153.0</u>
  Total Exploration	  <u>422.4</u>





## GROUP HISTORICAL INFORMATION

Name: Exploration Division

Ref No. EXDIV - 20<sup>1</sup>

Compiled by: G M Ralph

Date: 13.11.95

Source: WMC Records

Page: 1 of 2

Subject: Annual Exploration Expenditure, 1934 to present

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The following tabulation is based on data collated in 1983 taken from Tax Returns for 1934 to 1969 and Annual Accounts from 1970 to 1983. Expenditure excludes that spent on producing mines, development projects, CNGC, BHS, QPL and MEPL to 21.6.83. Information from 1984 to present supplied by C Freskos, Corporate Accounting, Melbourne Office.

FINANCIAL YEAR	ANNUAL EXPENDITURE			CUMULATIVE EXPENDITURE		
	MINERALS \$000	PETROLEUM \$000	TOTAL \$000	MINERALS \$000	PETROLEUM \$000	TOTAL \$000
1934	133	-	133	133	-	133
35	129	-	129	262	-	262
36	64	-	64	326	-	326
37	8	-	8	334	-	334
38	37	-	37	371	-	371
39	21	-	21	392	-	392
1940	16	-	16	408	-	408
41	6	-	6	414	-	414
42	22	-	22	436	-	436
43	1	-	1	437	-	437
44	1	-	1	438	-	438
45	-	-	-	438	-	438
46	8	-	8	446	-	446
47	206	-	206	652	-	652
48	273	-	273	925	-	925
49	62	-	62	987	-	987
1950	59	-	59	1,046	-	1,046
51	18	-	18	1,064	-	1,064
52	4	-	4	1,068	-	1,068
53	6	-	6	1,074	-	1,074
54	17	-	17	1,091	-	1,091
55	77	-	77	1,168	-	1,168
56	20	-	20	1,188	-	1,188
57	12	-	12	1,200	-	1,200
58	31	-	31	1,231	-	1,231
59	68	-	68	1,299	-	1,299

60	37	-	37	1,336	-	1,336
1961	95	-	95	1,431	-	1,431
62	448	-	448	1,879	-	1,879
63	467	-	467	2,346	-	2,346
64	625	-	625	2,971	-	2,971
65	460	-	460	3,431	-	3,431
66	542	-	542	3,973	-	3,973
67	571	-	571	4,544	-	4,544
68	1,167	-	1,167	5,711	-	5,711
69	1,704	-	1,704	7,415	-	7,415
1970	2,552	-	2,552	9,967	-	9,967
71	3,220	-	3,220	13,187	-	13,187
72	2,442	-	2,442	15,629	-	15,629
73	2,589	95	2,684	18,218	95	18,313
74	3,435	610	4,045	21,653	705	22,358
75	4,405	634	5,039	26,058	1,339	27,397
76	4,546	220	4,766	30,604	1,559	32,163
77	5,532	2,715	8,247	36,136	4,274	40,410
78	5,064	7,471	12,535	41,200	11,745	52,945
79	5,326	1,093	6,419	46,526	12,838	59,364
1980	9,882	3,360	13,242	56,408	16,198	72,606
81	13,822	6,747	20,569	70,230	22,945	93,175
82	12,559	17,639	30,198	82,789	40,584	123,373
83	11,845	16,122	27,967	94,634	56,706	151,340
84	15,425	25,657 (A)	41,082	110,059	82,363 (A)	192,422
85	16,590	42,894	59,484	126,649	125,257	251,906
86	18,000	17,100	35,100	144,649	142,357	287,006
87	25,000	7,600	32,600	169,649	149,957	319,606
88	76,400	10,900	87,300	246,049	160,857	406,906
89	74,200	23,800	98,000	320,249	184,657	504,906
1990	67,100	34,100	101,200	387,349	218,757	606,106
91	58,700	37,700	96,400	446,049	256,457	702,506
92	69,100	23,900	93,000	515,149	280,357	795,506
93	62,900	21,200	84,100	578,049	301,557	879,606
94	71,900	17,500	89,100	649,949	319,057	969,006
95	79,600	20,900	100,500	729,549	339,957	1,069,506
96	105,000	14,800	119,800	834,549	354,757	1,189,306
97	107,500	4,300	111,800	942,049	359,057	1,301,106
98 (B)	149,500	-	149,500	1,091,549	359,057	1,450,606

(A) Excludes purchase of Mesa Aust Ltd - 40,054

(B) Covers 18 month period from July 1997 to Dec 1998

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ESTIMATES OF WMC'S

EXTRACORPORATE INVESTMENTS

1955-1988

IV

DAVID LEVY

August 1982



GROUP MEMORANDUM

ADELAIDE

To J.H. LALOR

Date AUGUST 31, 1982

From I.W. LEVY

Ref. IWL:KR

Subject WMC's EXPLORATION EXPENDITURES 1955-80

The accompanying booklet contains (in order):

1. The summary of actual exploration expenditures.
2. The summary of Ex-Div's accounts (raw totals) excluding joint venture income (recovery accounts).
3. Gold Mines of Australia (GMA) exploration expenditures (from tax records).
4. My compilation of total expenditure in the Kambalda region plus my conclusions on actual exploration expenditures.
5. A newspaper cutting listing WMC's exploration expenditures since 1935.
6. My compilation of WMC exploration expenditures on a project-by-project basis. (Adjustments made to the accounts are shown at the end of each year's data sheets where applicable).
7. GMA's data sheets.

METHOD USED

I allocated the expenditures into the chosen environments by advice from:

R. Woodall  
J. Lalor  
D. Reid  
F. Taylor

where necessary but found most assistance from a K-report by G.R. Hudson in which historical totals of expenditures to 29th June, 1976 were allocated into a similar set of exploration environments (K/2268).

At times, the accounts, cost codes and project names were in a mess, making my task hopeless. Fortunately, Don Reid's major summaries of cost code - project; project name-cost code and project name - location - commodity have broken most of these impasses.

I chose to ignore any joint venture incomes from JV partners. Such recovery accounts appear as negative amounts and would artificially depress the level of overall investment by WMC explorationists. I examined the details of many JV's

(e.g. Mt. Clements) and concluded that it is impossible to simply account for farm-in terms and equities earned. Therefore, JV's effects on our exploration efforts are ignored. Should a JV be successful (e.g. Carnilya Hill), the economic consequences are assessed by treating only WMC's equity-share of profits as a return on the exploration investment made.

For the final summary of expenditures, I excluded mine geology, evaluation and pre-development costs (estimated) and included my estimates of exploration in the Kambalda region (largely funded by KNO) which are being reviewed by KNO and Jim Ross at present.

#### ACTION

Could you select a year from the mid to late 1970's and examine the analysis. I would like to know if I have made any major errors in this compilation which will be the basis of further work.

*I.W. Levy:*

I.W. LEVY  
Senior Geologist - Commercial

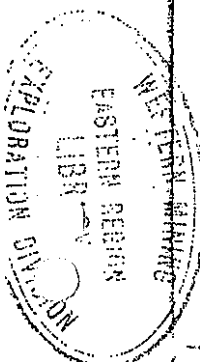
# WMC EXPLORATION EXPENDITURES

EXCLUDING EVALUATION AND MINE COSTS BUT ADDING KAMBALOA GRASS ROOTS EXPLORATION

EXPENDITURES FROM ALL SOURCES (Including JV Partners and KNO)

YEAR	LODE GOLD	NIS	ABM	P+BM	Pa BM	LODE TIN	OIL & GAS	TOTAL
Year to 31 Mar								
1955	9,653	0	828	1099	0	0	2838	77,242
6	9,812	2,500	130	608	0	2124	202	19,584
7	8,632	0	1174	0	0	0	(304)	11,532
8	5,588	0	236	14,870	0	0	0	30,514
9	11,514	0	207	34,392	0	0	0	68,464
1960	4,456	0	0	19,524	0	0	0	36,876
1	18,089	0	1,217	24	0	0	0	94,562
2	17,388	0	1,697	0	0	0	0	298,428
3	50,419	0	2,363	0	0	0	0	175,536
4	421,541	0	14,125	89,646	0	11,238	0	581,090
5	185,562	1,930	20,237	135,983	866	(1,352)	0	357,132
15 mths to 30 Jun								
1966	125,860	140,496	41,740	139,417	4,075	3,806	0	560,369
Year to 30 Jun								
1967	89,458	331,549	41,087	240,977	15,255	(3,806)	0	783,340
8	7,807	683,476	215,492	515,785	46,034	0	0	1,517,801
9	1,700	1,298,576	146,172	466,767	75,309	0	0	2,118,440
1970	5,037	1,458,422	243,973	464,892	88,191	300	0	2,817,837
1	11,500	1,596,265	328,941	522,243	140,420	0	0	3,745,953
2	42,503	1,325,579	216,124	89,563	316,794	0	0	3,874,021
3	29,681	1,565,347	734,300	69,713	274,986	1,020	0	3,543,861
4	295,268	2,303,098	780,583	298,966	583,310	33,427	12,916	4,595,077
5	794,204	1,866,143	621,472	230,175	478,605	167,440	(4,178)	4,901,626
6	858,196	1,149,762	492,180	770,730	840,227	374,067	261,351	5,355,043
7	309,532	1,203,972	743,464	1,116,373	853,166	285,664	2,703,712	7,884,692
8	189,128	1,379,044	671,043	1,013,435	1,054,420	161,607	7,489,639	12,859,502
9	511,600	1,051,778	535,196	685,993	728,120	116,438	1,003,360	5,507,560
1980	1,581,231	1,259,089	679,950	2,260,920	1,078,925	284,937	3,360,400	12,348,468

Jan Sen, Aug 1980



# TWO MAJOR PROJECTS NOT MANAGED BY WMC

## FRASER RANGE - WMC 1/9 TH EQUITY

<u>YEAR</u>	<u>WMC</u>		<u>PROJECT</u>	
	<u>NIS</u>	<u>PRBM</u>	<u>NIS</u>	<u>PRBM</u>
1965/66	16,033		144,297	
/67	23,476	4,143	211,284	37,287
/68	30,460		274,140	
/69	37,400		336,600	
/70	54,121		487,089	
/71	39,545		355,905	
/72	(63)		-	
/73	(712)		-	

## MOONTA - WALLAROO JOINT VENTURE

Pro. Base Me

WESTERN MINING - NORTH BROWN HILL - BROWN HILL SOUTH

<u>DATES</u>	<u>DECLARED WMC</u>		<u>ACCREDITED WMC</u>		<u>WMC</u>	<u>ACCREDITED TOTAL</u>	
	<u>EXPENDITURES</u>		<u>EXPENDITURE</u>		<u>EQUITY</u>	<u>PROJECT EXPENDITURE</u>	
	<u>SPENT</u>	<u>CUMULATIVE</u>	<u>SPENT</u>	<u>CUMULATIVE</u>	<u>%</u>	<u>SPENT</u>	<u>CUMULATIVE</u>
31/3/63-31/3/64	88,850	88,850	124,000	124,000	50	248,000	248,000
-31/3/65	135,116	223,966	24,000	148,000	50	48,000	296,000
31/3/65 - 30/6/66	121,513	345,479	112,500	260,500	50		
-30/6/67	91,092	436,571	154,984	415,484	50		
-30/6/68	85,244	521,815	307,511	723,000	50	1,130,000	
-30/6/69	77,191	599,006	26,947	749,947	50		
-30/6/70	77,081	676,087	0	749,947	50		1,426,000
30/6/70 - 31/12/70	79,134	755,221	0	749,947	50	73,894	1,499,894
31/12/70 - 31/3/71	0	755,221	0	749,947	47.04	92,683	1,592,577
31/3/71 - 30/6/72	(2,907)	752,314	0	749,947	40.88	241,917	1,834,494
-30/6/73	0	752,314	0	749,947	36.31	230,928	2,065,422
-30/6/74	0	752,314	0	749,947	30.98	355,667	2,421,089
-30/6/75	(5,675)	746,639	0	749,947	25.82	482,911	2,904,000
30/6/75 - 15/3/76	0	746,639	0	749,947	25.00	95,787	2,999,787
15/3/76 - 30/6/76	30,572 <sup>2</sup>	777,211	26,353	776,300	25.25	89,599	3,089,386
-30/6/77	7,221 <sup>3</sup>	784,432	16,294	792,594	24.42	120,410	3,209,796
-30/6/78	(5,103) <sup>4</sup>	779,329	0	792,594	22.88	115,599	3,325,395
-30/6/79	(455)	778,874	0	792,594	21.62	106,111	3,431,506
-30/6/80	201 <sup>5</sup>	779,075	0	792,594	18.09	377,109	3,808,615
-30/6/81	?	779,075	0	792,594	17.67	55,371	3,863,986
30/6/81 - 31/12/81	?	779,075	0	792,594	17.57	13,387	3,877,373

Initial equity was WMC (50%), NBH (20%) and BHS (30%).

WMC was manager until 31/12/70 when NBH assumed managerial control.

1. By this point, equity relationships were: NBH (60%), WMC (50%), BHS (15%). A new agreement deemed that each actual \$ expended would be treated as \$2 for equity calculations. Only actual \$ are recorded here.

2. Includes \$1,029 of "WMC Only" expenditure.

3. Includes \$7,134 of "WMC Only" expenditure.

As published in The Australian Financial Review

3.8.79

## WMC EXPLORATION EXPENDITURE

Year ended March 31:	WMC Net Profit (A) £	WMC Exploration Expenditure (B) £	Exploration Costs as Percentage of Profit
1935	(9,655)	167,875	—
1936	(3,967)	28,058	—
1937	13,245	3,994	29.7
1938	41,050	25,100	61.1
1939	42,958	22,211	51.7
1940	26,431	22,456	85.0
1941	6,762	3,298	48.8
1942	18,771	10,761	57.3
1943	68,505	475	0.7
1944	96,858	389	0.4
1945	47,652	202	0.4
1946	31,388	4,154	13.2
1947	89,996	103,176	114.6
1948	93,693	136,272	145.4
1949	271,345	30,946	11.4
1950	154,204	30,000	19.5
1951	101,611	9,000	8.9
1952	73,906	1,750	2.4
1953	189,255	2,750	1.5
1954	247,976	8,500	3.4
1955	214,567	38,500	17.9
1956	291,536	10,000	3.4
1957	242,059	5,750	2.4
1958	259,970	15,250	5.9
1959	308,444	52,750	17.1
1960	255,380	59,500	23.3
1961	297,568	122,500	41.2
1962	270,461	260,000	96.1
1963	278,667	235,000	84.3
1964	313,630	312,500	99.6
	\$	\$	
1965	482,324	460,000	95.4
15 months ended June 30:			
1966	808,847	542,000	67.0
1967	904,439	571,000	63.1
1968	2,265,035	1,507,000	66.5
1969	2,657,800	2,202,000	82.9
1970	14,298,000	2,840,000	19.9
1971	21,505,000	3,220,000	15.0
1972	13,046,000	3,145,000	24.1
1973	16,580,000	2,705,000	16.3
1974	14,421,000	4,431,000	28.6
1975	14,416,000	5,194,000	36.0
1976	11,790,000	4,854,000	41.2
1977	22,096,000	8,312,000	37.6
1978	10,092,000	12,751,000	126.3





As published in The Australian Financial Review

3.8.79

### WMC EXPLORATION EXPENDITURE

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1940	26,431	22,456	85.0
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1944	96,858	389	0.4
1945	47,652	202	0.4
1946	31,388	4,154	13.2
1947	89,996	103,176	114.6
1948	93,693	136,272	145.4
1949	271,345	30,946	11.4
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1953	189,255	2,750	1.5
1954	247,976	8,500	3.4
1955	214,567	38,500	17.9
1956	291,536	10,000	3.4
1957	242,059	5,750	2.4
1958	259,970	15,250	5.9
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1960	255,380	59,500	23.3
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1965	\$ 482,324	\$ 460,000	95.4
15 months ended June 30:			
1966	808,847	542,000	67.0
1967	904,439	571,000	63.1
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1970	14,298,000	2,840,000	19.9
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1974	14,421,000	4,331,000	28.6
1975	14,416,000	5,194,000	36.0
1976	11,790,000	4,854,000	41.2
1977	22,096,000	8,313,000	37.6
1978	10,092,000	12,751,000	126.3

Source: Unknown.

# WMC EXPLORATION EXPENDITURES

RAW TOTALS FROM TAX STATEMENTS (1955-72) AND COST SHEETS

YEAR	LODE GOLD	NIS	ABM	P <sub>r</sub> BM	P <sub>a</sub> BM	LODE TIN	OIL & GAS	TOTAL
Year to 31 Mar								
1955	9,653	0	828	1099	0	0	2,838	77,242
6	9,812	2,500	130	608	0	2124	202	19,584
7	8,632	0	1174	0	0	0	(304)	11,532
8	5,588	0	236	14,870	0	0	0	30,514
9	11,514	0	207	34,392	0	0	0	68,4
1960	4,456	0	0	19,524	0	0	0	36,876
1	18,089	0	1,217	24	0	0	0	94,562
2	17,388	0	1,697	0	0	0	0	448,428
3	50,419	0	2,363	0	0	0	0	467,398
4	421,541	0	14,125	89,646	0	11,238	0	624,604
5	187,808	3,280	19,887	135,983	866	(1,352)	0	365,150
15 mths to 30 Jun								
1966	132,004	40,496	41,740	151,686	4,075	3,806	0	554,769
Year to 30 Jun								
1967	89,458	93,549	41,087	233,040	15,255	(3,806)	0	555,946
8	7,807	1,428,912	215,492	515,785	46,034	0	0	2,277,257
9	1,700	2,839,364	146,172	466,767	75,309	0	0	3,701,007
1970	5,037	3,186,014	243,973	464,892	88,191	0	0	4,573
1	6,500	3,300,551	328,941	522,243	140,420	0	0	5,660,216
2	32,503	2,954,991	210,124	89,563	316,794	0	0	5,650,025
3	147,282	1,904,489	724,300	69,713	274,986	1,020	0	4,537,479
4	554,262	2,515,688	770,583	298,966	583,310	33,427	12,916	5,169,576
5	1,076,446	2,475,005	725,731	230,175	478,605	167,440	(4,178)	6,165,823
6	1,064,657	1,528,200	518,717	770,730	840,227	374,067	261,351	6,315,320
7	389,356	1,061,260	774,638	1,428,109	853,166	389,576	2,703,712	8,547,734
8	185,071	1,097,072	671,043	1,522,680	1,054,420	318,163	7,489,639	13,567,401
9	875,021	690,263	535,196	2,306,093	1,495,317	218,731	1,093,360	8,577,065
1980	2,379,438	848,324	659,950	3,399,393	2,417,776	365,469	3,360,400	18,028,958

Jan Long, Aug

# G.M.A. EXPLORATION EXPENDITURES

TOTALS FROM TAX STATEMENTS.

YEAR	LODE GOLD	NIS	ABM	P+BM	Pa BM	LODE TIN	OIL & GAS	TOTAL
Year to 31 Mar								
1955	6,488	0	0	0	0	4	1,718	29,068
6	9,012	0	0	0	0	188	0	9,438
7	61,280	0	0	0	0	238	306	62,104
8	23,390	0	0	0	0	0	0	23,662
9	19,400	0	0	0	0	0	0	19,400
<del>1960</del>		No Records Found (Company Ceased Operations)						
1								
2								
3								
4								
5								
15 mths to 30 Jun								
1966								
Year to 30 Jun								
1967								
8								
9								
1970								
1								
2								
3								
4								
5								
6								
7								
8								
9								
1980								

Jan Lang, Aug 12



# WESTERN MINING CORPORATION LIMITED

## TURNOVER STATISTICS - AUSTRALIA

QUARTER ENDED SEPTEMBER 1992

102

NOTE: All percentage turnover figures are annualised (i.e. multiplied by 4)

ALL EMPLOYEES				
Employee Classification	This Quarter		Four Quarter Moving Average	
	Number of Terminations	Annualized Turnover	Number of Terminations	Annualized Turnover
Executives	0	0.0%	5	9.0%
Senior Staff/Managerial	12	11.0%	29	6.7%
Unclassified/Professional	2	2.9%	20	7.7%
Junior Professional	5	9.6%	52	23.5%
Supervisors				
- U/Ground	2	5.5%	23	15.0%
- Other	8	11.9%	24	9.0%
Semi-Professional	13	13.9%	63	16.7%
Clerical	20	15.4%	69	13.2%
<b>TOTAL NON-WAGE EMPLOYEES</b>	<b>62</b>	<b>10.8%</b>	<b>285</b>	<b>12.5%</b>
WAGE	124	22.5%	774	34.3%
<b>TOTAL WMC EMPLOYEES</b>	<b>186</b>	<b>16.6%</b>	<b>1,059</b>	<b>23.3%</b>
PROFESSIONAL STAFF				
Accountants	3	10.9%	17	15.0%
Chemists	1	14.8%	2	7.1%
EDP	0	0.0%	5	5.1%
Engineers	2	7.3%	8	7.3%
Geoscientists	4	8.7%	18	9.8%
Metallurgists	2	9.6%	10	12.2%
Mining Engineers	0	0.0%	9	11.7%
Finance/Marketing	1	13.3%	2	6.7%
Other	6	9.0%	35	14.3%
<b>TOTAL PROF. STAFF</b>	<b>19</b>	<b>7.7%</b>	<b>106</b>	<b>11.0%</b>

**WMC GROUP EMPLOYEES & CONTRACTORS 1981-2000**

Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Corporate & Gen Admin	220	220	210	250	250	240	290	400	270	300	279	286	321	352				83	65	
WES											76	98	163	183						
Perth Office															264					
Corporate Services															213	249	299	105	169	
Exploration (incl Pet to 1988)	370	320	250	360	380	360	380	580	345	289	305	288	292	295	312	469	411	232	207	
Petroleum Exp & Prod - Aus									78	82	103	101	98	85	89	105	1			
Petroleum Exp & Prod - USA									27	157	210	219	178	155	125	122				
Gold	1120	1270									627				798	876	529	398	345	
Gold - Australia								1110	970	1080										
Gold - Fiji								1360	1360	1325	194									
Gold -Canada								990	690	643										
Gold - USA								100	170	94										
Gold - Brazil									270	327										
WMC Americas											980	724	343	351	310	44	26	24		
Western (non-nickel)			1420	1520	1540	1550	1600													
Eastern (incl VJV)			1280	1410	1400	1470	1730					172								
WA - Gold, Copper & Talc												663	734	1007						
Talc																47	36			
Nickel	2650	2700	2680	2670	2710	2380	2270	1950	2140	2041	2097	1956	1774	1532	1641	1835	1319	1150	1078	
Copper-Uranium								510	610	643	642	631	623	688	780	839	823	981	1011	
Fertilizers									142	154	104	124	112	128	178	213	188			
Ind Minerals & Fert																		240	374	
Projects & Other Ops	340	280	260							94					36					
Shared Services																		94	105	
Projects & Eng																45	86	89	60	
Other Operations									78		154	76	66	69		43	98	12		
Alumina & Ind Minerals															54	58	44			
<b>Total WMC</b>	<b>4700</b>	<b>4790</b>	<b>6100</b>	<b>6210</b>	<b>6280</b>	<b>6000</b>	<b>6270</b>	<b>7000</b>	<b>7150</b>	<b>7229</b>	<b>5771</b>	<b>5338</b>	<b>4704</b>	<b>4845</b>	<b>4800</b>	<b>4945</b>	<b>3860</b>	<b>3408</b>	<b>3414</b>	<b>3483</b>
Contractors								1710	2390	2301	1722	1451	1639	1849	2085	2280	2784	2133	1729	1729
<b>TOTAL WMC &amp; CONTR.</b>								<b>8710</b>	<b>9540</b>	<b>9530</b>	<b>7493</b>	<b>6789</b>	<b>6343</b>	<b>6694</b>	<b>6885</b>	<b>7225</b>	<b>6644</b>	<b>5541</b>	<b>5143</b>	<b>5212</b>

# APPENDIX IX ACRONYMS

## WMC GROUP HISTORICAL INFORMATION COLLECTION INDEX TO ENTITIES - BY ACRONYM

Acronym	Name of Entity
ACM	Australian Consolidated Minerals Ltd
AGM	Atlas Gold Mines NL
AGO	Agnew Gold Operations
ALCOA	Alcoa of Australia Limited
AUSTRAL	Austral Development Ltd
AWA	Alcoa World Alumina
BELMONT	Belmont Office
BGP	Bendigo Gold Project
BHS	Broken Hill South Limited
BJV	Benambra Joint Venture
BLNL	Berry Leads No Liability
BLP	Bulong Laterite Project
BML	Bendigo Mines Limited
BNP	Bulong Nickel Project
BPL	Boulder Perseverance Ltd
CFM	Cox's Find Mine
CHN	Carson Hill Operations
CHPL	Corner House Pty Ltd
CMI	Chibougamau Mines
CMNL	Carshalton (BML) Mines, NL
CNGC	Central Norseman Gold Corporation Limited
CNM	Central Norseman Minerals NL
CONEX	Consolidated Exploration Ltd
COSM	Cosmopolitan Mines NL
CPL	Comstaff
CSNL	Champagne Syndicate NL
CUBA	Cuban Joint Venture
CVDC	Central Victoria Dredging Co, NL
CYGM	Central Yellowdine Gold Mines NL
DIR.RES	Directors' Residence
DMNL	Derby (BML) Mines Ltd
EGM	Emperor Gold Mining Co.
ENT	Enterprise Gold Mines NL
ESNL	Exploration Syndicate Pty Ltd
EXDIV	Exploration Division
FIJI	WMC (FIJI) Pty Ltd
GBG	Great Bendigo Goldfields Ltd
GBH	Great Boulder Holdings Ltd
GBM	Great Boulder Mines
GBP	Great Boulder Proprietary Gold Mines Limited
GEFCA	Gold Exploration & Finance Co of Australia Ltd



GGP	Goodall Gold Project
GGT	Goldfields Gas Transmission Pty Ltd
GMA	Gold Mines of Australia Limited
GMK	Gold Mines of Kalgoorlie Ltd
GOJV	Geraldton Operations Joint Venture
GPC	Greenhill Petroleum Corporation
GWC	Great Western Consolidated NL
H50	Hill 50 gold Mine, NL
HCA	Hail Creek Associates
HFPL	Hi-Fert Pty Ltd
JGP	Jenipapo Gold Project
KALGOFF	Kalgoorlie Offices
KAMGO	Kambalda Gold Operations
KGO	Kalgoorlie Gold Operations
KLP	Kingston Lignite Project
KLV	Kalgoorlie Lake View Pty Ltd
KMA	Kalgoorlie Mining Associates
KNM	Kambalda Nickel Mines
KNO	Kambalda Nickel Operations
KNR	Kwinana Nickel Refinery
KNS	Kalgoorlie Nickel Smelter
KOT	Kalgoorlie Ore Treatment Co, Ltd
KSGM	Kalgoorlie Southern Gold Mines, NL
LANC	Lancefield Gold Operations
LGD	Leonora Gold Development Pty Ltd
LGO	Leinster Gold Operations
LNO	Leinster Nickel Operations
LRC	Laterite Research Company
LVS	Lake View and Star Limited
LVSTH	Lake View South (GMK) Ltd
MBGM	Mount Boppy Gold Mines Pty Ltd
MCGM	Mount Coolon Gold Mines NL
MCPL	Mines Consultants Pty Ltd
MEL	Melbourne Office
MKO	Mount Keith Operations
MRGP	Mara Rosa Gold Project
MSM	Morning Star (GMA) Mines NL
NBGM	North Boulder (KALG) Gold Mine NL
NCGM	New Coolgardie Gold Mines NL
NCO	Nifty Copper Operations
NGMNL	Nell Gwynne (BML) Mines NL
NiDIV	Nickel Division
NMNL	Mapoleon (BML) Mines NL
ODO	Olympic Dam Operations
PDA	Petroleum Division (Australia)
PME	Paringa Mining & Exploration Company Limited

PMNL	Phoenix Mines NL
QPL	Queensland Phosphate Limited
SEA	Seabright Operations
SIGM	St Ives Gold Mines
SJV	Stawell Joint Venture
TASPET	Tasman Petroleum Ltd
TCP	Tampakan Copper Project
TGM	Triton Gold Mines NL
TITAN	Titanium Project
TJVP	Tarnagulla Joint Venture Project
TST	Three Springs Talc
VGDC	Victoria Gold Dredging Co NL
VJV	Vatukoula Joint Venture
WANL	Western Aluminium NL
WES	WMC Engineering Services Pty Ltd
WEX	Western Exploration Pty Ltd
WFERT	WMC Fertilizers Ltd
WGM	Western Gold Mines NL
WHR	Western Hog Ranch
WM	Westmentor Pty Ltd
WMC	WMC Limited
WML	WMC Mineracao Limitada
WMS	WMC Mineral Sands Limited
WNP	Windarra Nickel Project
WVC	Western Venture Capital Inc
YGP	Yandan Gold Project
YQG	Yilgangie Queen Gold Mine
YUP	Yeelirrie Uranium Project
ZGP	Zarmitan Gold Project

**WMC GROUP HISTORICAL INFORMATION COLLECTION**  
**INDEX TO ENTITIES - BY NAME**

<b>Name of Entity</b>	<b>Acronym</b>
Agnew Gold Operations	AGO
Alcoa of Australia Limited	ALCOA
Alcoa World Alumina	AWA
Atlas Gold Mines NL	AGM
Austral Development Ltd	AUSTRAL
Australian Consolidated Minerals Ltd	ACM
Belmont Office	BELMONT
Benambra Joint Venture	BJV
Bendigo Gold Project	BGP
Bendigo Mines Limited	BML
Berry Leads No Liability	BLNL
Boulder Perseverance Ltd	BPL
Broken Hill South Limited	BHS
Bulong Laterite Project	BLP
Bulong Nickel Project	BNP
Carshalton (BML) Mines, NL	CMNL
Carson Hill Operations	CHN
Central Norseman Gold Corporation Limited	CNGC
Central Norseman Minerals NL	CNM
Central Victoria Dredging Co, NL	CVDC
Central Yellowdine Gold Mines NL	CYGM
Champagne Syndicate NL	CSNL
Chibougamau Mines	CMI
Comstaff	CPL
Consolidated Exploration Ltd	CONEX
Corner House Pty Ltd	CHPL
Corridor Sands Ltd	CSL
Cosmopolitan Mines NL	COSM
Cox's Find Mine	CFM
Cuban Joint Venture	CUBA
Derby (BML) Mines Ltd	DMNL
Directors' Residence	DIR.RES
Emperor Gold Mining Co.	EGM
Enterprise Gold Mines NL	ENT
Exploration Division	EXDIV
Exploration Syndicate Pty Ltd	ESNL
Geraldton Operations Joint Venture	GOJV
Gold Exploration & Finance Co of Australia Ltd	GEFCA

Gold Mines of Australia Limited	GMA
Gold Mines of Kalgoorlie Ltd	GMK
Goldfields Gas Transmission Pty Ltd	GGT
Goodall Gold Project	GGP
Great Bendigo Goldfields Ltd	GBG
Great Boulder Holdings Ltd	GBH
Great Boulder Mines	GBM
Great Boulder Proprietary Gold Mines Limited	GBP
Great Western Consolidated NL	GWC
Greenhill Petroleum Corporation	GPC
Hail Creek Associates	HCA
Haoma Ltd	HAO
Hi-Fert Pty Ltd	HFPL
Hill 50 Gold Mine, NL	H50
Jenipapo Gold Project	JGP
Kalgoorlie Gold Operations	KGO
Kalgoorlie Lake View Pty Ltd	KLV
Kalgoorlie Mining Associates	KMA
Kalgoorlie Nickel Smelter	KNS
Kalgoorlie Offices	KALGOFF
Kalgoorlie Ore Treatment Co, Ltd	KOT
Kalgoorlie Southern Gold Mines, NL	KSGM
Kambalda Gold Operations	KAMGO
Kambalda Nickel Mines	KNM
Kambalda Nickel Operations	KNO
Kingston Lignite Project	KLP
Kwinana Nickel Refinery	KNR
Lake View and Star Limited	LVS
Lake View South (GMK) Ltd	LVSTH
Lancefield Gold Operations	LANC
Laterite Research Company	LRC
Leinster Gold Operations	LGO
Leinster Nickel Operations	LNO
Leonora Gold Development Pty Ltd	LGD
Mara Rosa Gold Project	MRGP
Melbourne Office	MEL
Mines Consultants Pty Ltd	MCPL
Morning Star (GMA) Mines NL	MSM
Mount Boppy Gold Mines Pty Ltd	MBGM
Mount Coolon Gold Mines NL	MCGM
Mount Keith Operations	MKO
Napoleon (BML) Mines NL	NMNL

Nell Gwynne (BML) Mines NL	NGMNL
New Coolgardie Gold Mines NL	NCGM
Nickel Division	NiDIV
Nifty Copper Operations	NCO
Olympic Dam Operations	ODO
Petroleum Division (Australia)	PDA
Phoenix Mines NL	PMNL
Queensland Phosphate Limited	QPL
Seabright Operations	SEA
St Ives Gold Mines	SIGM
Stawell Joint Venture	SJV
Stillwater Chromium Project	SCP
Tampakan Copper Project	TCP
Tarnagulla Joint Venture Project	TJVP
Tasman Petroleum Ltd	TASPET
Three Springs Talc	TST
Titanium Project	TITAN
Triton Gold Mines NL	TGM
Vatukoula Joint Venture	VJV
Victoria Gold Dredging Co NL	VGDC
Western Aluminium NL	WANL
Western Exploration Pty Ltd	WEX
Western Gold Mines NL	WGM
Western Hog Ranch	WHR
Western Venture Capital Inc	WVC
Westmentor Pty Ltd	WM
Windarra Nickel Project	WNP
WMC (FIJI) Pty Ltd	FIJI
WMC Engineering Services Pty Ltd	WES
WMC Fertilizers Ltd	WFERT
WMC Limited	WMC
WMC Mineracao Limitada	WML
WMC Mineral Sands Limited	WMS
Yandan Gold Project	YGP
Yeelirrie Uranium Project	YUP
Yilgange Queen Gold Mine	YQG
Zarmitan Gold Project	ZGP

## WMC SENIOR MANAGEMENT - 1970

The following list of senior management in WMC in 1970 was collated partly from memory and partly from Departmental records currently available. It shows the three/four levels of management reporting to the Managing Director at the time.

G M Ralph  
9 August 2000

### **Managing Director, *Bill Morgan***

#### **Deputy Managing Director, *Arvi Parbo***

*Melbourne Office*

##### **Secretary and Administrative Controller, *Kevin Larsen***

Group Taxation Officer, *Ken H Higgs*

Group Legal Officer, *John O James*

Staff Accountant, *Len Whitby*

Asst Secretary, *Lou C Jacobs*

##### **Financial Controller, *Harold S Amos***

Group Accountant, *Keith H Allen*

##### **General Manager Commercial, *Douglas P McIntyre***

Manager Metal Sales, *Robert W Allard*

Manager Fertilizer Sales, *David Berry*

Commercial Officer - Ores & Concentrates, *W H (Bill) Cunningham*

### **Executive Director - WA, *L C 'Brodie' Brodie-Hall***

#### **General Manager - WA, *E D J (Doug) Stewart***

*Perth Office*

##### **Chief Administrative Officer - WA, *Keith D Aird***

Legal Officer - Perth, *S J Colin Wise*

Chief Accountant - WA, *R F Hutt*

Group Personnel Officer, *Merv Hennessey?*

Group Insurance Officer, *Robert Horton*

Public Relations Officer, *Robert B Gude*

##### **Chief Engineer, *John C Hill***

Asst Chief Engineer, *Stan A Eyers*

##### **Manager Planning & Development, *Ken E Denham***

##### **Group Consultant Metallurgist, *Colin M Kleemann***

Chief Metallurgist, *Ron F Blanks*

*Operations*

##### **Exploration Manager & Chief Geologist, *Roy Woodall***

Res Mgr - Kambalda Nickel Operations, *John B Oliver*

Res Mgr - Kalgoorlie Nickel Smelter, *CJ D (Ned) Williams*

Res Mgr - Kwinana Nickel Refinery, *Allan J Gittos*

Res Mgr - Gold Mines of Kalgoorlie, *Gordon F V Anderson*

Res Mgr - Central Norseman Gold Corp, *Lawrie E Quan*

Res Mgr - Geraldton Operations Joint Venture, *F E (Pat) Gray*

Manager - Three Springs Talc, *Patrick N Johnston*

Metallurgical Supt, *George G Botica*  
 Asst Mill Supt, *Don J Head*  
 Exploration Geologist, *Geoff D Loftus-Hills*  
**Res Mgr, Kalgoorlie Nickel Smelter, C J D (Ned) Williams**  
 Metallurgical Supt, *Peter Miller*  
 Chief Engineer, *Doug A Marshall*  
 Admin Supt, *Charlie W Hastie*  
**Res Mgr, Kwinana Nickel Refinery, John K Copping**  
 Asst Resident Manager, *R W (Bob) Bourne*  
 Technical Supt, *A Dean Giles*  
 Maintenance Engineer, *Arthur C Dodd*  
**Res Mgr, Windarra Nickel Project, Robert H Floyd**  
 Mining Engineer, *Dick Hoskins*  
 Metallurgical Supt, *K J Sangster*  
 Chief Engineer, *John S Willis*  
 Admin Mgr, *Kel K Webster*  
 Accountant, *Duncan M Campbell*  
*Gold Operations*  
**Res Mgr, Central Norseman Gold Corp, Lawrie Quan**  
 Acting Res Mgr, *E John Lea*  
 Mine Supt, *Joe L Denison*  
 Snr U/G Manager, *Greg Robertson*  
 U/G Manager, *Bob H Poole*  
 U/G Manager, *Merv Goode*  
 Mill Supt, *W R (Bill) Lethlean*  
 Accountant, *G C Hart*  
**Gen Mgr, Kalgoorlie Lake View, Jack Manners**  
 Operations Manager, *N R (Dick) Hooker*  
 Mill Supt, *Peter Willcocks*  
 Mine Supt, *Jack C McDermott*  
 Chief Accountant, *Brian F Best*  
*Other Operations*  
**Manager, Three Springs Talc, Pat N Johnston**  
**Gen Mgr, WMC Mineral Sands, Bernard J Cox**  
 Project Manager, *F E (Pat) Gray*  
 Mine Mgr, *Tom Coles*  
**Chief Project Eng, WES, Peter R Webster**  
 Design Engineer, *Mike D Softley*  
 Chief Mining Engineer, *Ian R Letts*

## **Exploration Manager & Chief Geologist, Roy Woodall**

Exploration Mgr, *James H Lalor*  
 Geophysicist, *Hugh Rutter*  
 Operations Manager, *Don Huxtable*  
 Consultant Specialist, *Tim O'Driscoll*  
 General Manager Petroleum, *Chris R Porter*

## WMC SENIOR MANAGEMENT - 1975

The following list of senior management in WMC early in 1975 was collated partly from memory and partly from Department records currently available. It shows the three levels of management reporting to the Managing Director at the time.

G M Ralph  
3 August 2000

Draft as at 5.9.00

### Managing Director, *Arvi Parbo*

#### *Melbourne Office*

**Director of Administration, *Hugh O Clark***

Group Administration Mgr, *Keith D Aird*

Senior Legal Officer-Melb, *Peter H MacSporran*

Group Properties Officer, *Frank B Taylor*

Company Secretary, *Kevin S Larsen*

Asst Secretary, *Lou T N Jacobs*

Superannuation Mgr, *Len Whitby*

**General Manager - Finance, *Harold S Amos***

Financial Controller, *Don M Morley*

Group Taxation Officer, *Ken E Higgs*

**General Manager - Fuel and Energy Minerals, *E D J (Doug) Stewart***

**General Manager - Metals, *Doug P McIntyre***

Gen Mgr WMC (UK), *R W (Bob) Allard (UK)*

Ex VP WMC (NA), *Tom F Moorman (USA)*

Manager Corporate Planning, *John O Reynolds*

**Managing Director, Hail Creek Associates, *John B Oliver***

#### *Western Australia*

**Executive Director WA, *L C (Brodie) Brodie-Hall***

**General Manager WA, *Keith F Parry***

*Perth Group Management*

Manager Corporate Services Division, *Allen J Gittos*

Group Administration Supt (WA), *W Bruce Gardner*

Manager Technical Services, *Ken E Denham*

Chief Accountant, *Alan S Nelson*

Chief Metallurgist R&D, *Ron F Blanks*

Legal Officer - Perth, *S J Colin Wise*

Group Insurance Officer, *M B (Bob) Horton*

Manager Development Division, *John C Hill*

Group Consultant, Industrial Relations, *Stan J Carter*

Group Consulting Metallurgist, *Colin M Kleemann*

Executive Asst to Ex Dir, *Gilbert M Ralph*

Executive Asst Gen Mgr WA, *Barry S Patterson*

#### *Nickel Division*

Production Manager, *Stan A Evers*

Chief Metallurgist, *A E (Dick) O'Meara*

Chief Mining Engineer, *R A (Bob) Nicholls*

Commercial Manager, *A David M Green*

**Res Mgr, Kambalda Nickel Operations, *Brian J Hurley***

U/G Manager, *Harry A Rymer*

U/G Manager, *Phil C Lockyer*



Mining Engineer, *R A (Dick) Tastula*  
Metallurgical Supt, *George G Botica*  
Asst Mill Supt, *Don J Head*  
Exploration Geologist, *Geoff D Loftus-Hills*  
**Res Mgr, Kalgoorlie Nickel Smelter, C J D (Ned) Williams**  
Metallurgical Supt, *Peter Miller*  
Chief Engineer, *Doug A Marshall*  
Admin Supt, *Charlie W Hastie*  
**Res Mgr, Kwinana Nickel Refinery, John K Copping**  
Asst Resident Manager, *R W (Bob) Bourne*  
Technical Supt, *A Dean Giles*  
Maintenance Engineer, *Arthur C Dodd*  
**Res Mgr, Windarra Nickel Project, Robert H Floyd**  
Mining Engineer, *Dick Hoskins*  
Metallurgical Supt, *K J Sangster*  
Chief Engineer, *John S Willis*  
Admin Mgr, *Kel K Webster*  
Accountant, *Duncan M Campbell*

*Gold Operations*

**Res Mgr, Central Norseman Gold Corp, Lawrie Quan**  
Acting Res Mgr, *E John Lea*  
Mine Supt, *Joe L Denison*  
Snr U/G Manager, *Greg Robertson*  
U/G Manager, *Bob H Poole*  
U/G Manager, *Merv Goode*  
Mill Supt, *W R (Bill) Lethlean*  
Accountant, *G C Hart*  
**Gen Mgr, Kalgoorlie Lake View, Jack Manners**  
Operations Manager, *N R (Dick) Hooker*  
Mill Supt, *Peter Willcocks*  
Mine Supt, *Jack C McDermott*  
Chief Accountant, *Brian F Best*

*Other Operations*

**Manager, Three Springs Talc, Pat N Johnston**  
**Gen Mgr, WMC Mineral Sands, Bernard J Cox**  
Project Manager, *F E (Pat) Gray*  
Mine Mgr, *Tom Coles*  
**Chief Project Eng, WES, Peter R Webster**  
Design Engineer, *Mike D Softley*  
Chief Mining Engineer, *Ian R Letts*

**Exploration Manager & Chief Geologist, Roy Woodall**

Exploration Mgr, *James H Lalor*  
Geophysicist, *Hugh Rutter*

**Operations Manager, Don Huxtable**

**Consultant Specialist, Tim O'Driscoll**

**General Manager Petroleum, Chris R Porter**

## **WMC SENIOR MANAGEMENT - 1980**

The following list of senior management in WMC in January 1980 was collated partly from memory and partly from Departmental records currently available. It shows the three/four levels of management reporting to the Managing Director at the time.

G M Ralph  
7 August 2000

**Draft as at 24.8.00**

### **Managing Director, *Arvi Parbo***

#### **Executive Director, *Hugh M Morgan***

##### **General Manager Finance & Administration, *Harold S Amos***

**Treasurer & Financial Controller, *Don M Morley***

**Asst Treasurer, *Peter J Maloney***

**Group Mgr - Accounting, *Keith H Allen***

**Taxation Mgr, *Jeff A Smith***

**Mgr Business Planning, *E G (Ted) Russell***

**Mgr Legal Services, *S J Colin Wise***

**Mgr Internal Audit, *Terry Pilcher***

**Business Mgr, *Ian J Duncan***

**Mgr Super & Admin, *Leslie J Dodd***

**Properties Mgr, *Frank Taylor***

**Mgr Corporate Planning, *John R Reynolds***

**Company Secretary, *Kevin S Larsen***

**Asst Company Secretary, *John W Winterbottom***

#### **Director Corporate Affairs, *Hugh O Clark***

#### **Director of Operations, *Keith F Parry***

##### **General Manager WA & Nickel Division, *Brian J Hurley***

**Deputy General Mgr Nickel Division, *C J D (Ned) Williams***

**Chief Metallurgist, *Bob W Bourne***

**Chief Mining Engineer, *A Colin Cruickshank***

**Commercial Mgr, *A David M Green***

**ExVP WMC Nth America, *Tom F Moorman***

**Mgr Nickel Sales (Aus), *Maria Galanou***

**Res Mgr - Kambalda Nickel Operations, *Barry S Patterson***

**Mine Supt, *A J (Tony) Palmer***

**Metallurgical Supt, *Bruno Sceresini***

**Concentrator Supt, *Ian W Lawrence***

**Chief Mining Engineer, *Brian Micke***

**U/G Supt, *Barry McCahon***

**U/G Manager, *Colin McIntyre***

**U/G Manager, *Phil Lockyer***

**Chief Geologist, *Geoff Loftus-Hills***

**Chief Engineer, *Douglas A Marshall***

**Res Mgr - Windarra Nickel Project, *R A (Dick) Tastula***

**Chief Geologist, *Jim H Cleghorn***

**Res Mgr - Kalgoorlie Nickel Smelter, *George Botica***

**Metallurgical Supt, *Don R T Hall***

Admin Supt, *Charlie W Hastie*  
Res Mgr - Kwinana Nickel Refinery, *John K Copping*  
Asst Res Mgr, *Don J Head*

**General Manager, Gold, N R (Dick) Hooker**

Res Mgr - Kalgoorlie Lake View, *Jack C McDermott*  
Snr Geologist, *Jim S Reeve*

Res Mgr - Central Norseman Gold Corp, *E John Lea*  
Mine Supt, *Joe L Denison*  
Snr U/G Mgr, *Greg Robertson*  
Mill Supt, *Bill R Lethlean*  
Chief Engineer, *Frank Orr*

Res Mgr - Hill 50 Gold Mine, *Lou Checker*  
Snr Supervising Geologist, *W B (Bill) Anderson*

**Manager, Talc Operations, Patrick J Johnston**

Mine Supt, *Jeff Fradd*

**Manager, Yeelirrie Uranium Project, F E (Pat) Gray**

**Manager Engineering Services, Peter Webster**

Design Engineer, *Mike D Softley*  
Snr Electrical Engineer, *E (Ted) Winship*  
Construction Engineer, *Jack C Warburton*

**General Manager Projects, John B Oliver**

Snr Mining Engineer, *R J (Bob) Crew*  
Mgr Metallurgy, *A E (Dick) O'Meara*

**General Manager Industrial Relations, Stan Carter**

**Manager Administration, W Bruce Gardner**

**Chief Accountant,**

**Manager Technical Services, Alan S Nelson**

**Corporate Counsel WA, John D Stewart**

**Executive Officer Operations, Gilbert M Ralph**

**Director of Exploration, Roy Woodall**

Chief Geophysicist, *Don J Esdale*  
Chief Geochemist, *Tony W Robbins*  
Consultant Geologist - Tectonics, *E S Tim O'Driscoll*  
Consultant Geologist - Copper, *Douglas W Haynes*  
Consulting Specialist, *Owen A Bavington*  
Chief Draughtsman, *Frank Deconti*  
Mgr Central Technical Records, *Don R Reid*

**Regional Exploration Mgr - Eastern Region, Jim H Lalor**

Chief Geologist (Olympic Dam), *George White*  
Senior Supv Geologist, *Geoff R T Hudson*  
Senior Geologist, Bairnsdale, *David J Barr*  
Senior Geologist, Adelaide, *David E Roberts*

**Regional Exploration Mgr - Western Region, *Richard H Mazzucchelli***

Consultant Geologist - Nickel, *Guy A Travis*

Consultant Geologist - Uranium, *Eric Cameron*

Consultant Geologist - Operations, *John A Haycraft*

Senior Geophysicist, *Frank W Lindeman*

Senior Geologist, *Mike L Schmulian*

**Regional Exploration Mgr - Eastern Goldfields Region, *Geoff M F Hopkins***

Senior Sup Geophysicist, *J H Croggon*

Consultant Specialist, *Barry C Severne*

Mgr Analytical Services, *Mike Page*

**General Manager Petroleum Division, *Chris R Porter***

## **WMC SENIOR MANAGEMENT - 1990**

The following list of senior management in WMC in 1990 was collated partly from memory and partly from some informal charts and Departmental records currently available. It shows the three levels of management reporting to the Managing Director at the time.

G M Ralph  
7 August 2000

**Draft as at 24.8.00**

### **Managing Director, *Hugh Morgan***

#### *Melbourne Office*

#### **Director of Finance and Administration, *Don Morley***

**General Manager - Accounting & Tax, *Jeff Smith***

Group Mgr - Accounting, *Mark Blackburn*

Taxation Mgr, *Peter Dimech*

Risk Mgr, *Jim Royer*

Mgr Accounting Development, *Ken Tranter*

#### **General Manager - Corporate Services, *Geoff Loftus-Hills***

Mgr - Remuneration, *Tony Bull*

Mgr - Management Information Services, *Des Harvey*

Mgr - Affirmative Action, *Val Marshall*

Mgr - Superannuation, *Allan Schurmann*

Mgr - Personnel, *Tim Scully*

Mgr - Office Services, *Graham Stickland*

Mgr - Information Services, *vacant*

#### **Treasurer, *Alan Knights***

Asst Treasurer - Operations, *Mark Chamberlain*

Asst Treasurer - Corporate Finance, *Paul Chapman*

Asst Treasurer - Administration, *Frank Traczewski*

Mgr Project Analysis, *Richard Schodde*

**Mgr Industrial Minerals, *Pat Patterson***

**Res Mgr - Talc Operations, *Joe Denison***

#### **General Counsel, *Colin Wise***

**Legal Mgr - Melbourne, *Kym Saville***

**Mgr - Properties, *Terry Johanson***

**Corporate Counsel - WA, *John Stewart***

**Corporate Lawyer, *Geoff Witham***

#### **General Manager - Shareholder Relations & Secretary, *Fred Grimwade***

**Asst Secretary, *Ross Mallett***

**Mgr Corporate Publications, *Gilbert Ralph***

#### *Others reporting directly to the MD*

**Mgr - Corporate Affairs, *Duncan Bell***

**Mgr - Internal Audit, *Peter Godfrey***

**Group Mgr - Occupational Health & Safety, *Mark Sonter***

**Group Mgr - Environment, *George White***

**Executive Officer, *Ray Evans***

#### **General Manager - Corporate Industrial Relations, *Stan Carter***

**General Manager Petroleum, Australasia, *Hugh White***

Regional Exploration Mgr - Timor Sea, *S Bayford*  
Regional Exploration Mgr - Bonaparte, *J Durant*  
Regional Exploration Mgr - Canning, *T Michelmores*  
Regional Exploration Mgr - Carnarvon, *Don Poynton*  
Res Mgr - Malaysia, *H Macrae*  
Operations Supt, *R King*  
Commercial Mgr, *Terry Pilcher*  
Senior Construction Engineer, *N Keron*

**President - Greenhill Petroleum Corp, *Ralph Cox***

Operations Mgr, *Lawton E Barton Jnr*  
Operations Mgr, *Charles L Little*  
Regional exploration Mgr, *Robert Mathis*  
Development Mgr, *Norbert Renaud*  
Land Mgr, *Gary Edwards*  
Drilling Mgr, *Hugh Bezner*  
General Council, *Pat Allison*  
Mgr Administration & Finance, *Julian Thornton*

**Director of Operations, *Keith Hulley***

**General Manager WA Operations, *Phil Lockyer***

Regional Mgr - Northern WA Operations, *Rob Dennis*  
Res Mgr - Leinster Nickel Operations, *Rob Dennis*  
Res Mgr - Windarra Nickel Project, *Ian Letts*  
Res Mgr - Mt Magnet Gold Operations, *Allan Quadrio*  
Regional Mgr - Southern WA Operations, *Tim Moran*  
Res Mgr - Kambalda Nickel Operations, *Tim Moran*  
Res Mgr - Kalgoorlie Gold Operations, *Bill Anderson*  
Res Mgr - Central Norseman Gold Corp, *Peter Teasdale*  
Others reporting directly to the General Manager WA  
Res Mgr - Kalgoorlie Nickel Smelter, *Ross Muller*  
Res Mgr - Kwinana Nickel Refinery, *Phil Hunt*  
Commercial Mgr, *Peter Maloney*  
President WMC (USA), *Tom Moormann*  
Managing Director, WMC (UK), *Henry Muller*  
Manager Projects, *Deming Whitman*  
Chief Geologist - Nickel, *Mick Elias*  
Chief Geologist - Gold, *Geoff Hopkins*  
Senior Metallurgist, *Don Hall*

**General Manager - Olympic Dam Operations, *Ian Duncan***

Res Mgr - Olympic Dam Operations, *Bob Crew*  
Mgr - Olympic Dam Marketing, *James Eggins*  
Finance Mgr, *Jonathan Sanders*

**General Manager - Eastern Operations, *Graeme Sauer***

Res Mgr - Goodall Gold Project, *Colin Cruickshank*  
Res Mgr - Stawell Joint Venture, *David Sheffield*  
Res Mgr - Vatuloula Joint Venture, *Andy Cullum*

**President, Westminer Canada, *Jim Lalor***

Res Mgr - Seabright Operations, *D Armstrong*  
Res Mgr - Brazilian Operations, *Mike Schmulian*  
Res Mgr - Chibougamau Mines, *R Kanawar / Serge Gagnon*

Res Mgr - Western Hog Ranch, *'Butch' Moore*  
VP Mining, *Tony Owens*  
VP Operations USA, *Brian Micke*  
VP Exploration USA, *Dave Roberts*  
VP Geology & Exploration, *Jeff Gresham*  
VP Finance, *Jeff Parr*  
Exploration Manager Canada, *Dan Evans*  
Corporate Council, *Willa Harasym*  
Director, Administration & HR, *G Brown*

**General Manager WMC Engineering Services, *Doug Marshall***

Chief Civil Engineer, *Jeremy Folwell*  
Chief Mechanical Engineer, *John Willis*  
Mgr Group Metallurgy, *Bob Bourne*  
Senior Mining Engineer, *B Eaton*  
Project Mgr - KNS, *R H Mackay*  
Project Mgr - Nifty, *Phil Dunstan*  
Mgr Engineering WES Adelaide, *Mike Sofitley*  
Procurement Mgr, *P Kraj-Krajewski*

**General Manager - Fertilizers, *Richard Morgan***

Mgr Hi-Fert, *David Rust*  
Distribution Supt, *John Dennis*

**Director of Exploration, *Roy Woodall***

**General Manager Mineral Exploration (Australasia), *Dave Harley***

Exploration Mgr, Western Region, *John Brooke*  
Exploration Mgr, Eastern Region, *Chris Middleton*  
Chief Scientist, *Doug Haynes*  
Operations Mgr, *Tony Robbins*

**ORGANISING TO BE THE BEST  
THROUGH A BUSINESS UNIT  
STRUCTURE**

**WESTERN MINING CORPORATION LIMITED**

**H.M. MORGAN  
Managing Director**

**November 24, 1994**



Exhibit 1

**WMC is in a wider range of activities and places than 10, 20 or 30 years ago**

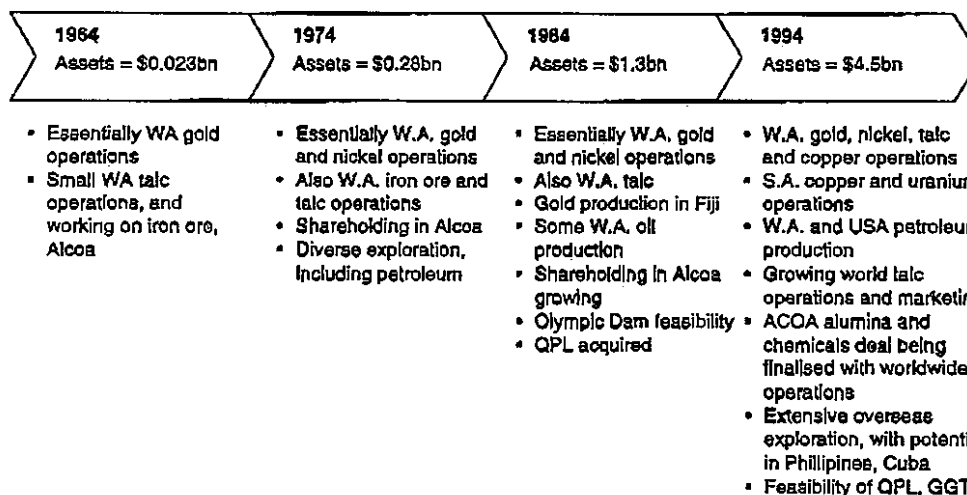
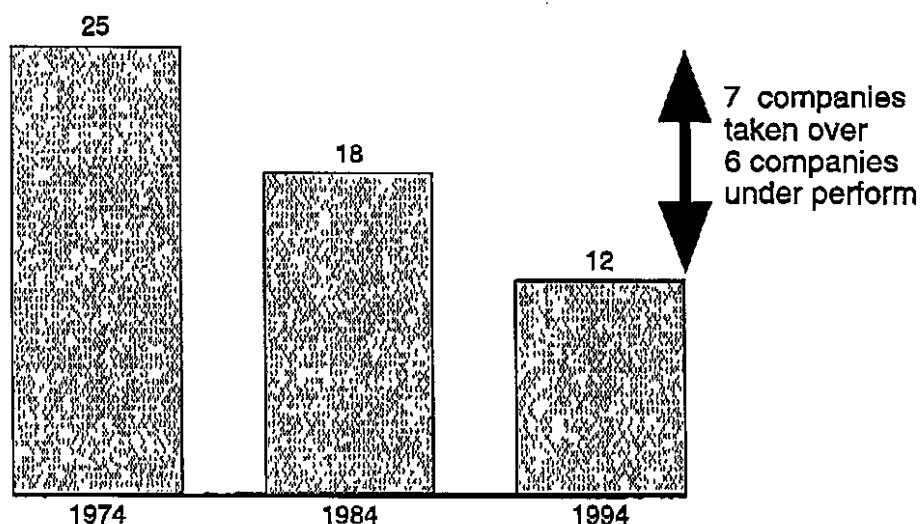


Exhibit 2

**Less than half of the Top 25 companies in 1974 are so classified today**



**Number of Companies in the Top 25 Companies in 1974 so Classified in 1984 and 1994**

# Organising To Be The Best Through a Business Unit Structure

## *Western Mining Corporation Limited*

Western Mining Corporation Limited (WMC) is a very successful company. From humble beginnings it has grown to be in the top 10 Australian companies ranked by market capitalisation. Its growth over the last 30 years has been both uninterrupted and strong.

The company today has many strengths. It has a proud history, good assets and an openness and commitment to the company by staff. There is also currently a strong willingness to improve.

## **WMC and The World Have Both Changed**

WMC has changed markedly in the last 30 years. It has not only increased in size, it is today in a much wider range of activities and places (Exhibit 1). Its businesses are very different in terms of technology, markets, competitors and size.

As WMC has changed, so the world has changed. Mature societies become more complex, with a wider range of expressed needs. Improving communications magnifies this complexity. Compared to 30 years ago regulatory hurdles are much larger, for example, on environment and land access issues.

Business success now demands we master regulatory issues as never before. We must, at many levels in the company, be able to deal successfully with a wider range of stakeholders, both to begin new, and stay in our current, businesses. While some in our company will seek to improve the regulatory environment, all must work within what we have. Indeed, we must do this better than our competitors.

Though WMC is currently reasonably successful, future success is not guaranteed. Indeed, of the top 25 Australian companies in 1974, less than half are so classified today (Exhibit 2). The very important lesson for us all is that success requires constant effort and change.

WMC has decided on aggressive targets for the future. Far from relaxing we will perform better than we have in the past in terms of both shareholder returns and asset growth. While our growth in shareholder value over the last 10 years against our peers puts us mid ranking, our future objective is to be in the top 25%. Our company will also become even larger and more diverse. By 2000 we aim to have at least six core businesses, four developing businesses and 25% of our assets overseas.

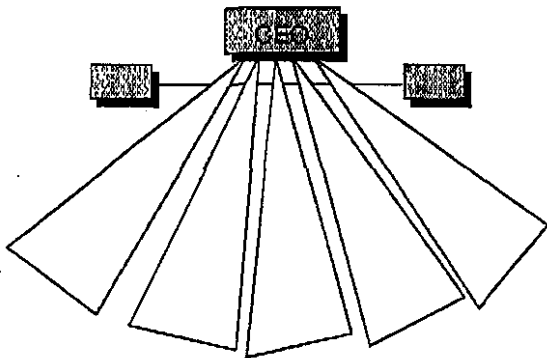
## **Implications For Structure**

These large changes in our company, the environment in which it operates, and WMC's objectives have significant implications for how we organise the group. The corporate centre can no longer effectively play the co-ordinating, advisory and service roles that it did in the past. Attempting to do so has caused overload and some inertia at the top, and, more importantly, blurred accountability.

Exhibit 3

**An increased emphasis on line reporting will sharpen the roles played at the group and the business unit level**

The historical structure required that the CEO play both a group and business CEO role



The new structure will see business unit decisions primarily driven by leaders reporting to the CEO who are accountable for them

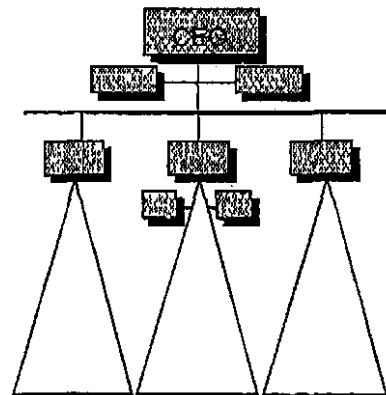
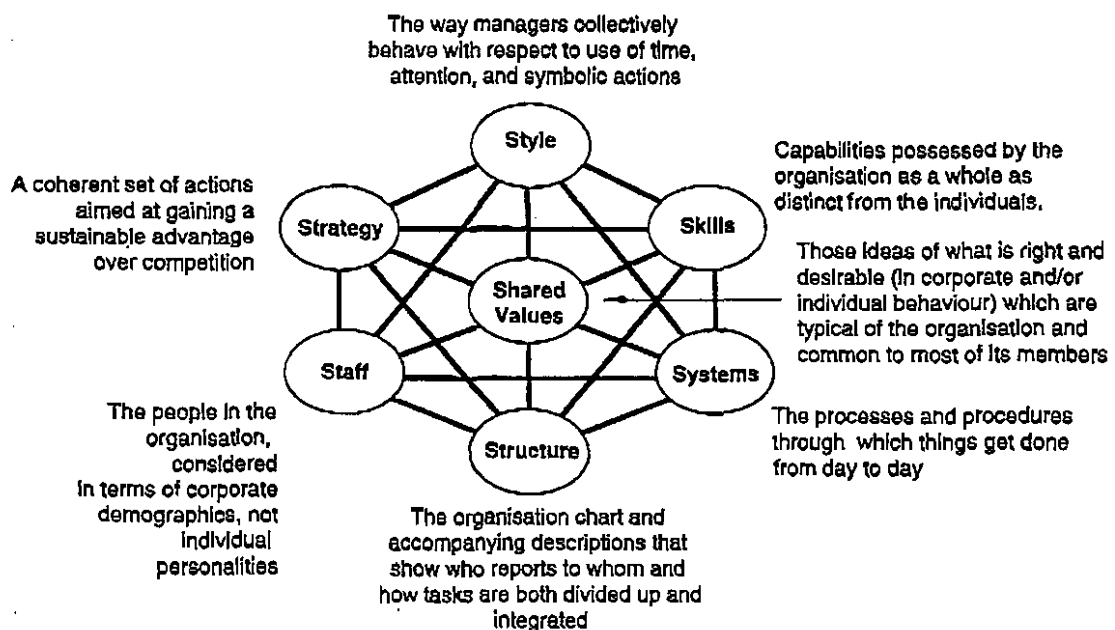


Exhibit 4

**Structure is just one part of the inter-related whole that makes up a company**



Over the last three to four years WMC has increasingly recognised that it needs to alter its organisation structure, its performance monitoring systems, and other aspects of the company, and has been steadily making the necessary changes. Such changes take considerable time, and must proceed in a certain order. They begin slowly, but eventually they affect every aspect of the company's operation.

We now need to complete the move to business units, and to delegate to them not only increased resources and responsibility, but also increased accountability for performance. This move has important implications for the role of the corporate centre, how executive directors operate, how we meet as a company, and how we monitor performance. Increased delegation necessitates more openness and frankness and acceptance by managers that performance is their clear accountability. An increased emphasis on line reporting will sharpen the roles played at the group and the business unit level (Exhibit 3).

This paper seeks to describe in some detail the new organisation structure, and other accompanying changes. While change never ceases, and what is being announced now will need continuing fine-tuning, it does attempt to settle an important part of our recent transition.

This paper builds on the earlier presentation to G20 in August. It provides information under the following headings.

1. Outlining the changes and their linkages.
2. Establishing business units.
3. Giving people the resources.
4. Reducing the Corporate Centre.
5. Clarifying accountability boundaries.
6. Improving performance monitoring systems.
7. Changing the way we meet.

## **1. Outlining The Changes And Their Linkages**

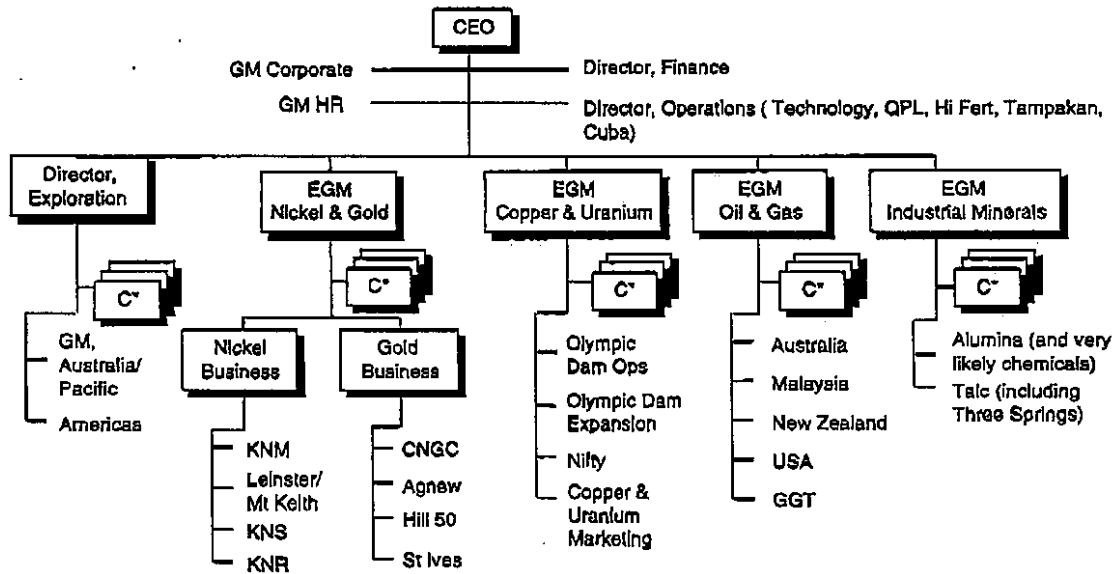
WMC has, over many years, built up a complex matrix structure. This increasingly involved what many saw as separate streams: the operators and the functional groupings. Neither had a sufficient business focus. Formal authority from the CEO was split, creating joint responsibility and authority. This ultimately began to work against WMC operating as a team.

WMC's size, diversity and aspirations have required that we simplify by formalising the move to a business unit structure. This involves delegating more authority from the CEO to business unit leaders. With clearer goals and, most importantly, clearer and increased accountability, business units will enhance teamwork, both within and between business units, and improve the focus on the bottom line. This emphasis on power through line authority simplifies and reduces the natural matrix tensions that exist between operating and functional groups.

It is a move that has major implications for every aspect of WMC's operations. Structure is just one part of the inter-related whole that makes up a company. Exhibit 4 provides a checklist of issues that are all linked and which must be understood when thinking about re-orientating a company.

Exhibit 5

# WMC's Organisation Structure



\* Advisers at the EGM level, grouped into Commercial (C), HR, Technical

## **A Structure Better Suited To Our Strategy**

A clear business unit structure is best suited for WMC to meet its ambitious objectives. Leaders of existing business units will have the ability and, importantly, the accountability to ensure both high cash flow from existing operations and, over time, growth from new activity in their business area. Executive Directors will devote greater time both to monitoring the progress of existing businesses and establishing new businesses.

WMC's new formalised structure is shown at Exhibit 5. We have established business units in Exploration, Nickel and Gold, Copper and Uranium, Oil and Gas and Industrial Minerals. The latter will take full responsibility for our talc operations, and it recognises that we need active capacity in both monitoring and advising on WMC's options in relation to our participation in the alumina and, very likely, chemicals business.

## **Changing Leadership Roles**

The role of Director of Operations changes considerably in this new structure. In one sense part of his massive role is split among many EGMs. The change is, however, more significant than that and it is vitally linked to our growth strategy. The Director of Operations will:

- ¶ provide the Board with continuing input on WMC's performance from an operations standpoint
- ¶ assist the CEO during the transition to a business unit structure
- ¶ take a major role in nurturing and technical evaluation of new businesses, particularly in new core activities, but also in existing core activities overseas while our current business units are devoting their full attention to their immediate domestic challenges. In future, for example, our nickel interests in Cuba could be taken forward by the relevant business unit, but for now that unit is fully occupied ensuring WMC earns a good return on its recent sizeable investments
- ¶ for the moment, advise the CEO on technology issues, and generally improve WMC's focus on technical issues. Following the changes to WES, which had a significant role in technology priority programming and information dissemination, we need to ensure that cross business unit liaison on technical issues continues.

By this move WMC is recognising that nurturing new businesses takes considerable time and care. Political, legal, social and technical issues need to be closely managed for economic success. We are evaluating a number of non-exploration opportunities in many parts of the world. In addition, QPL, Tampakan and Cuba will take increasing senior management time and so in their present formative stages will continue to report in to the Director of Operations.

Technical issues need high standing in the company. We need to be scanning other firms and developments at both the business and corporate levels to ensure WMC is using the best technology. Continuing cost competitiveness depends on this. The CEO also needs high-level technical advice in monitoring the business units, just as he needs high-level financial advice.

The Director of Finance will play two roles. He will be the Chief Financial Officer, and he will be responsible for planning, acquisitions and new business proposals. He will have

more time for these latter responsibilities as he will cease to have responsibility for administration, and for talc and nurturing emerging businesses generally.

The Director of Exploration will also continue to play two roles. He will advise the CEO on exploration issues when monitoring the business units, and he will fill the role of Executive General Manager (EGM) in charge of the Exploration business unit. This will need to be a full business unit with strong commercial skills. When this is achieved the EGM Exploration will be able to develop projects such as Tampakan up to the feasibility study stage when it could be handed over to the relevant business unit.

These changes allow a more appropriate emphasis in our business unit monitoring and equip us well for the growth we seek. They see all Executive Directors involved in aspects of business unit monitoring and growth. The Director of Exploration advises the CEO on exploration issues in relation to business unit monitoring, and is accountable for the Exploration Division. The Director of Finance advises the CEO on financial/commercial issues in relation to business unit monitoring, and is accountable both as Chief Financial Officer and for acquisitions, planning and new business proposals. The Director of Operations will advise the CEO on technical/operations issues, and be accountable for nurturing and technical evaluation of new businesses.

### **Similar Advisory Structure**

A parallel advisory structure can serve all EGMs, and this could also be appropriate at Resident Manager level. Advisers grouped under Commercial, Technical and Human Resources should improve linkages, minimise direct reports and assist with defining career paths. People can move to line management, or be specialist advisers on commercial, technical or human resources issues. We will encourage most people to experience both activities at some time. Those who wish a more specialist focus, however, should face no limit to their career path. Our human resources advisers will actively assist with ensuring we all have well developed career paths, especially in technical areas.

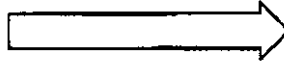
As applies now, the General Manager, Human Resources will continue to focus on major cross-business unit issues and career path planning. Stronger emphasis on human resources has now been established. In the future, the emphasis will be upon monitoring, counselling and advising by the General Manager, Human Resources, and his core staff will become more differentiated from the bulk of the human resources managers who remain solely responsible for their work to line management.

The CEO will also need a corporate adviser, mainly to assist with stakeholders and bring together responsibility for corporate administration and other matters. We are currently seeking to fill a GM Corporate position from outside the company. The Group Manager, Corporate Affairs and the Group Manager for the Environment will report to this new General Manager. The Group Manager for Occupational Health and Safety (OH&S) will report to the General Manager, Human Resources. The two Group Management positions for the Environment and OH&S have not and are not supposed to have any line management responsibilities. Both play, however, a vital role in a broadly defined audit and prudential function to monitor and assist line management which remains totally accountable for the high standards expected to be achieved in the areas of environment and OH&S performance. As is currently the case, for now aboriginal issues are to remain the responsibility of the Group Geographer, who will continue to report to the CEO. This will be reviewed as the experience of the GM Corporate and the EGMs increases.

The Company Secretary in future will report through the Director of Finance. He will, of course, often have to deal directly with the Chairman and CEO in many aspects of his work. Likewise, some of those reporting to the GM Corporate will need direct access when appropriate to the CEO, for example this may often be the case for the Manager, Corporate Affairs.

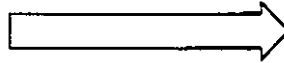
**A business unit structure involves major changes to the way WMC is run and monitored**

Important services provided centrally



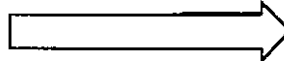
Business units control/buy in own services (e.g., legal, construction, technical)

Exploration and acquisition separate from operations



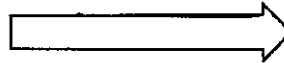
Business units responsible for local exploration and related acquisitions; centre has quality control role

Largely production and cost driven operations



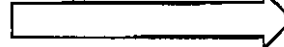
Business units responsible for sustainable business profit

Centre closely involved with environment, OH&S, title security



Form important KPIs which are regularly monitored

Operations separate



Regular leadership meetings to share experiences and provide collective input



WMC must deliver high performance from our current business units. Our growth objectives require finance, and the initial servicing must come from current initiatives. The CEO in future will therefore spend more time with EGMs and at sites monitoring and advising business units, and less time on stakeholder issues.

## **2. Establishing Business Units**

WMC's original, simple structure suited it well. Melbourne focused essentially on raising the finance, while operations leadership was in W.A. Operations had a production focus, and there were few compliance complexities to worry about.

As WMC and the world changed there were many add-ons to this early simple structure. Different types of operations began, and eventually operations leadership moved to Melbourne. Operators increasingly had to focus on costs, cash and profits as well as production. The corporate centre became increasingly involved in a wider range of activities, from engineering and technical advice, to a range of mechanisms to deal with compliance issues.

The resultant complexity led to some inertia and confused accountability. It became much harder for the centre to focus simultaneously on the detailed needs of very different businesses.

The growing role of the corporate centre blurred accountability as so much of what operations needed to perform were not controlled by them. There could be many excuses for poor performance. In addition, the corporate centre did not train, and then did not fully trust, operators to deal with many of the new compliance complexities. Finally top management became too distant from resident managers, so information became more filtered and needs could not be clearly communicated.

For some time, therefore, we have been restructuring to emphasise local business leaders running decentralised business units. Responsibility and accountability is being pushed down. Business units will be held accountable for wider performance, both sustainable profit and compliance complexities.

A business unit structure involves major changes to the way WMC is run and monitored (Exhibit 6). Business units are increasingly being encouraged to have more resources and responsibilities, will be held accountable for performance, but will also be given greater opportunity to contribute to the wider group performance.

### **Commodity More Than Geographic Business Units**

Business units have been grouped initially so that there is not much difference between applying commodity and geographic criteria in Australia today. International conglomerates always face a dilemma in deciding between a geography or a commodity focus. There are no simple solutions, just pragmatic ones. At this stage of WMC's evolution, however, leadership by EGMs will be more powerful if business units have a commodity orientation within a defined geographic boundary.

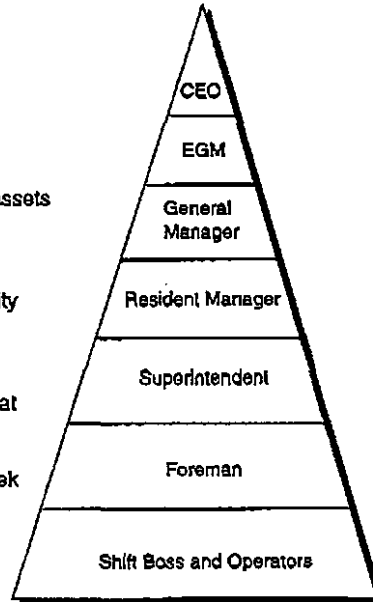
Organising more by commodity results in a structure that best suits WMC's strategy of fast growth and diversification. Commodity business units will have the capacity and incentive to expand. They will be the source of the group's expertise and knowledge in that commodity, including knowledge of business development opportunities, and they will eventually be encouraged to seek these opportunities, subject to central vetting. Having business units focus on growth in core areas frees up the corporate centre to focus on establishing new businesses.

Exhibit 7

### Seven Steps of Accountability and Value Added

#### Examples of Accountability

- Achieve corporate objectives
- Build so much value
- Earn so much profits from limited assets
- Produces tonnes of concentrate at \$/tonne within quality and availability constraints
- Feed so much ore to concentrator at \$/tonne
- Drill and blast so much ore per week
- Load so many trucks per shift



#### Examples of Value Added

- Corporate strategy
- Group strategy
- Business strategy
- Make cost/value trade-offs, allocate resources between departments
- Improve department efficiency, relate costs to output
- Move operators, improve their competence, solve their immediate problems
- Direct output

Local geographic leadership is also important. A co-ordinated voice is often required in dealing with State political and infrastructure issues. In the structure it is clear that the EGM Nickel and Gold is responsible for local Western Australian issues and that the EGM Copper and Uranium is responsible for local South Australian issues.

Business units should be well informed about their businesses in a world context. They need to understand their markets and their competitors. With this knowledge, however, their immediate focus is to run their current operations optimally to make them the BEST.

The commodity groupings under the EGMs, of course, derive from current circumstances. These groupings can change. Were one of gold or nickel to grow significantly, for example, it could subsequently become the only responsibility of one EGM.

### **Increased Business Unit Accountability**

Business unit leaders must have accountability for key tasks and commensurate authority to take action on them. This is required to improve autonomy and to engender wider business skills at many levels in WMC. EGMs must have full authority to:

- ¶ veto the appointment of subordinates
- ¶ assign tasks to direct reports
- ¶ initiate transfer or dismissal of subordinates, and
- ¶ appraise subordinate performance and adjust rewards accordingly.

These are essential elements of authority that are vested in business units commensurate with the level of accountability now expected. Each level of line management must have similar authority, and be able to add definable value.

### **WMC As a Seven-Level Company**

This suggests WMC should have a maximum of seven levels within its organisation. This derives from the view of accountability described in Exhibit 7. Currently WMC has around nine levels, although this depends which part of the company you look at. Our new structure generally removes one level above the RM.

Once accountability is defined for each level we may be able to judge better which levels are unnecessary below the RM. This process will be driven by business units themselves.

At each level those who propose ideas should be able to speak directly to those who will decide whether or not they can proceed. With levels better defined people should not have to communicate through many layers of management to get decisions. This should encourage subordinates to come to supervisors with solutions, not problems. This shall certainly be expected from EGMs.

Reduced levels should be a powerful performance driver within WMC. People will benefit from knowing what is required of them, that they have the necessary management prerogatives and resources, and that they will face less interference.

Business units in terms of overall profit responsibility for now are largely defined at the EGM level. They can be more clearly defined at a lower level, such as separate Nickel and Gold business units, when appropriate.

These changes should affect business units and those who work in them considerably. For example, Resident Managers in discharging their wide responsibilities will have a clearer understanding of their accountability for capital expenditure and exploration.

### **3. Giving People The Resources**

Increasing business unit accountability requires that they have the necessary resources. This particularly means that they have greater discretion over which services they use, and that they can have authority over appropriate advisers.

#### **Devolve Service Centres As Much As Possible**

Service structures whose role essentially is to assist business units should come under the control of business units. This will improve business unit responsibility and accountability. It is difficult to hold business units accountable for performance where they have no discretion as to where they go for vital services. As an example, the construction, supply and technology units in WES have been recently decentralised. There are new centres of technology and design and project control in Adelaide and Perth.

The remaining service centres will be reviewed, as is occurring now with MIS. We will need to understand the need for central requirements and common systems across business units, and how best these can be met. A clear distinction should be drawn between service centres (which assist the business units) and corporate centre control areas (which must remain in the centre).

The Operations Management System is currently being installed with central direction. Once this is complete we can review how best to meet the common requirements. As with Accounting Development, servicing of the system could be provided centrally, or be devolved, or be moved to one of the business units to be supplied on a user pays basis to others.

#### **Advisers Reporting To The Relevant Decision-Makers**

Steps have also been taken to have advisers report to the relevant decision-makers. For example, the WES Group Consultants have been changed to an enhanced technical adviser stream. Legal advisers have been allocated to business units.

Understanding the role of advisers is crucial to clarifying accountability throughout the company. It is worth repeating comments made at the last G20 meeting.

- ¶ Advisers are specialists who advise their manager and those with line responsibility reporting to the same manager
- ¶ The adviser's manager should define the limits of the adviser's responsibility relative to line operators
- ¶ Advisers should try to convince people, not command
- ¶ Commands should be given through the operating line, albeit after a manager has received the views of an adviser
- ¶ While advisers are accountable for the quality of their advice, advisees are accountable for output and so must decide whether or not to take the advice.
- ¶ Advisers are encouraged and required to appeal to a higher authority when seriously concerned about issues.

The most important points are defining the adviser's responsibility, and commands being given through the operating line. Advisers should not use a reference to a senior manager to get things done. They should simply advise. If the advisee does not act they have a last resort option of referring the matter to their own supervisor, or to a more senior adviser. Decisions should only be reversed with intervention from the line manager's boss. In moving to a business unit structure WMC will achieve a single line of authority. Line managers with advice from Human Resources should control the career development of those who report to them. Functional areas should only provide advice on, rather than control, these issues.

That most important point being said, there is considerable merit in professionals maintaining contact across WMC as a group. This should apply to mining engineers, metallurgists and lawyers, as well as geologists, accountants and safety officers. There is no contradiction between this and business unit accountability. Using lawyers as an example, WMC's senior lawyer:

- ¶ would be expected to call, say, annual meetings of WMC lawyers to maintain contact and exchange ideas
- ¶ should be asked for advice on lawyer selection and lawyer performance reviews, with of course the ultimate decision residing with the lawyer's line supervisor
- ¶ can advise the CEO or the Finance Director on rules he thinks should apply across the group, for example, on the selection of outside law firms. Decision-making power on such group-wide practices would rest with the CEO
- ¶ can suggest that lawyers in one business unit be made available to help another, or the corporate centre, if he sees the need. Whether or not this occurs depends on the views of the lawyer's line supervisor, and ultimately perhaps the CEO
- ¶ can suggest staff rotations, but again the losing or gaining line supervisors can veto such moves
- ¶ finally, should report any concerns about legal standards, but again action depends on the views of line supervisors, or ultimately, the CEO.

#### **4. Reducing The Corporate Centre**

In light of the above, the role of the corporate centre has been examined. The corporate centre is defined as the Board, the CEO, other executive directors and all those working in areas reporting to executive directors other than people in stand-alone business units. EGMs are a crucial link between the business units and the centre. They form a crucial part of the leadership team.

The appropriate role should flow from WMC's corporate objectives and the nature of the business units. WMC seeks excellent financial performance from existing businesses, and growth from new core businesses in new areas. Existing businesses sell to different markets and face different competitors and challenges. They operate in reasonably stable industry structures, and major investment decisions are discrete and occasional. The centre can, therefore, concentrate increasingly on monitoring performance outcomes, and can be constantly looking for new business.

Exhibit 8

**The Corporate Centre needs to move from an orchestrator/operator to more of a coaching role**

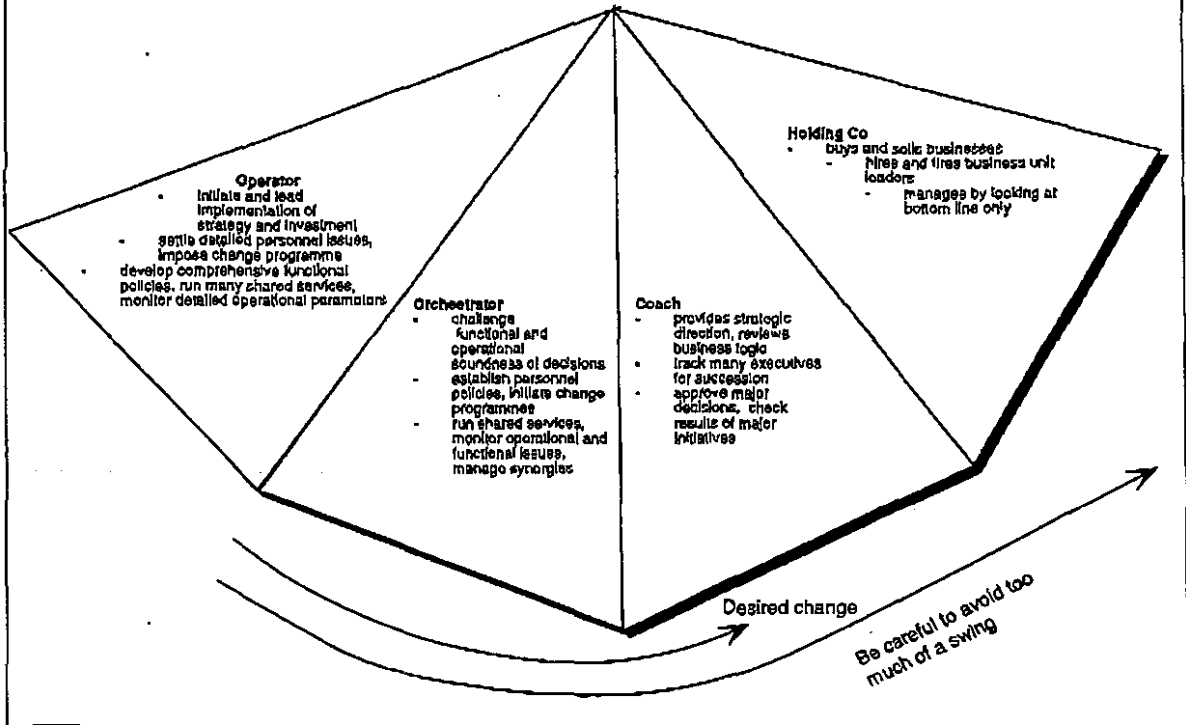
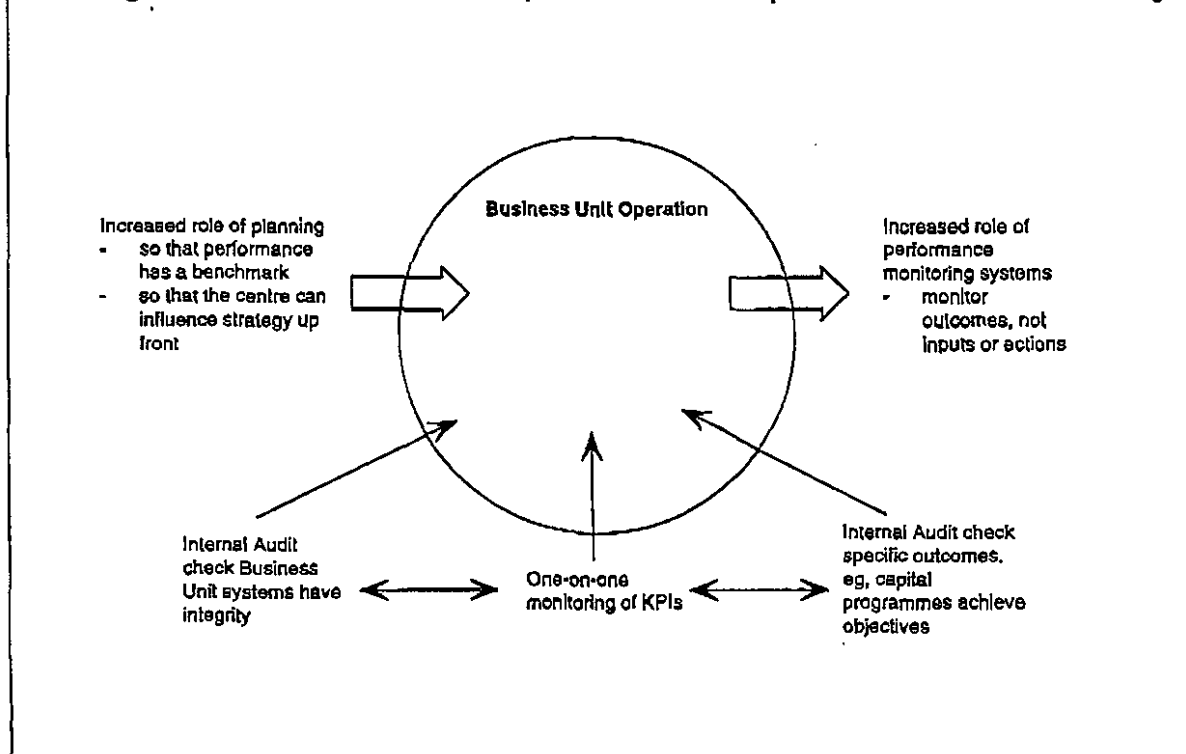


Exhibit 9

**Moving to a business unit structure requires a different corporate centre role in monitoring**



## Corporate Centre Roles

The corporate centre should intervene less and move to more of a coaching role (Exhibit 8). It will have four main roles.

- ¶ Shape the corporate business portfolio. In addition to seeking new businesses, this involves establishing the strategic direction within which existing businesses operate, intervening to check business logic and suggest new initiatives, and approving budget allocations.
- ¶ Enhance business performance. A range of high potential executives will be tracked for succession planning, major decisions with strategic implications will need approval, particular objectives will be set and the achievement of specific plans and major initiatives will be monitored.
- ¶ Manage the cost and availability of finance and human resources, as happens now.
- ¶ Manage the external stakeholders. Some further devolution can occur as trust is gained.

The corporate centre is getting smaller. This follows what has and will happen with service centres and advisers. Given WMC's current need to increase accountability, the aim should be to devolve essentially business unit tasks wherever possible. Services can, for example, be provided by one business unit on a user pays basis for others. Alternatively, as another example, a committee of business unit purchasing officers could co-ordinate to achieve economies of scale.

The corporate centre does, however, need to be able to monitor the business units effectively. We are not moving to a holding company model. Capacity will exist to question and monitor business unit strategies and plans, audit business unit processes and specific initiatives, and closely monitor performance (Exhibit 9). In the past, for example, we have not been good managers of capital. The Corporate Centre will take a greater interest in outcomes in this area. We need to review specific proposals more rigorously, to increase accountability for outcomes, and we will increase auditing of capital expenditure outcomes.

## The Corporate Centre and Growth

WMC needs to be better prepared than it is now for growth. As already described, improved capacity can come from four sources.

- ¶ Business units will have a larger role in suggesting business unit acquisitions and implementing those agreed in their commodity areas.
- ¶ The Director of Finance will have more time to focus on growth. His responsibilities for talc and administration will move elsewhere.
- ¶ The Director of Finance will be enhancing his planning and acquisition staff to help plan growth initiatives and implement them.
- ¶ The Director of Operations will play a large role in nurturing and in technical evaluation of new businesses.

## 5. Clarifying Accountability Boundaries

Understanding exactly what is meant by business units requires clarifying their accountability boundaries. This particularly requires understanding in relation to geography, acquisition and exploration.

Boundaries shall be set pragmatically, but within a consistent framework. The aim is to establish complete businesses able to take the full range of decisions for success and growth. As current business challenges are successfully met, accountability boundaries can be pushed out. It must be strongly emphasised, however, that increasing the boundaries is not automatic. It will only occur when, and if, local business units are performing well and able to take on new challenges.

Boundaries will be discussed yearly in annual key performance indicator (KPI) negotiations. These annual negotiations must not only determine KPIs, but also what responsibilities must necessarily be delegated to achieve them.

### Geographic Boundaries

These must be determined by common sense rather than inflexible rules. Each current business unit has different circumstances and challenges.

Oil and Gas has worldwide responsibility. Within this, its operations are currently divided geographically.

The new EGM Industrial Minerals will also have worldwide responsibility. This will involve close monitoring of our participation in alumina and, very likely, chemicals. It will also involve running our talc mining, milling and marketing business. The new EGM may wish to sub-contract oversight of our talc mine in WA to the EGM Nickel and Gold.

Nickel and Gold will, for the moment, have an Australian focus. Its domestic challenges are large and must be met well before the scope is broadened. The EGM will have responsibility for running any predominantly nickel or gold operation that WMC has in Australia.

Copper and uranium will also, for the moment, have an Australian focus. The challenge posed by the expansion of Olympic Dam is huge. At a convenient time it is proposed that responsibility for Nifty will be transferred to the EGM, Copper and Uranium.

While the EGMs for Nickel and Gold, and Copper and Uranium, will have an Australian geographic responsibility, as already stated their main effort must be aimed at ensuring business success with what they currently have. This requires, however, that they build up their knowledge of the world industry they are in. New developments can be considered when existing businesses are successful and as circumstances permit.

### Acquisition Boundaries

Business units will be able to propose acquisitions to top management that relate to their geographic and commodity responsibility. Initially within Australia the EGMs for Nickel and Gold, and Copper and Uranium, will, therefore, be encouraged to propose acquisitions in their commodities. Likewise, in oil and gas, and industrial minerals, the relevant EGMs will have a worldwide responsibility. When appropriate, EGMs will have acquisition implementation carriage, but no proposal will proceed without being considered by the Director of Finance who will play a quality control role in all such activity.



It is intended that each commodity business unit will eventually be the Group's centre of technical, strategic and commercial expertise in that commodity. The Director of Finance's area should, however, always have the capacity to supervise the appropriate approval procedure for acquisition proposals and business plans.

Accountability for acquisitions can, on occasion, be split. Those proposing an acquisition are accountable for the idea's success. Those implementing the acquisition are accountable for successful implementation.

The Director of Finance has clear accountability for proposing all other acquisitions. Consistent with the team approach we are building, business units will be involved in such activity as much as possible, and will be expected to contribute technical skills wherever needed. Of course, the Director of Finance is not prevented from suggesting acquisitions in, say, nickel, but he would then naturally involve the EGM Nickel and Gold in consideration of the merits of such a move.

### **Exploration Boundaries**

Greenfields mineral exploration will generally be the responsibility of the Director of Exploration who will, therefore, have full responsibility for exploration in the Americas.

The Exploration business unit is naturally WMC's main vehicle for initial international political contact. It is constantly required to go to a new country and begin a potentially long term commitment for WMC. Therefore, Exploration must have the necessary skills to perform its traditional activity. Its legal and commercial skills are being upgraded to allow it to do this. Consequently, it will also provide support for other parts of the company when doing business overseas. For example, if we were considering an acquisition in a new country, Exploration would be expected to support as appropriate with any country knowledge skills. Industrial Minerals could also assist. So, of course, could any other business unit with operations overseas.

Business units will be fully responsible for all exploration within their budget. In minerals, this will generally be exploration that optimises existing infrastructure. Exploration plans and budgets will be negotiated annually, and will therefore define what people are responsible for.

Resident managers particularly need to take a greater interest in geology. They need to nurture their geologists as they would their mine engineers, as they are equally responsible for the performance of both.

For their part, geologists within operations need to recognise their clear line responsibility. This is particularly relevant in relation to information.

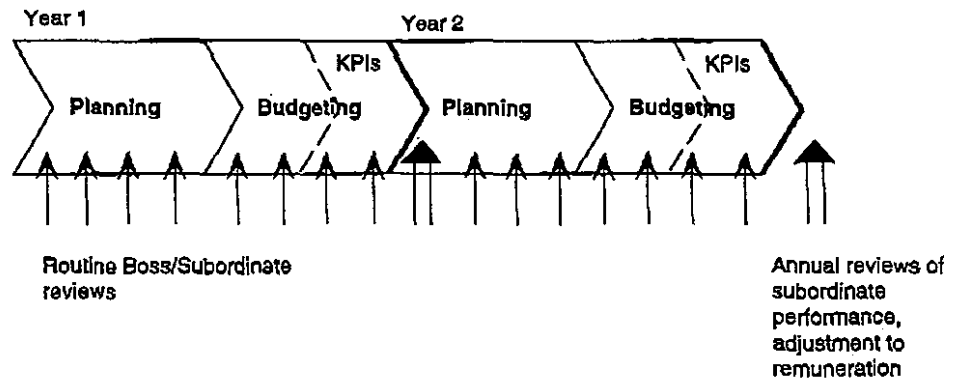
The Exploration and commodity business units need to consult each other. For example, in formulating greenfield strategy in particular commodities, Exploration should consult with relevant commodity business units. This can occur both at senior geologist level in the business units, and at the reconstituted Executive Committee meetings to be described below. It is important that commodity business unit leaders feel able to contribute views on all aspects of their business, and that the Director of Exploration be able to understand and comment on strategies for utilising ore bodies.

## **6. Improving Performance Monitoring Systems**

WMC's evolution from a complex matrix to a business unit structure facilitates improved planning and performance monitoring. A complex matrix structure by its nature sees multiple sources of authority, and constant exchanges and trade-offs, which makes planning

Exhibit 10

### Integrated planning, budgeting and performance monitoring processes



and performance monitoring difficult. Our changing structure, however, will not dictate how we work. This will depend much more on our staff, skills and systems.

Improved planning and performance monitoring systems are desired by all levels within the organisation. Staff generally would welcome a clearer sense of where the company is going and what is expected of them. Progress is well underway. Strategic plans for each business unit will be agreed shortly, and will go to the Board in consolidated form in December. Performance appraisals for all staff are beginning.

The integrated planning and performance monitoring process can be summarised as follows (Exhibit 10).

- ¶ We must plan in detail how we are to achieve our ambitious new objectives: what contribution will come from growth in our existing business units, what from emerging businesses and what role will be played by new finds and acquisitions
- ¶ Annual budgets will describe the progress to be made in meeting plan objectives over the coming year
- ¶ Each year the responsibilities to be delegated to EGMs and their key performance indicators (KPIs) will be negotiated
- ¶ Performance against these KPIs will be regularly monitored
- ¶ At year end performance will be appraised and remuneration adjusted accordingly.

We will, therefore, plan to achieve our objectives, provide resources and set accountabilities accordingly, and monitor outcomes closely. The corporate centre, particularly, will be less concerned with details and inputs and much more concerned with setting broad policies and the delivery of outcomes against objectives.

### **Planning and Budget Processes**

The preparation of the strategic plan, with presentations to the Board in December, is well underway and many have been involved. The strategic plans of business units are also set within the context of the objectives of WMC. Plans describe how each business unit will contribute to the Group's objective of achieving 25% of its assets overseas, of achieving rates of growth and financial returns in the top 25% of like companies, and so on. Strategic plans deal with how the main strategic issues facing each business unit will be handled.

Budgets are much more than an expenditure allocation process. They need to be set with a view to identifying how much progress towards plan objectives will be made in the coming two years, and exactly how this process will be achieved.

### **Key Performance Indicators**

People cannot be equally responsible for everything. They need a clearer view of what their priorities should be, and agreed KPIs seek to do this. Time is inevitably short for every manager, with constant choices made about what to spend scarce time on. KPIs can continually remind the manager what the most important tasks are. KPIs should:

- ¶ be agreed before the end of the budget process. Because most KPIs will be quantified they can only be set when the final budget numbers come together.

**Managers should at minimum have authority to:**

- ¶ veto appointment of personnel
- ¶ assign tasks to direct reports
- ¶ initiate transfer or dismissal of subordinates
- ¶ appraise subordinate performance and adjust rewards accordingly

- ¶ reflect the combined judgement of both the supervisor and the supervised. They should be negotiated, involve give and take, and only be settled after face to face discussion.
- ¶ be precise and be based on specified assumptions. They should list the precise outcome required and the time for completion.
- ¶ be able to be driven by decisions within the control of those for whom they are set. In agreeing KPIs, therefore, supervisors should describe the authorities that are delegated so that the priorities can be achieved. (Exhibit 11 describes the minimum authorities of managers)

The CEO should only really be concerned with the KPIs set for his direct reports. While all employees should have KPIs, those below the CEO's direct reports should have their KPIs set within their business units or other structures.

Advisers will need KPIs. Over the years the load on senior management has been heavier than necessary because staff work has not always been of sufficient depth, presentation or timeliness throughout the Company.

There needs to be three sets of KPIs for EGMs running business units. First, core financial KPIs, which will be discussed on November 24. Second, core non-financial KPIs. Third, KPIs that will vary each year. For example, it may be agreed with the CEO that some operations should focus over the next year on improving supply. In another year the focus could be on maintenance.

Core non-financial issues could cover such matters as geology, land title, the environment, occupational health and safety and employee satisfaction. These are all issues vital for business sustainability. Whereas financial KPIs can usually be summarised into one or a set of numbers, non-financial KPIs may be best set by agreeing quite specific plans submitted by EGMs.

The new processes will see business unit leaders present the CEO with, for example, a considered environmental plan which will be the culmination of material received from resident managers. The plan would be negotiated and settled between the CEO and the business unit leader. The Group Manager, Environment's role in this process will be to assist the CEO in his assessment with or through the General Manager, Corporate. Environmental plans could list specific actions, expenditure on projects and desired environmental outcomes.

### **Performance Monitoring, Performance Appraisal and Remuneration**

Performance monitoring would be more efficient if it was done regularly, with a clear agenda, and with agreed outcomes. This way messages can be more clearly communicated and problems anticipated. Performance monitoring sessions should be based on memoranda from business unit leaders covering progress on all KPIs and other matters that the business unit leader wishes to raise with the CEO.

Performance appraisal processes are important for both parties. Rather than having to create a specific occasion, supervisors have a regular forum to comment on performance and impart objectives. While regular feedback would be given, the main performance appraisal should occur at the end of the financial year. Regular discussions, however, should ensure that the end of year session involved no surprises.

Given the importance of the achievement of good progress on all key performance indicators, success or otherwise should translate into significant changes in wage levels and, if relevant, bonus share issues. This way performance appraisal cannot focus only on generalities. It must involve a specific assessment of employee performance.

Exhibit 12

### Changing the way we meet

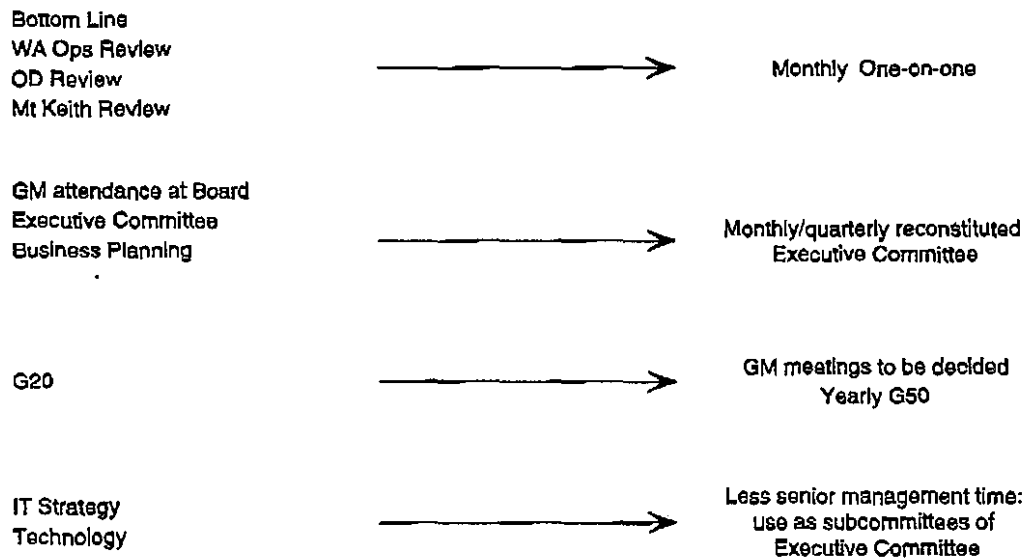


Exhibit 13

### Meeting more effectively

#### Monthly One-on-one

- KPIs
- Major initiatives
- Operating strategy
- Business planning

#### Yearly G50

- WMC skills
- WMC strategy
- WMC structure
- WMC values
- WMC style
- WMC systems

#### Monthly/Quarterly Reconstituted Executive Committee

- Usually meet in Melbourne, initially monthly
- Agenda items only for discussion, not information (Information comes via one-page weekly Information Reports to CEO)
- Agenda items advised to CEO one week before meeting, with proposer to provide at that time one page on each suggested item listing issues to be discussed and desired outcomes
- Agenda items settled three days before meeting, and sent out to all participants together with one page on each item listing issues to be discussed and desired outcomes (any other relevant paper should be kept to a minimum, but should also be sent out 3 days before meeting)
- Examples of likely topics
  - cross business unit issues such as employee relations
  - major capital decisions
  - important progress points with emerging projects
  - major potential environmental requirements
  - important WMC financial decisions

## 7. Changing The Way We Meet

The changes so far described require changes in the way WMC meets (Exhibit 12). We need to spend less time in meetings, and to make meetings more effective. (Exhibit 13)

There will be monthly one-on-one meetings between the CEO and each direct report to discuss KPIs, major initiatives, operating strategy and business planning, as appropriate. Other Executive Directors may be involved as required in one-on-one meetings with EGMs. Most meetings will be face-to-face, and some will be on site.

There will also be regular meetings of a revitalised and reconstituted Executive Committee, which will comprise the CEO and his nine direct reports shown in Exhibit 5. This leadership team will discuss written reports monthly, at least initially, and will operate within certain rules. The aim particularly will be to allow business unit leaders to see the whole picture, to allow WMC to benefit from the available mix of skills and to bond the leadership team.

Executive Committee agenda items will be for discussion, not simply for information. We will institute a system of weekly Information Reports to the CEO from each of the General Managers and above. They will be one or, at most, two pages long, seek to inform the CEO of all matters of relevance, be provided to the CEO every Friday by 4.00pm Melbourne time, and should be copied to all General Managers and above. They should cover important developments over the week, for example, major equipment breakdown, environmental or safety incidents, important competitor activity or relevant government agency or customer negotiations. They should be treated as highly confidential, to encourage full disclosure even of sensitive material. Their aim is to inform, so removing surprises, and avoiding the need to take valuable meeting time bringing everyone up to date. The CEO will use them as an important management tool.

We need to adjust the corporate approach to information. We need to move from a defensive, exclusive and need to know approach to a no surprises, inclusive and open approach. With increased accountability and responsibility must come increased frankness and an ability to protect confidential information.

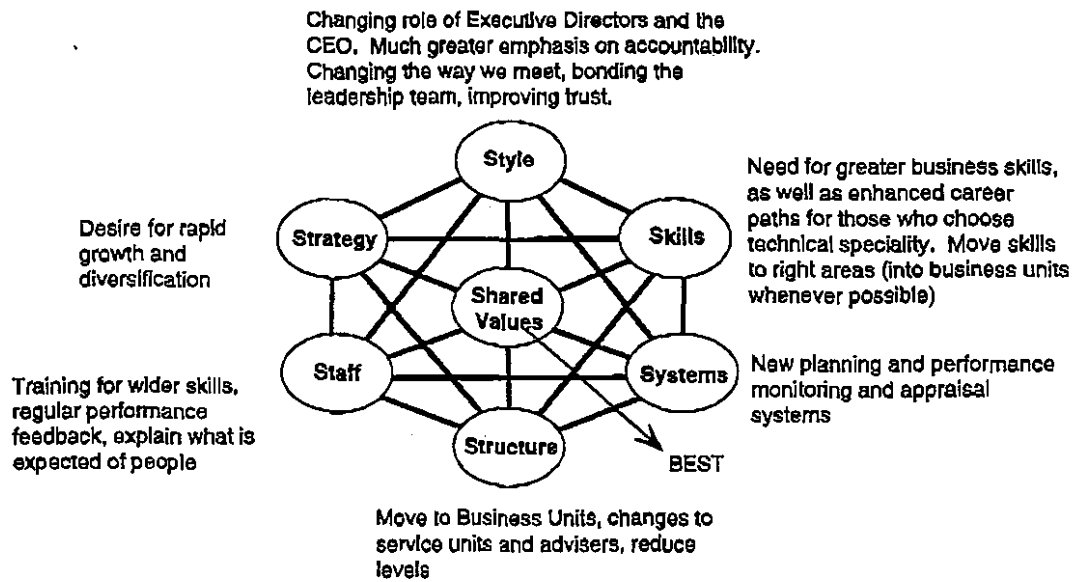
Finally, we have yet to settle what meetings will be held of General Managers and above. There will, however, be a once a year wider group (such as G50) meeting to discuss longer term issues. The agendas for these meetings could include:

- ¶ discussion of WMC values, style or general skill issues
- ¶ discussion of WMC's vision, strategy and financial performance
- ¶ discussion of WMC's structure or systems.

These meetings can reduce attendance at other meetings. In particular:

- ¶ all EGMs and GMs in future will not regularly attend Board meetings. They will instead attend only when required for particular presentations. The aim is to lessen the demands on their time as regular attendance at Board meetings can take around 5% of their working time
- ¶ the above meetings will remove the need for bottom line meetings and the Business Planning Committee

**Structure is just one part of the inter-related whole that makes up our company**





¶ attendance by senior management at a range of other meetings can be rationalised with those who do attend particular meetings briefing their peers at the regular Executive Committee meeting. Most other regular senior meetings will therefore effectively operate as sub-committees of the Executive Committee meeting.

\* \* \*

Exhibit 14 summaries the thrust of the changes we have made together over the last three to four years. They affect every aspect of the company and are linked one to the other. They should also affect every individual in the company. Announcements are being made to implement the measures mentioned today but not previously implemented.

These changes are judged to be right for now. They suit where we have come from and where we are going. As circumstances change, and as we experience the new structures and systems, adjustments will be made. We need constantly to question whether we are performing as well as we can.

The accountabilities outlined above in particular will change with time. As WMC grows, as we work better as a team, and as we improve our skills, responsibilities can be increased.

*11 November 1994*



**WMC Resources Ltd**

ACN 004 184 598

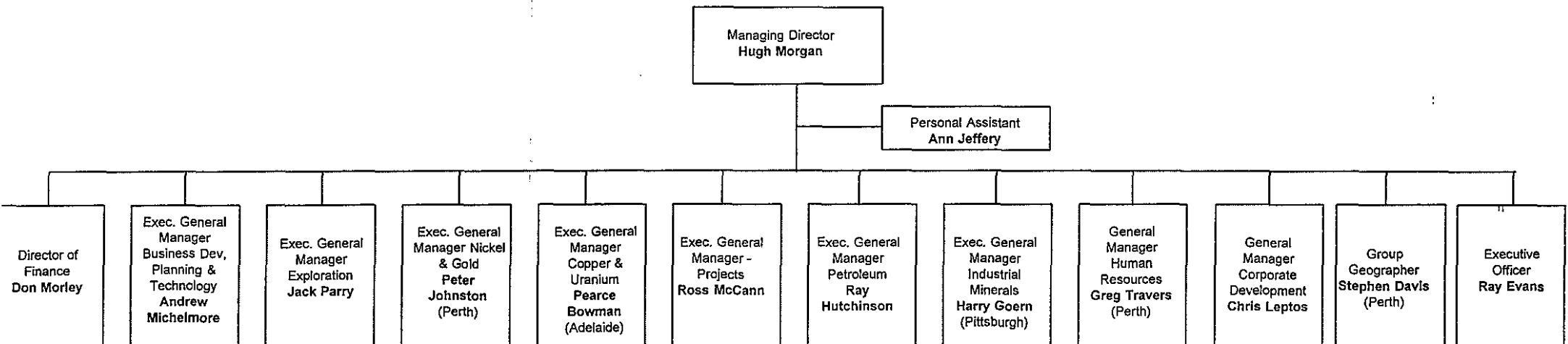
# **Organisation Charts**

28 March 1997

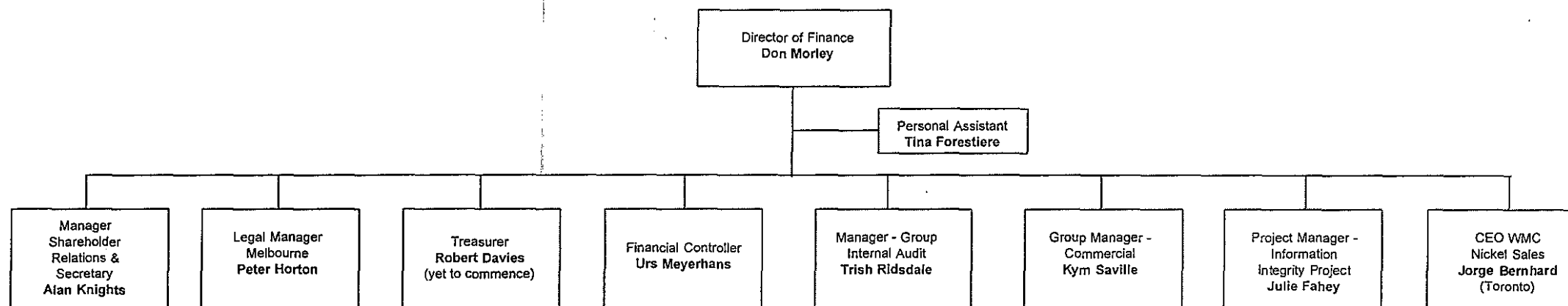
# INDEX

Director of Finance - <b>Don Morley</b> .....	Page 2
Executive General Manager Business Development, Planning & Technology - <b>Andrew Michelmores</b> .....	Page 3
Executive General Manager Exploration - <b>Jack Parry</b> .....	Page 4
Executive General Manager Nickel & Gold - <b>Peter Johnston</b> .....	Page 5-7
Executive General Manager Copper & Uranium - <b>Pearce Bowman</b> .....	Page 8
Executive General Manager - Projects - <b>Ross McCann</b> .....	Page 9
Executive General Manager - Petroleum - <b>Ray Hutchinson</b> .....	Page 10
Executive General Manager Industrial Minerals - <b>Harry Goern</b> .....	Page 11
General Manager Human Resources - <b>Greg Travers</b> .....	Page 12
General Manager Corporate Development - <b>Chris Leptos</b> .....	Page 13
Group Geographer - <b>Stephen Davis</b> .....	Page 14

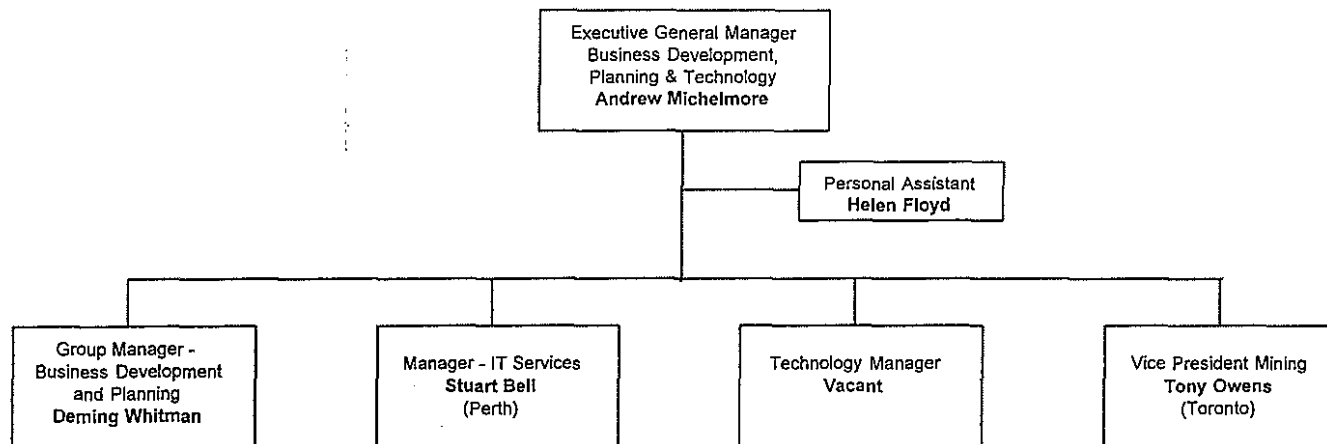
# Corporate Management



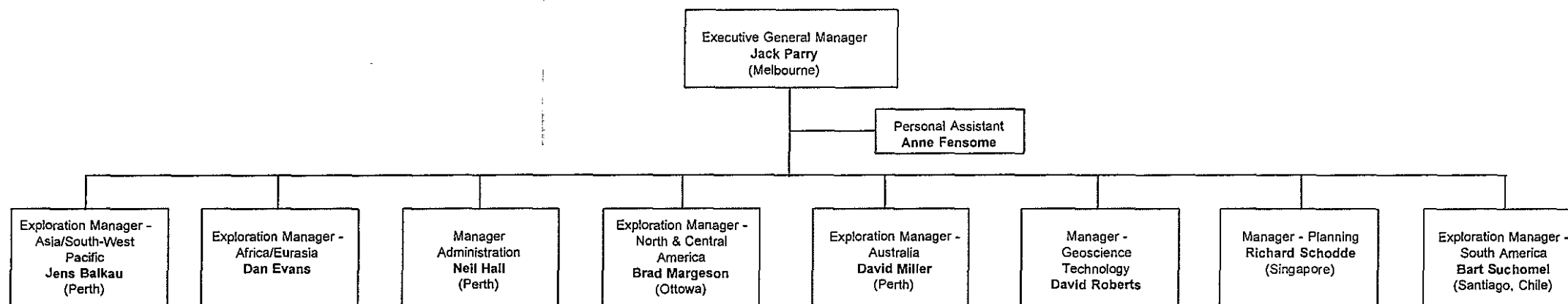
# Finance



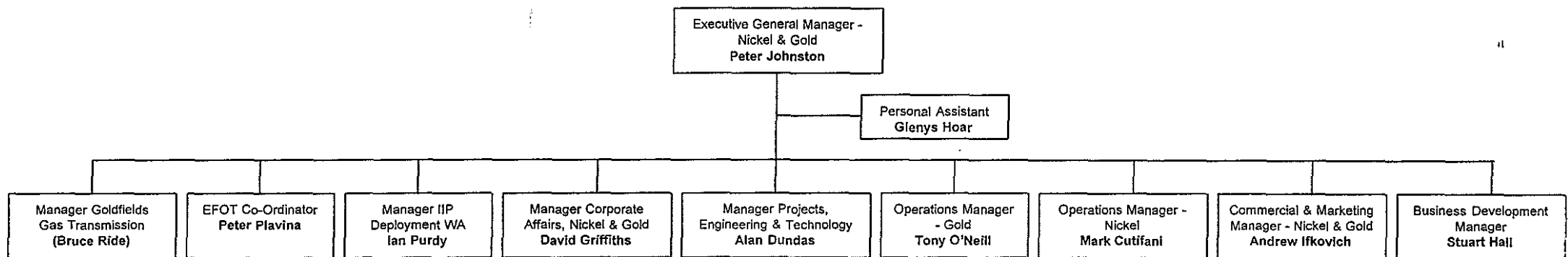
# Business Development, Planning & Technology



# Exploration Division

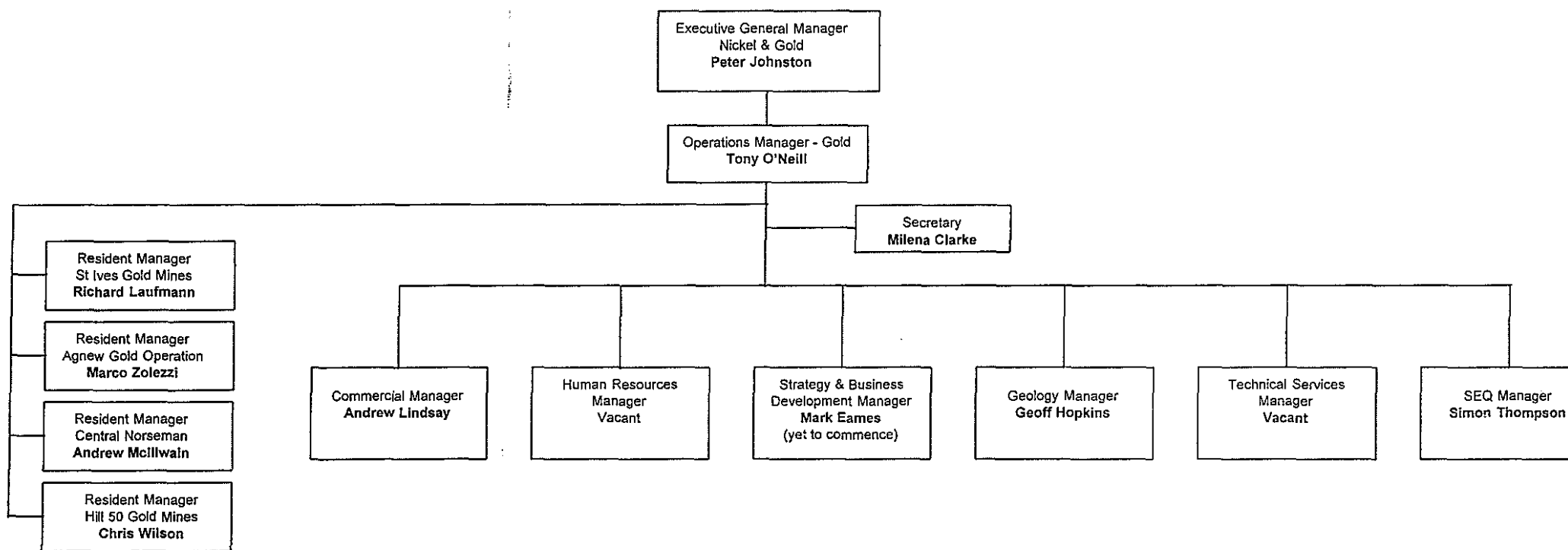


# Nickel & Gold Division (Perth)

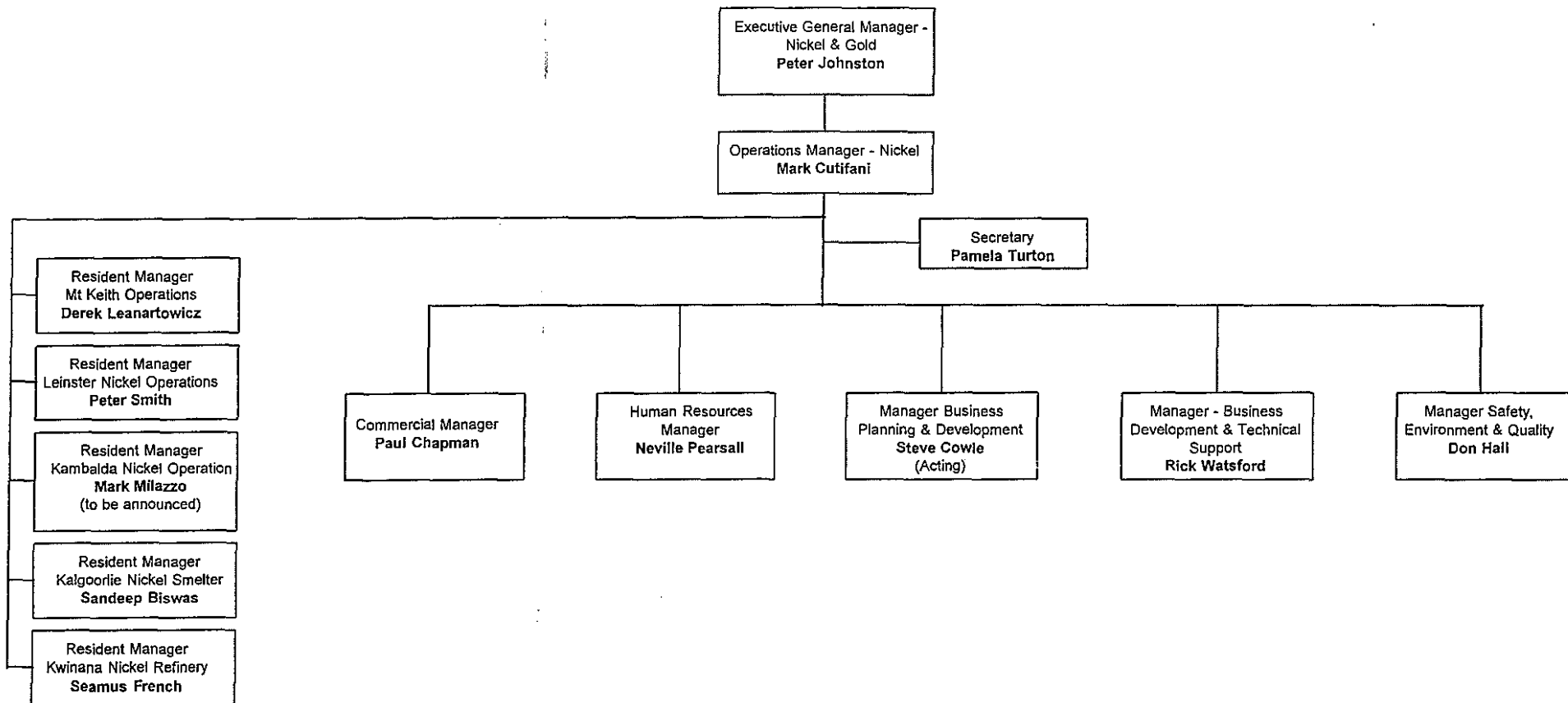




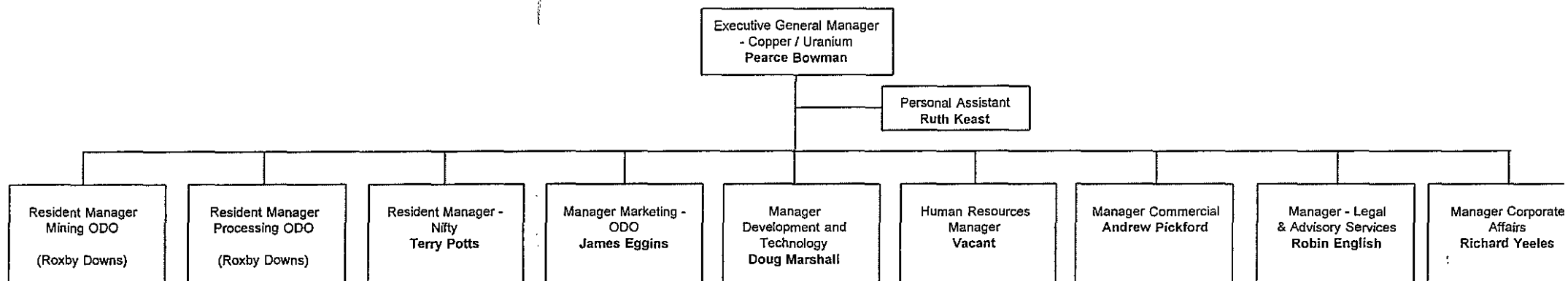
# Gold Operations (Perth)



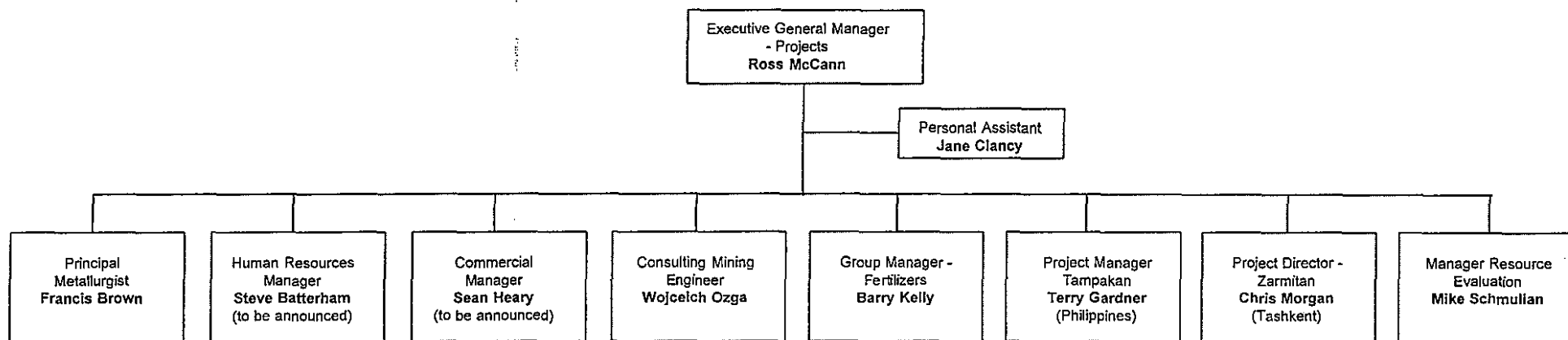
# Nickel Operations (Perth)



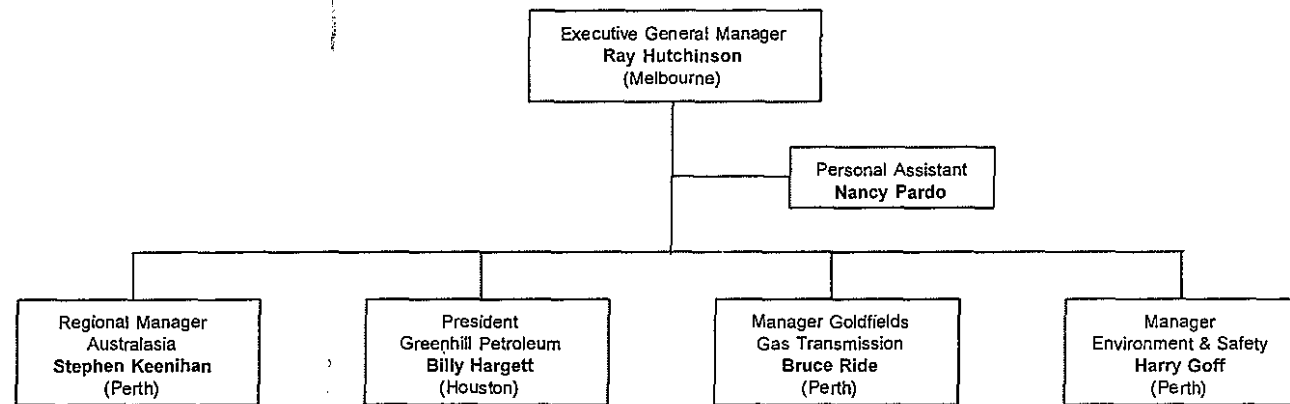
# Copper Uranium Division (Adelaide)



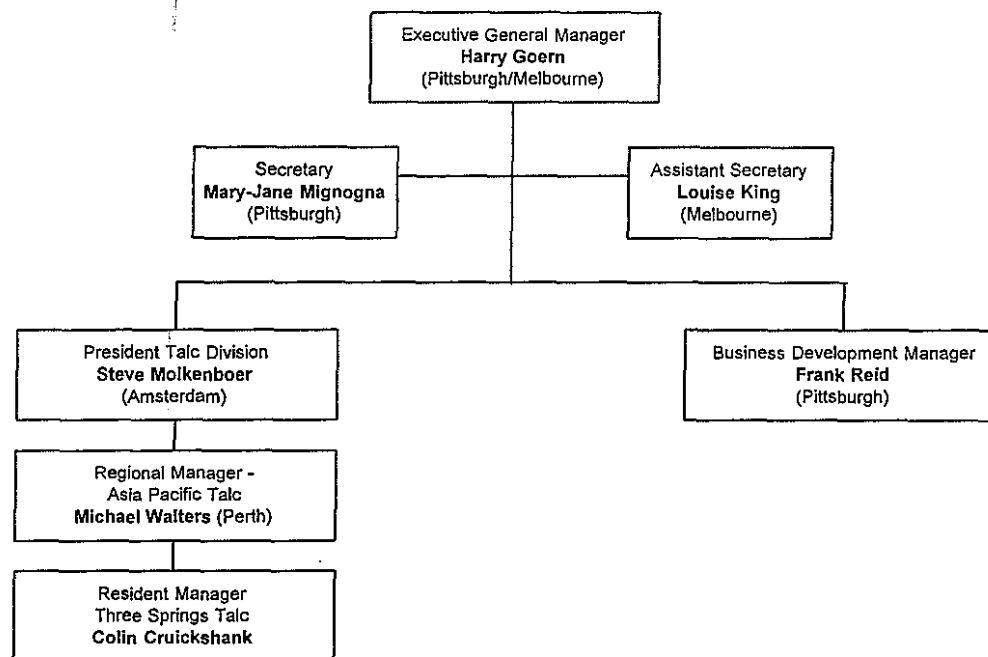
# Group Projects



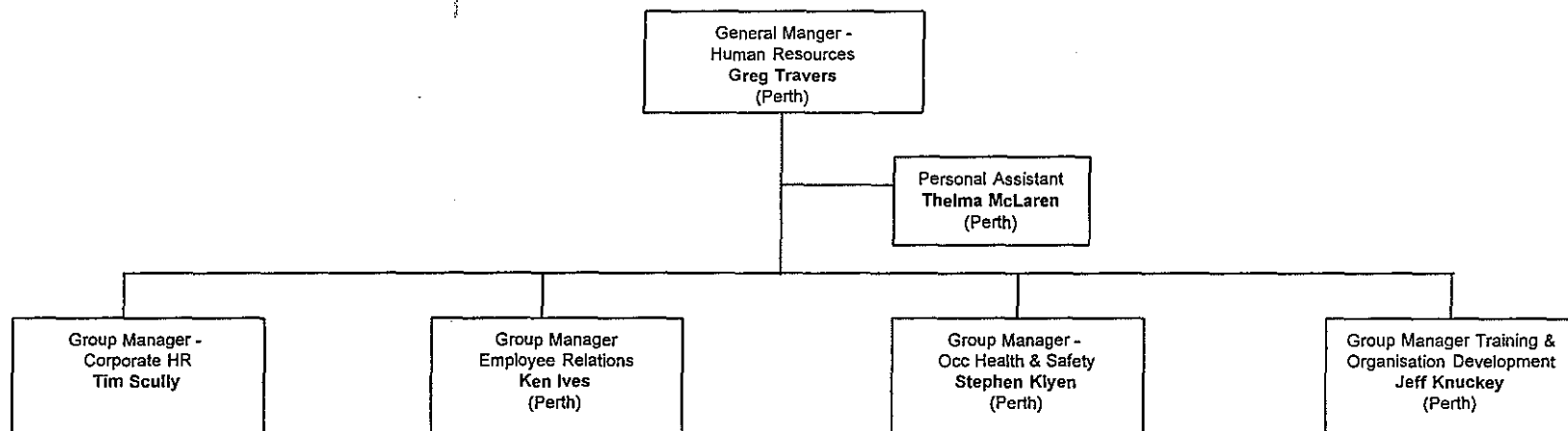
# Petroleum Division



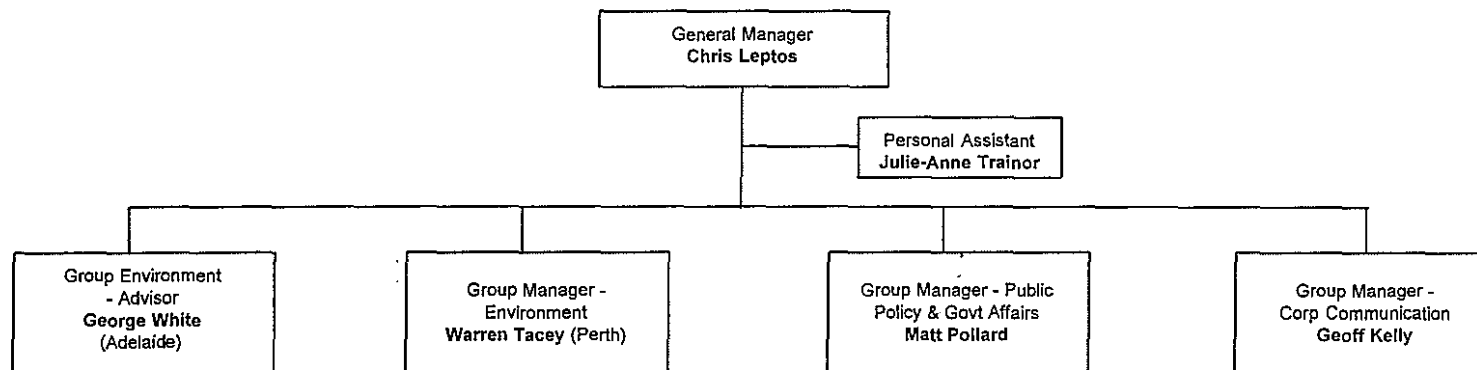
# Industrial Minerals



# Human Resources

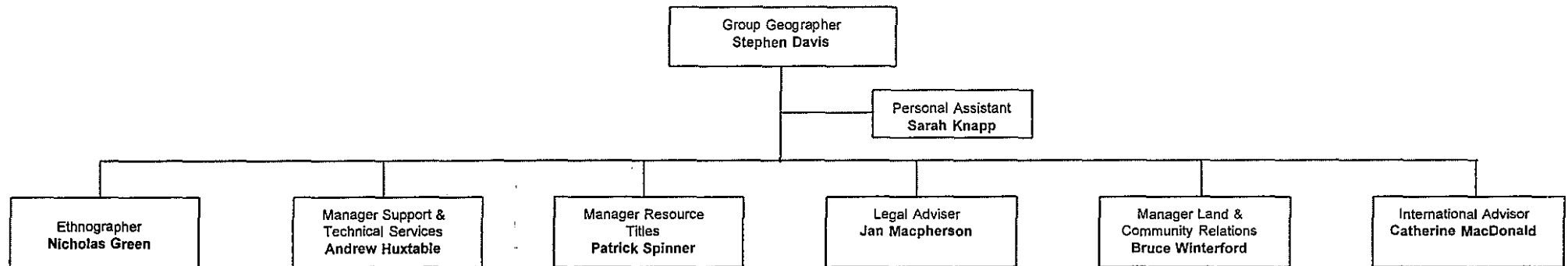


# Corporate Development - Melbourne





# Group Geographer's Office (Perth)



## **WMC SENIOR MANAGEMENT - 2000**

The following list of senior management in WMC Limited early in 2000 was collated from a chart produced by Peter Smith. It shows the three levels of management (four in the case of Nickel) reporting to the Chief Executive Officer at the time of collation.

G M Ralph  
3 August 2000

**Draft as at 24.8.00**

### **Chief Executive Officer, *Hugh M Morgan***

#### **Director Finance, *Don M Morley***

##### **Treasurer & Mgr Shareholder Relations, *Bob Davies***

Asst Treasurer, Finance, *Ian Maher*  
Asst Treasurer, Operations, *Yong Quek*  
Mgr Treasury Operations, *James Barrie*  
Mgr Shareholder Communications, *Charles Reis*

##### **Group Mgr, Business Effectiveness, *Peter Smith***

Project Mgr, Leadership Development, *Cliff Parker*  
Project Mgr, Systems & Processes, *David Payne*

##### **Financial Controller, *Urs Meyerhans***

Project Mgr, GST, *Richard Burnell*  
Financial Mgr, Corporate, *Linda Dillon*  
Mgr Taxation, *Stephen Harris*  
Mgr Group Financial Services, *Gordon Petty*  
Risk Mgr, *John Pearce*  
Process Improvement Analyst - Finance, *Ray Hughes-Odgers*  
Group Capital Controller, *Harry Gross*  
Planning Integration Mgr, *Warren Hallum*

##### **Mgr - Group Internal Audit, *Garry Wyatt***

Group Auditor, *Wayne Sharpe*  
Group Auditor, *Tim Hickman*  
Group Auditor, *Rod Schaefer*  
Group Auditor, *Richard Evans*

##### **Legal Mgr & Company Secretary, *Peter Horton***

Corporate Lawyer, *Jim Leggatt*  
Corporate Lawyer, *Sue-Anne Higgins*  
Corporate Lawyer, *Anthony Lennon*  
Corporate Lawyer, *Stephanie Reeves*  
Asst Company Secretary, *Ross Mallett*

### **EGM Industrial Mineral & Fertilizers, *Andrew Michelmore***

#### **GM Fertilizers, *Barry Kelly***

Mgr Corporate Affairs, *Ian Clague*  
Safety Environment & Quality Control Mgr, *Greg Hewson*  
Commercial Mgr, *Adam Todd*  
IIP2 Project Mgr & Information Mgr, *Brian Stephenson*  
Marketing Sales & Logistics Mgr, *Frans Helleman*

#### **GM Industrial Minerals, *Stuart Hall***

Resource Development Mgr, *Naji Aouker*  
Chief Engineer Industrial Minerals Division, *Geoff Carroll*  
Commercial Mgr Industrial Minerals, *Gordon Dunbar*  
Marketing Mgr Asia Pacific Talc, *Andy Lockie*  
Operations Mgr, *Dave Loth*

#### **Commercial Mgr, *Ken Tranter***

Business Analyst, .....

**Operations Mgr, *Russell Luxford***  
 Project Mgr Ramp-Up, *Ray Willis*  
 Mgr Engineering, *Rod Hansen*

**Divisional Mgr - HR, *Paul Duckett***  
 HR Adviser, *Craig Goodhand*

**GM Fertilizers, *Alex Arthur***  
 Mgr Mining & Beneficiation, *Peter Llewellyn*  
 Mgr Admin Services, *Dot Obst*  
 Mgr Phosphate Hill, *Brian Davis*  
 Mgr Maintenance, *Peter Kelsall*

## **EGM Corporate HR & Development, *Greg Travers***

**Group Mgr Corporate HR, *Ken Ives***  
 Employee Relations Mgr, *Chris Mitchell*  
 HR Mgr Remuneration, *Ian Hall*  
 HR Mgr Corporate, *Suzi Jotwani*

**Group Mgr HR & Development Services, *Tim Scully***  
 Mgr HR Services, *Amanda Shirley*  
 Mgr Environmental Systems, *Peter Elliott*  
 Mgr Property Services Centre, *Andrew Huxtable*  
 Process Improvement Analyst, *Carina Whittington*

**Group Training & Organisational Development Mgr, *Wayne Young***  
 Training Services Mgr, *Jenny Ward*

**Group Mgr Corporate Affairs, *Gordon Drake***  
 Group Mgr Corporate Communication, *Geoff Kelly*  
 Project Mgr Corporate Communication, *Ursula McGuinness*  
 Project Mgr Environmental Policy, *Kristina Ringwood*  
 Project Technical Asst, *Kellie Dark*

**Group Mgr Environment, Health & Safety, *Martin Webb***  
 Mgr Health & Hygiene, *Mark Edebone*  
 EOF Project Co-ordinator, *Ken Thomas*  
 Group Environmental Adviser, *George White*  
 Environmental Scientist, *Sean Kildare*

**Group Mgr Community Affairs, *Deming Whitman***  
 Group Adviser - Community - Legal, *Jan Macpherson*  
 Group Adviser - Land Access, *Patrick Spinner*

## **EGM Exploration, *Jack Parry***

**Divisional Exploration Mgr, *Jans Balkau***  
 Exploration Mgr, *Minlu Fo*  
 Exploration Mgr, *Charles Wilkinson*  
 Exploration Mgr, *Paul Mazzoni*

**Divisional HR Mgr, *Geoff Weaver***  
 HR Officer, Belmont, *Fatima Correia*  
 Professional Development Mgr, *Kevin Johnson*

**Divisional Controller, *Peter Armstrong***  
 Supply Mgr, *Mark Smith*  
 Accounting Mgr, *Wayne Holmes*  
 Senior Geologist, *Chris Newman*

**Group Adviser Mine & Advanced Projects Geology, *David Miller***  
 Principal Geologist Ore Reserves/Resources, *Henri Sans*  
 Mgr Mineralogical & Geological Services, *Karsten Winter*  
 Mgr Hydrology, *Gary Meyer*  
 Senior Geologist, *Neil Godden*

**Project Generation, *Dave Roberts***  
 Business Services Mgr, *Jeff Welborn*

Commercial Mgr, *David Berrie*  
Commercial Mgr, *Dom Barrington*  
Exploration Mgr, *Ken Collum*  
Administration Mgr, *Santiago, Omar Contreras*  
Information Mgr, *Rob Freeth*  
Tenement Officer, *Dan Soderberg*  
Adviser Loss Control & Environment, *Phil Smith*

**Divisional Exploration Mgr, *Bart Suchomel***

Chief Geochemist, *Paul Taufen*  
Exploration Mgr - Project Generation, *Malcolm Norris*  
Exploration Mgr - Project Generation, *Jon Kronskey*  
Chief Geophysicist, *Howard Golden*  
Mgr Drilling Services, *John Emerson*  
Mgr Nickel Laterites, *Mick Elias*

**Divisional Exploration Mgr, *Brad Margeson***

Senior Geologist Brazil, Sao Martin Project, *Paulo Brito*  
Project Mgr Santiago, *Jon Black*  
Senior Geologist Brazil, Goas Project, *Augusto Mol*  
Senior Geologist, *Eugenio Ferrari*  
Exploration Mgr, *Rex Brommecker*  
Country Mgr, French Guiana, *Herve Germani*

**EGM Copper Division, *Pearce Bowman***

**GM - Olympic Dam Operations, *Ian Smith***

Mining Mgr, *Jim Beyer*  
Mill/Hydro Mgr, *Peter Ellen*  
Smelter Mgr, *Arthur Hunt*  
Refinery Mgr, *Jason Schell*  
Backfill Mgr, *Gary Baldwin*  
Operations Maintenance Mgr, *Greg Harvey*  
Maintenance Support Mgr, *Krish Krishnaoorthy*  
Information Analyst, *Rob Gilbertson*

**Divisional Mgr - Development CuDiv, *Dave Thomas***

Mgr Geology, *Stewart Eldridge*  
Mgr Mine Technical Services, *Bryan Beighton*  
Mgr Engineering & Services, *Mike Sofley*  
Mgr Laboratories, *Barry Hewlett*  
Chief Metallurgist, *Bruce Day*

**Divisional Mgr - Major Projects, *Doug Marshall***

Administration Services Mgr, *Chris Best*

**Divisional Mgr Corporate Affairs, *Richard Yeeles***

Land Management Superintendent, *John Read*  
Public Affairs Mgr, *Terry Dwyer*  
Legal Affairs Mgr, *Paul Blewett*  
Environment Mgr, *Keith Ashby*  
Community Relations Officer, *David Stokes*  
Environmental Adviser, *Vic Farrington*

**Divisional Mgr Commercial/Marketing, *James Eggins***

Mgr Copper Sales, *Russell Griffen*  
Marketing Mgr Uranium, *Chris Lewis*  
Sales Rep Copper, *Ian Cleverley*  
Production Planning Co-ordinator, *Frank Bolton*  
Mgr Marketing Development, *Andrew Ifkovich*

**Divisional Mgr - Commercial, *Alan Knights***

Business Performance, *Neil Grimes*  
Mine Business Analyst, *Neil Fraser*  
Information Mgr, *Chris Mahoney*

Capital Controller, *Greg Kelly*  
Divisional HR Mgr, *Steve Batterham*  
Site HR Mgr, *Greg Christensen*

**EGM Projects, *Ross McCann***

**Project Mgr Tampakan, *Terry Gardiner***  
Vice President Corporate Affairs, *Ed Coronel*  
HR Mgr, *Mel Bagara*  
Environment & Loss Control Mgr, *JoJo Bacani*  
Corporate Affairs Mgr, *Ernie Mendoza*  
Legal Mgr, *Ferando Penarroyo*  
Operations Mgr, *Roger Corpus*  
Administration Mgr, *Nael Cruspero*  
Chief Accountant, *Ronald Imperial*  
Chief Geologist, *Alex Madera*

**Project Studies Mgr, *Joe Campbell***  
Accountant, *Rob Finlay*  
District Geologist, *Alan Sexton*  
Camp Mgr/Safety Adviser, *Jim Bernard*

**Project Director - Zarmitan, *Sean Heary***  
Senior Financial Analyst, *David Forster*  
Commercial Mgr (Americas), *Linda Pendrill*

**Project Director, Pinares, *Germain Del Corral***  
Geology Mgr, *Rob Behets*  
Metallurgy Mgr, *Chris George*  
Technical Mgr, *Raul Sanchez*  
Commercial/Legal Mgr, *Brian Weihs*  
Chief Corporate Draftsman, *Mark Ypelaar*

**Consulting Mining Engineer, *Wojeiech Ozga***  
Ore Reserve (Mine) Geologist, *Chris De Vityr*  
Mgr Project Evaluation & Support, *Rod Watt*

**Project Mgr - QFP, *John Bovard***  
Principal Process Engineer, *Jeff Duckworth*

**Group Mgr - Commercial, *Kym Saville***  
Mgr Acquisitions, *Simon Heggen*  
Mgr Acquisitions, *Bob Smith*  
Project Mgr - Business Development, *Peter Spiers*  
Project Mgr - Business Development, *Steve Cowle*

**Group Mgr - Technology, *Rob La Nauze***  
Mgr Total Systems Processing, *Francis Brown*  
Mgr Mine Automation, *Adrian Molinia*  
Mgr Orebody Imaging, *Ian Scott*

**EGM Gold, *Tony O'Neill***

**Mgr Business Strategy, *Andrew McIlwain***  
**Operations Mgr - Central Norseman Gold Corp, *Geoff Pedemont***  
Mgr Mining, *Chris Stone*  
Mgr Metallurgy, *Peter Williams*  
Mgr Geology, *Chris Stephens*  
Mgr Engineering Services, *Graeme Roach*  
Mgr Risk Control, *Ron Groeland*  
HR Officer, *Kristy Johnson-Brown*

**GM St Ives Gold, *Richard Laufman***  
Mining Mgr, *Peter Teasdale*  
Metallurgy Mgr, *Stewart Findlay*  
Chief Geologist, *Ed Ainscough*  
Technical Services Mgr, *Iain Ross*

Safety Mgr, *Darren Hedley*  
 Environmental Mgr, *Alan Vasey*  
 Commercial Mgr, *Bob Rutten*  
 HR Mgr, *Steve Tobin*  
 Business Improvement Mgr, *Wayne Taylor*  
**GM Agnew Gold Operation, *Neil Whitaker***  
 Mining Mgr (Contractor), *Bill Frazer*  
 Production Superintendent (Contractor), *John Bower*  
 Geology Mgr, *Dave Kelly*  
 Engineering Superintendent, *Patrick Enaille*  
 Loss Control & Services Superintendent, *Trevor Pleass*  
 Commercial Mgr, *Tim Duffy*  
 HR Officer, *Michelle Denny*  
**Group Mgr Supply, *Bob Dandie***  
 Supply Mgr (Vic), *John Jeffreys*  
 e-Supply Mgr, (WA), *Alan Poezyn*  
 CIT Mgr (WA), *Bernie Houston*  
 Transport & Logistics Mgr (WA), *John Oliver*  
**Mgr Technical, *Marco Zolezi***  
 Senior Mining Engineer, *Glenn Van Vlemen*  
 Mgr Metallurgy - Gold, *Andrew Skalski*  
 Mgr Resource Planning, *Peter Mc Ardle*  
 Senior Environmental Adviser, *Greg Morris*  
**Commercial Mgr Gold, *Mark Eames***  
 Taxation Mgr Gold & Exploration, *Stephen Gooderson*  
 Contracts Mgr, *Phil Mortimer*  
 Accounting Mgr, *Stephen Procter*  
 Geologist Acquisitions, *Maurice Re*  
 Planning Mgr, *Steve Robinson*

## **EGM Nickel, *Peter Johnston***

**Divisional HR Mgr Nickel, *Jeff Knuckey***  
 HR Officer - Nickel, *vacant*  
 Building Facilities Co-ordinator, *Veronica Haywood*  
**Divisional Mgr - Corporate Affairs Nickel, *Dave Griffiths***  
 Community Relations Mgr, *Bob Dalton*  
 Land Access Mgr, *Mark Donovan*  
 Environmental Mgr - Nickel & Gold, *Vanessa Guthrie*  
 Public Affairs Mgr, *Peter Clough*  
**Group Mgr Information, *Einar Vikingur***  
 IM Planning Mgr, *Mike Bache*  
 e-Business Mgr, *Ian Hollingworth*  
 Mgr BBS, *Chris Folry*  
 Planning & Systems Mgr, *Graeme Tebbit*  
 RITO Mgr, *Ken Morgan*  
 Team Leader Corporate Information Management, *Denis Bunworth*  
 Mgr Information Services, *Lesley Crombie*  
**Divisional Mgr - Commercial Nickel, *Paul Chapman***  
 Accounting & Information Mgr, *Paul Sims*  
 Negotiations Mgr, *Andrew Wood*  
 Business Analyst, *Shaun Vokes*  
 Business Analyst, *Michael Barratt*  
 Taxation Mgr Nickel, *Dane Paddon*  
**Mgr Business Strategy - Nickel, *John Quayle***  
 Project Mgr, *Bruce Wedderburn*  
 Project Mgr - Business Development, *Eric Staszczuk*  
 Geology Mgr Nickel, *David Chapman*

**Chief Executive Officer Nickel Marketing, *Jorge Bernhard***  
 VP Marketing & Sales, *Samantha Hogg*  
 Controller, *Tim Hollaar*

**Project Mgr - IIP Commissioning Project, *Trevor Peters***  
 Communications & Training Team Leader, *Bernice Boland*  
 Change Requests Team Leader, *Julia Jones*  
 Roles & Responsibilities Team Leader, *Pam Harling*  
 Service Procurement & BOMs/Catalogue Team leader, *Bernie Houston*  
 Reporting & CO Team Team Leader, *Peter Sawiak*  
 EOM & Budgets Forecast/Planning Team Leader, *Ray Hughes-Odgers*  
 PM Team Leader, *Peter Powell*  
 SD Team Leader, *Mark Williams*  
 Prodtrak & PP/QM Team Leader, *Peter McDonald*  
 Payroll/HRSC Team Leader, *Carina Whittington*

**GM Nickel Operations, *Alan Dundas***  
**GM Kwinana Nickel Refinery, *Seamus French***  
 Operations Mgr, *vacant*  
 Process Improvement Co-ordinator, *Peter Gough*  
 Business development Mgr, *Ian Clark*  
 Commercial Mgr, *Fred Hess*  
 HR Mgr, *Jon Kaskow*

**GM Kambalda Nickel Operations, *Luke Tonkin***  
 Mining Mgr, *Tim Gilbert*  
 Metallurgy Mgr, *Barry Clout*  
 Geology Mgr, *Peter Bewick*  
 Technical Services Mgr, *Chris Banasik*  
 Safety, Environment & Systems Mgr, *Alan Robertson*  
 Commercial Mgr, *Will Robinson*

**GM Kt Keith Nickel Operations, *Derek Lenartowicz***  
 Mining Mgr, *Damien Marantelli*  
 Metallurgy Mgr, *Roy Francis*  
 Engineering & Environment Mgr, *Geoff Chapman*  
 Commercial Mgr, *George Bank*  
 HR Mgr, *Tim Glare*

**GM Kalgoorlie Nickel Smelter, *Sandeep Biswas***  
 Production Mgr, *Jon Taylor*  
 Act Engineering Mgr, *Atholl Boothroyd*  
 SEQ Mgr, *Peter Cowley*  
 Major Products Mgr, *Bob Mackay*  
 Business & Production Planning Mgr, *Brendan Price*  
 Commercial/HR Mgr, *Peter Odgers*

**GM Leinster Nickel Operations, *Hamish Bohannan***  
 Mine Mgr (Act), *Mark Richardson*  
 Metallurgy Mgr, *Tony Emslie*  
 Operations Planning Mgr, *Jim Jewel*  
 Maintenance Mgr, *Jeff Smith*  
 Quality Systems Mgr, *Terry Carter*  
 Exploration Mgr, *Craig Reddell*  
 Commercial Mgr, *Greg Heard*  
 HR Mgr, *Bruce Ross-Adams*

**Technical Mgr, *Rick Watsford***  
 Mgr Metallurgy, *Narayan Krisnan*  
 Mgr Mineral Processing, *Geoff Senior*  
 Mgr Smelting, *Roger Player*  
 Mgr Maintenance Development, *Joe Keane*  
 Mgr Contracts, *William Rowe*  
 Business Analyst Production, *Alistair Stephens*

Abbreviations used are EGM for Executive General Manager, GM for General Manager and Mgr for Manager, Asst for Assistant, HR for Human Relations and Act for Acting.





APPENDIX XI  
WMC SAFETY & HEALTH CHRONOLOGY OF  
MAJOR ACTIVITIES

**WMC Safety & Health Development  
Chronology of Major Corporate Activities**

<u>Timing</u>	<u>Development</u>
1989	<i>Multiple fatalities - EMU mine + 2 other fatalities</i>  Corporate OHS Department formed - based in Adelaide
1990	<i>2 Fatalities</i>  First formal meeting of WMC S&H personnel  ACCSTAT database (DOS Version) installed at sites/major upgrades approx every 12 months  OHS Advisory Notes (Red Book) prepared and distributed widely in WMC
1990 - 1994	Annual OHS budgets co-ordinated and reviewed by Group Manager - OHS
1990 - 1994	Slow, but consistent, increase in the number of OHS Advisors at operations
1991	<i>6 Fatalities</i>  OHS Policy and Procedure released and included in the Group Policy and Procedures Manual  Commenced preparation and distribution of monthly "corporate" injury statistics. Also, monthly data for inclusion in Managing Director's Report  OHS reported as a "stand-alone" item in Annual Report. Also included in Quarterly Reports
1992	<i>4 Fatalities</i>  Meetings of WMC S&H personnel in their speciality groups, e.g. Safety and Emergency Response Occupational Hygiene, Occupational Health ACCSTAT
1993	<i>1 Fatality</i>  Health and Safety Conference chaired by Executive Assistant to Managing Director. Increased emphasis on external speakers including Regulators and Contractors
1994	<i><b>ZERO FATALITIES IN 1994</b></i>  Health and Safety Conference included representatives from Alcoa and Line Managers with S & H responsibilities (especially HR Managers)

<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
<b><u>1995</u></b>			
February	<i>(Fatality Neil Gollap CNGC)</i>		
May	<i>(Fatality Shaun Schwier H50)</i> <i>(Fatality John Croom SIGM)</i>		
June	Corporate OHS Department relocates to Perth (new Group Manager Safety & Health)	SRK	
July	S.A.F.E. auditing approved by Executive Committee	SRK	
	WMC S&H Presentation at WMC/ Alcoa MDP ( Vines)	GT/ SRK	
August	Monthly Executive S&H Summary Report upgraded/increased focus on activities	SRK	
	OHS Management Training (DuPont) - over 200 by March 1996	Chamber/ SRK	
	ACCSTAT upgraded to Windows version	SE	
September	WMC 95/96 Objectives (Processes/ Outcomes) in Annual Report (Involvement + Accountability/ Systems + Auditing)	SRK	
	Commenced training 20 WMC staff in ISRS for S.A.F.E. (Perth)	SRK	
October	Redraft of Safety and Health Policy - circulation for comment	SRK/ SE	
	S.A.F.E audit program commences - Cycle 1 - 18 sites	SRK	
November	Annual OHS conference held in Kalgoorlie for "Line Management" - 130 vs 65 in 1994	SRK	
	Inaugural Meeting of WMC Safety Network	SRK	
	Draft Guidelines for Safety in annual performance appraisal	SRK	
	Memo to EGM's re: issue of Contractors safety	SRK	
December	Involvement in Alcoa S&H Audit ( Kwinana)	SRK	
	<i>(Fatality Margarito Rayo - Nicaragua)</i>		
	Visit to Nicaragua - Incident Investigation	PBJ/ SRK	
July - Dec	Additional Business Unit Safety resources (Gold/ Nickel/ExDiv)	B Units	
<b><u>1996</u></b>			
February	Rewrite of GPP/Safety manual (based on ISRS)	SE/ SRK	
March	WMC Executive Committee formally has Safety as Agenda Item # 1	SRK/PBJ	
	Visit to Pittsburgh - Alcoa S&H Technology Transfer - feedback	SRK	
	<i>(Fatality Howard Spence - GGT)</i>		

Notes: \* ELP : Relevant element of DNV "Executive Leadership Profile" Audit  
+ Acronyms - see last page

<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
	Suggestion to form EOFT Taskforce - similar to Alcoa concept	SRK	
	Involvement as Minex Auditor	SRK	
April	Issued report of SAFE Auditing Progress (½ way Cycle 1)	SRK	
	Gold Business Unit - Mine Safety Action Plans	D Whitman	
May	1996/97 Budget Planning/ Performance KPIs as per HMM memo	SRK	
	WMC Safety Network reviews draft scope of EOFT - written by SRK	SRK	
	Contractor's Safety Forum ( safety advisors only)	SRK	
June	<i><u>(Fatality Ricky Birch - KNO)</u></i>		
	Elimination of Fatalities Taskforce endorsed by ExCo	HMM	
	Health/Medical Network	SE/ SRK	
July	EOFT Steering Committee and initial Taskforce meetings	PBJ/SRK/ST	
	Relaunch of WMC Safety & Health Policy and Beliefs	HMM/ SRK	
August	Contractors Line Managers Safety Forum (line managers)	SRK/ PBJ	
	Training/Risk Assessment for EOFT Members	PBJ/ST/SRK	
	WA User Group for ISRS - DNV organisation	SRK/ DNV	
October	<i><u>(Fatality Tony Bowes LNO)</u></i>		
	First EOFT Project Teams commence	SRK/ PBJ/ST	
	Cycle 2 of S.A.F.E. Audits commence	SRK	
	Review of SAP functionality with Safety & Health	S Mackowski	
November	WMC Safety & Health Conference - largest ever - 200 attendees	SRK	
	First Safety Conference	MB/JP	
	Concept of WMC Emergency Response Network floated	SRK/RWatsford (ODO)	
	Commenced providing advice/review re Yeelerrie/KRP	SE	
December	Safety & Health Strategic Plan presentation preparation	SRK/ Network	
	IFAP independent review of EOFT (#1)	EOFT	

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<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
<b><u>1997</u></b>			
January	SAFE - first WMC users group meeting in Perth - 20 attendees	SRK	
	Proposals for EOFT style teams to review "Employee Behaviors and "Contractor Management" to EOFT SC, Safety Network and HMM	SRK	
	QFP S&H Management System developed against WMC S&H Management System	SE/ SRK	
February	First of second 4 EOFT teams commence	EOFT	
	Contractors Line Managers Safety Forum (#2)	PBJ/ SRK	
March	GIA Review of WMC Corporate Safety & Health Department	GIA/SRK	
	MKO, KNR - Entry into MCA 1997 Minex Awards	Nickel B Unit	
	Three WMC employees appointed Minex Evaluators	SRK/CParker/SMackowski	
	Fitness For Work Standard approved by HMM	SRK/CMitchell/Prime	
April	<b><u>(Fatality Peter Abel KNO)</u></b>		
	Emergency Response Network ( Initial meeting)	SRK/PB	
	Country Risk Assessment Workshop	DW/RA	
	Technology Workshop	AGM/ (now RMc/RLN)	
May	ExCo decides to implement STOP across WMC (see January re proposal re: Employee Behavior Team)	PBJ/ExCo	
	Mining contractors - 6 audited under SAFE for first time (Kambalda)	SRK	
	Review of WMC status vs ACIL NSW Mining Safety Review	SRK	
	Short Term Incentive Scheme (STI) with safety as first/major part	GT	
	STOP implementation commences in Nickel/ Gold - 230 total	PBJ/ SRK	
June	KNR Safety Charter	KNR	
	Draft internal safety report prepared by Tim Diamanidis	SRK	
	IFAP independent review of EOFT (#2)	EOFT	
	QFD S&H Management System (based on WMC)	SE/SRK	
	Inaugural meeting of Industry S&H Managers network (June) in Melbourne to be held quarterly	SRK	
	New WMC Hazard/ Incident Report Form/Investigation Guidelines and Training packages	SRK/SE	

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<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
July	Request for proposal for independent review of WMC Safety by ACIL	SRK	
	Marysville review of EOFT	PB/ PBJ	
	<i><u>(Fatality - Byron Mejia - Nicaragua shooting)</u></i>		
	Incident Investigation in Nicaragua	SE/ MB	
	Receipt/distribution of ACIL proposal to Exec Committee	SRK	
August	EOFT presentations at NSW Mining Industry Seminar	SRK	
	Emergency Medical Evacuation Review	J Ward/MB	
	Review of ACIL proposal for Independent review of WMC safety	EOFT SC	
	E-mail participation in Alcoa Benchmarking study on Integrated Audits	SRK	
September	<i><u>Double Fatality Kerry Everett, Clinton Vodden - KNO)</u></i>		
	HMM Presentation at Qld Mining Industry Safety Conference	SRK/ HMM	
	MKO - Highly Commended in MINEX	MCA	
	KNR - Commended in MINEX	MCA	
	Country Risk Assessment --> Personal Safety, Health and Security Assessment for new work location - draft	SE/ MB	
	ExDiv "Time Out" day - across the world	JP/ MB	
	Legislation compliance audit - Nickel (using Mel Bell)	PBJ/ AD/ PP	
	DNV ELP Audit of Corporate/ Nickel & Gold/ CU Div/ Project	SRK/DNV	
October	Virtual S&H Management System Concept	SRK	
	Hosted inaugural meeting of MCA S&H Network (WMC Melb)	SRK	
	Review of Health/Hygiene "issues" with Ben Woodhouse	SE	
	WMC using Chemaalert as agreed MSDS system/new contract rates	SE/LRobertson (LSS)	
	Coordination of NICNAS registration for WMC	SE	
	IIP SC "allocates" \$50k to SAP/SEQ functionality (including review synergies of S&H + Environment systems)	SE/PE	
	Final draft of WMC Internal S&H Annual Report to ExCo **	SRK	
November	<i><u>(Fatality Zac Bakar - SIGM)</u></i>		
	1997 Safety & Health Conference - Kalgoorlie - 205 attendees	SRK	
	Summary of ELP audit sent to Executive **	SRK	

Notes: \* ELP : Relevant element of DNV "Executive Leadership Profile" Audit  
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<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
	November ExCo moved to Kalgoorlie (entirely on S&H) (** prereading)	SRK/ HMM	
	HMM launches " 5 Key Questions"	SRK	
	MD S.H.A.R.E. (Safety & Health Awards/ Recognitions of Excellence) inaugural Excellence Award to MKO	SRK	
	Shannon Green Video launched at Conference	SRK/HMM/PP	
	Initial WMC S&H Newsletter (#1)	SRK/PP	
	Network meetings at Conference (Health/ Hygiene/Contractors/ Emergency Response)	SRK/ SE	
	ExDiv (Aust) EGM's Safety Award	JP/MB	
	QV1 Safety Presentation (x 2) by EGM	PBJ	
December	S&H Strategic Plan presentation to HMM etc	SRK	
	December/January WMC S&H Newsletter (#2) distributed	SRK/NShaw	
	Generic WMC S&H Induction (ppt) - to be updated monthly	SRK/Dtaylor (S&H)	
	WMC S.A.M. with WorkSAFE	SRK/PP	
January 98	EOFT auditing (U/G Ground Control) - ISRS (SAFE) style	PP	
	Prepare schedule for ExCo members cross-audits re Involvement	SRK/HMM	
February			
	MINEX applications due - suggest KNR/MKO/OEP /ODO Mine & Process/ HiFert/ Ex Div Australia	SRK/SLewis (MCA)	
<u>Planned/Possible</u>			
	<i>Behavioral Safety Benchmarking Study - seminar/site visits (employees/ managers)</i>	SRK	
	<i>ExCo - training in ISRS auditing technique for their cross-audits on Involvement</i>	SRK/DNV	
	<i>WMC SAFE users group meeting - Perth/ODO</i>	SRK/DNV	
March	<i>WMC STOP status report (audit by DuPont/North??)</i>	SRK	
	<i>SAFE Cycle 2 report</i>	SRK	
	<i>SAFE Cycle 3 commences</i>	SRK/DNV	

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<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
	<i>Training Workshop/ Forum - focus on S&amp;H, EOFT</i>	<i>ABradshaw/SRK</i>	
	<i>Code of Conduct style booklet on S&amp;H behavior</i>	<i>SRK/Network</i>	
	<i>Worker Involvement initiatives:</i>		
	<ul style="list-style-type: none"> <li>• <i>Perception Surveys</i></li> <li>• <i>JSA</i></li> <li>• <i>Behavioural Based safety processes</i></li> </ul>		
	<i>Line Management into short term safety Advisor roles</i>	<i>SRK/GT</i>	
	<i>Safety Management training for Safety resources</i>	<i>SRK/Network</i>	
	<i>S.A.F.E. Progress Report (6 monthly)?</i>	<i>SRK</i>	
	<i>Off the job safety program</i>	<i>SRK</i>	
	<i>WMC Safety and Health audits (replace ISRS within SAFE ???)</i>	<i>SRK/WT</i>	
	<i>Secondment of Safety staff to/from Alcoa</i>	<i>SRK/JK</i>	
	<i>Annual Safety and Health Report (with Environment)</i>	<i>SRK/GD</i>	
	<i>Move to WMC Loss Control (SH, E, R, Legal) ???</i>	<i>HMM/GT</i>	
	<i>Emergency Response 2 Day Workshop (ODO)</i>	<i>PB</i>	
	<i>One day Safety Management for Senior WMC Managers</i>	<i>SRK/GT</i>	
	<i>Business Unit specific Safety seminars</i>	<i>SRK/EGM's</i>	
<i>March 1999</i>	<i>Combined S&amp;H and Environment Conference - SHARE Awards</i>	<i>SRK/WTacey</i>	

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## ACRONYMS

AGM	A Micheltmore, EGM - Industrial Minerals & Fertilizers
GT	G Travers, General Manager - Human Resources
HMM	H M Morgan, Managing Director
JP	J Parry, EGM - Exploration
MB	M Byrne, Principal Safety Advisor - ExDiv
PB	P Bowman, EGM - Copper Uranium
PBJ	P Johnston, EGM - Nickel & Gold
PP	P Plavina, EOFT Coordinator
SE	S Evans, Group Advisor - Safety & Health
SRK	S Klyen, Group Manager - Safety & Health
ST	S Thompson, SEQ Manager - Gold (EOFT Coordinator June 96-Feb 97)

ACIL/SJ	ACIL - Consultants/Susan Johnston (ACIL)
B Units	Business Units
Chamber	WA Chamber of Minerals & Energy
DNV	Det Norske Veritas (owners of ISRS)
EOFT	Elimination of Fatalities Taskforce
EOFT SC	Elimination of Fatalities Taskforce Steering Committee
ExCo	Managing Director's Executive Committee
GIA	Group Internal Audit
ISRS	International Safety Rating System
KNR	Kwinana Nickel Refinery
MCA	Minerals Council of Australia
MINEX	Minerals Industry Excellence Awards for S&H
Prime	Prime Health Group - Consultants
Network	SWMC S&H Network

Frank Martin Webb

**WMC Safety & Health Development**  
**Chronology of Major Corporate Activities**

<u>Timing</u>	<u>Development</u>
1989	<p><b><i>Multiple fatalities - EMU mine + 2 other fatalities</i></b></p> <p>Corporate OHS Department formed - based in Adelaide</p>
1990	<p><b><i>2 Fatalities</i></b></p> <p>First formal meeting of WMC S&amp;H personnel</p> <p>ACCSTAT database (DOS Version) installed at sites/major upgrades approx every 12 months</p> <p>OHS Advisory Notes (Red Book) prepared and distributed widely in WMC</p>
1990 - 1994	<p>Annual OHS budgets co-ordinated and reviewed by Group Manager - OHS</p>
1990 - 1994	<p>Slow, but consistent, increase in the number of OHS Advisors at operations</p>
1991	<p><b><i>6 Fatalities</i></b></p> <p>OHS Policy and Procedure released and included in the Group Policy and Procedures Manual</p> <p>Commenced preparation and distribution of monthly "corporate" injury statistics. Also, monthly data for inclusion in Managing Director's Report</p> <p>OHS reported as a "stand-alone" item in Annual Report. Also included in Quarterly Reports</p>
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1993	<p><b><i>1 Fatality</i></b></p> <p>Health and Safety Conference chaired by Executive Assistant to Managing Director. Increased emphasis on external speakers including Regulators and Contractors</p>
1994	<p><b><i>ZERO FATALITIES IN 1994</i></b></p> <p>Health and Safety Conference included representatives from Alcoa and Line Managers with S &amp; H responsibilities (especially HR Managers)</p>

<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
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May	<i>(Fatality Shaun Schwier H50)</i> <i>(Fatality John Croom SIGM)</i>		
June	Corporate OHS Department relocates to Perth (new Group Manager Safety & Health)	SRK	
July	S.A.F.E. auditing approved by Executive Committee	SRK	
	WMC S&H Presentation at WMC/ Alcoa MDP ( Vines)	GT/ SRK	
August	Monthly Executive S&H Summary Report upgraded/increased focus on activities	SRK	
	OHS Management Training (DuPont) - over 200 by March 1996	Chamber/ SRK	
	ACCSTAT upgraded to Windows version	SE	
September	WMC 95/96 Objectives (Processes/ Outcomes) in Annual Report (Involvement + Accountability/ Systems + Auditing)	SRK	
	Commenced training 20 WMC staff in ISRS for S.A.F.E. (Perth)	SRK	
October	Redraft of Safety and Health Policy - circulation for comment	SRK/ SE	
	S.A.F.E audit program commences - Cycle 1 - 18 sites	SRK	
November	Annual OHS conference held in Kalgoorlie for "Line Management" - 130 vs 65 in 1994	SRK	
	Inaugural Meeting of WMC Safety Network	SRK	
	Draft Guidelines for Safety in annual performance appraisal	SRK	
	Memo to EGM's re: issue of Contractors safety	SRK	
December	Involvement in Alcoa S&H Audit ( Kwinana)	SRK	
	<i>(Fatality Margarito Rayo - Nicaragua)</i>		
	Visit to Nicaragua - Incident Investigation	PBJ/ SRK	
July - Dec	Additional Business Unit Safety resources (Gold/ Nickel/ExDiv)	B Units	
<b><u>1996</u></b>			
February	Rewrite of GPP/Safety manual (based on ISRS)	SE/ SRK	
March	WMC Executive Committee formally has Safety as Agenda Item # 1	SRK/PBJ	
	Visit to Pittsburgh - Alcoa S&H Technology Transfer - feedback	SRK	
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	Involvement as Minex Auditor	SRK	
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	Gold Business Unit - Mine Safety Action Plans	D Whitman	
May	1996/97 Budget Planning/ Performance KPIs as per HMM memo	SRK	
	WMC Safety Network reviews draft scope of EOFT - written by SRK	SRK	
	Contractor's Safety Forum ( safety advisors only)	SRK	
June	<u>(Fatality Ricky Birch - KNO)</u>		
	Elimination of Fatalities Taskforce endorsed by ExCo	HMM	
	Health/Medical Network	SE/ SRK	
July	EOFT Steering Committee and initial Taskforce meetings	PBJ/SRK/ST	
	Relaunch of WMC Safety & Health Policy and Beliefs	HMM/ SRK	
August	Contractors Line Managers Safety Forum (line managers)	SRK/ PBJ	
	Training/Risk Assessment for EOFT Members	PBJ/ST/SRK	
	WA User Group for ISRS - DNV organisation	SRK/ DNV	
October	<u>(Fatality Tony Bowes LNO)</u>		
	First EOFT Project Teams commence	SRK/ PBJ/ST	
	Cycle 2 of S.A.F.E. Audits commence	SRK	
	Review of SAP functionality with Safety & Health	S Mackowski	
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	First Safety Conference	MB/JP	
	Concept of WMC Emergency Response Network floated	SRK/RWatsford (ODO)	
	Commenced providing advice/review re Yeelerrie/KRP	SE	
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	IFAP independent review of EOFT (#1)	EOFT	

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	Proposals for EOFT style teams to review "Employee Behaviors and "Contractor Management" to EOFT SC, Safety Network and HMM	SRK	
	QFP S&H Management System developed against WMC S&H Management System	SE/ SRK	
February	First of second 4 EOFT teams commence	EOFT	
	Contractors Line Managers Safety Forum (#2)	PBJ/ SRK	
March	GIA Review of WMC Corporate Safety & Health Department	GIA/SRK	
	MKO, KNR - Entry into MCA 1997 Minex Awards	Nickel B Unit	
	Three WMC employees appointed Minex Evaluators	SRK/CParker/SMackowski	
	Fitness For Work Standard approved by HMM	SRK/CMitchell/Prime	
April	<u>(Fatality Peter Abel KNO)</u>		
	Emergency Response Network ( Initial meeting)	SRK/PB	
	Country Risk Assessment Workshop	DW/RA	
	Technology Workshop	AGM/ (now RMc/RLN)	
May	ExCo decides to implement STOP across WMC (see January re proposal re: Employee Behavior Team)	PBJ/ExCo	
	Mining contractors - 6 audited under SAFE for first time (Kambalda)	SRK	
	Review of WMC status vs ACIL NSW Mining Safety Review	SRK	
	Short Term Incentive Scheme (STI) with safety as first/major part	GT	
June	STOP implementation commences in Nickel/ Gold - 230 total	PBJ/ SRK	
	KNR Safety Charter	KNR	
	Draft internal safety report prepared by Tim Diamanidis	SRK	
	IFAP independent review of EOFT (#2)	EOFT	
	QFD S&H Management System (based on WMC)	SE/SRK	
	Inaugural meeting of Industry S&H Managers network (June) in Melbourne to be held quarterly	SRK	
	New WMC Hazard/ Incident Report Form/Investigation Guidelines and Training packages	SRK/SE	

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	Marysville review of EOFT	PB/ PBJ	
	<i><u>(Fatality - Byron Mejia - Nicaragua shooting)</u></i>		
	Incident Investigation in Nicaragua	SE/ MB	
August	Receipt/distribution of ACIL proposal to Exec Committee	SRK	
	EOFT presentations at NSW Mining Industry Seminar	SRK	
	Emergency Medical Evacuation Review	J Ward/MB	
	Review of ACIL proposal for Independent review of WMC safety	EOFT SC	
	E-mail participation in Alcoa Benchmarking study on Integrated Audits	SRK	
September	<i><u>Double Fatality Kerry Everett, Clinton Vodden - KNO)</u></i>		
	HMM Presentation at Qld Mining Industry Safety Conference	SRK/ HMM	
	MKO - Highly Commended in MINEX	MCA	
	KNR - Commended in MINEX	MCA	
	Country Risk Assessment -> Personal Safety, Health and Security Assessment for new work location - draft	SE/ MB	
	ExDiv "Time Out" day - across the world	JP/ MB	
	Legislation compliance audit - Nickel (using Mel Bell)	PBJ/ AD/ PP	
	DNV ELP Audit of Corporate/ Nickel & Gold/ CU Div/ Project	SRK/DNV	
October	Virtual S&H Management System Concept	SRK	
	Hosted inaugural meeting of MCA S&H Network (WMC Melb)	SRK	
	Review of Health/Hygiene "issues" with Ben Woodhouse	SE	
	WMC using Chemaalert as agreed MSDS system/new contract rates	SE/LRobertson (LSS)	
	Coordination of NICNAS registration for WMC	SE	
	IIP SC "allocates" \$50k to SAP/SEQ functionality (including review synergies of S&H + Environment systems)	SE/PE	
November	Final draft of WMC Internal S&H Annual Report to ExCo **	SRK	
	<i><u>(Fatality Zac Bakar - SIGM)</u></i>		
	1997 Safety & Health Conference - Kalgoorlie - 205 attendees	SRK	
	Summary of ELP audit sent to Executive **	SRK	

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<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
	November ExCo moved to Kalgoorlie (entirely on S&H) (** prereading)	SRK/ HMM	
	HMM launches " 5 Key Questions"	SRK	
	MD S.H.A.R.E. (Safety & Health Awards/ Recognitions of Excellence) inaugural Excellence Award to MKO	SRK	
	Shannon Green Video launched at Conference	SRK/HMM/PP	
	Initial WMC S&H Newsletter (#1)	SRK/PP	
	Network meetings at Conference (Health/ Hygiene/Contractors/ Emergency Response)	SRK/ SE	
	ExDiv (Aust) EGM's Safety Award	JP/MB	
	QVI Safety Presentation (x 2) by EGM	PBJ	
December	S&H Strategic Plan presentation to HMM etc	SRK	
	December/January WMC S&H Newsletter (#2) distributed	SRK/NShaw	
	Generic WMC S&H Induction (ppt) - to be updated monthly	SRK/Dtaylor (S&H)	
	WMC S.A.M. with WorkSAFE	SRK/PP	
January 98	EOFT auditing (U/G Ground Control) - ISRS (SAFE) style	PP	
	Prepare schedule for ExCo members cross-audits re Involvement	SRK/HMM	
February			
	MINEX applications due - suggest KNR/MKO/OEP /ODO Mine & Process/ HiFert/ Ex Div Australia	SRK/SLewis (MCA)	
<u>Planned/Possible</u>			
	<i>Behavioral Safety Benchmarking Study - seminar/site visits (employees/ managers)</i>	SRK	
	<i>ExCo - training in ISRS auditing technique for their cross-audits on Involvement</i>	SRK/DNV	
	<i>WMC SAFE users group meeting - Perth/ODO</i>	SRK/DNV	
March	<i>WMC STOP status report (audit by DuPont/North??)</i>	SRK	
	<i>SAFE Cycle 2 report</i>	SRK	
	<i>SAFE Cycle 3 commences</i>	SRK/DNV	

Notes: \* ELP : Relevant element of DNV "Executive Leadership Profile" Audit  
+ Acronyms - see last page

<u>Timing</u>	<u>Major Activity</u>	<u>Action By +</u>	<u>ELP *</u>
	<i>Training Workshop/ Forum - focus on S&amp;H, EOFT</i>	<i>ABradshaw/SRK</i>	
	<i>Code of Conduct style booklet on S&amp;H behavior</i>	<i>SRK/Network</i>	
	<i>Worker Involvement initiatives:</i>		
	<ul style="list-style-type: none"> <li>• <i>Perception Surveys</i></li> <li>• <i>JSA</i></li> <li>• <i>Behavioural Based safety processes</i></li> </ul>		
	<i>Line Management into short term safety Advisor roles</i>	<i>SRK/GT</i>	
	<i>Safety Management training for Safety resources</i>	<i>SRK/Network</i>	
	<i>S.A.F.E. Progress Report (6 monthly)?</i>	<i>SRK</i>	
	<i>Off the job safety program</i>	<i>SRK</i>	
	<i>WMC Safety and Health audits (replace ISRS within SAFE ???)</i>	<i>SRK/WT</i>	
	<i>Secondment of Safety staff to/from Alcoa</i>	<i>SRK/JK</i>	
	<i>Annual Safety and Health Report (with Environment)</i>	<i>SRK/GD</i>	
	<i>Move to WMC Loss Control (SH, E, R, Legal) ???</i>	<i>HMM/GT</i>	
	<i>Emergency Response 2 Day Workshop (ODO)</i>	<i>PB</i>	
	<i>One day Safety Management for Senior WMC Managers</i>	<i>SRK/GT</i>	
	<i>Business Unit specific Safety seminars</i>	<i>SRK/EGM's</i>	
<i>March 1999</i>	<i>Combined S&amp;H and Environment Conference - SHARE Awards</i>	<i>SRK/WTacey</i>	

Notes: \* ELP : Relevant element of DNV "Executive Leadership Profile" Audit  
+ Acronyms - see last page

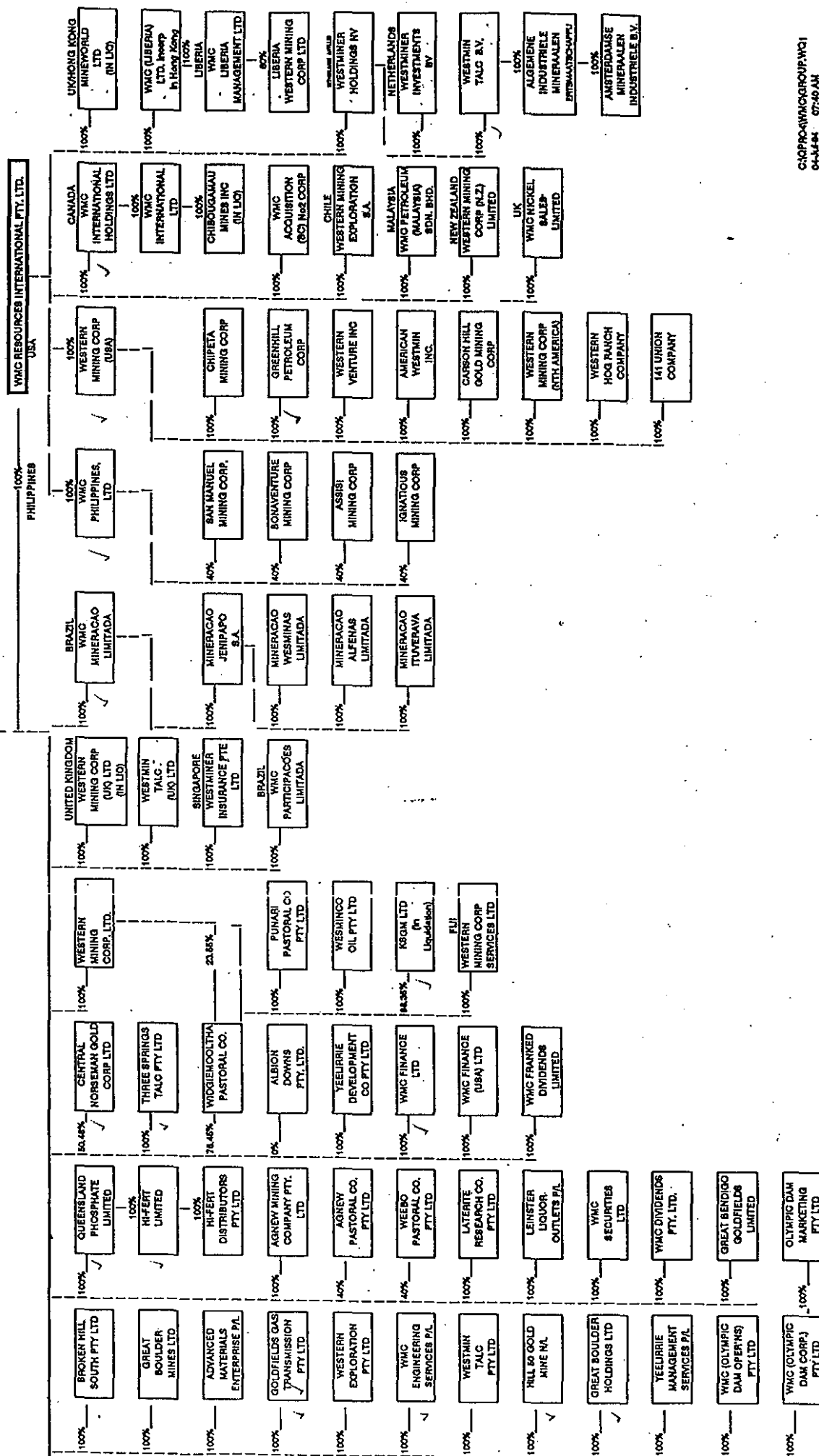


## ACRONYMS

AGM	A Micheltmore, EGM - Industrial Minerals & Fertilizers
GT	G Travers, General Manager - Human Resources
HMM	H M Morgan, Managing Director
JP	J Parry, EGM - Exploration
MB	M Byrne, Principal Safety Advisor - ExDiv
PB	P Bowman, EGM - Copper Uranium
PBJ	P Johnston, EGM - Nickel & Gold
PP	P Plavina, EOFT Coordinator
SE	S Evans, Group Advisor - Safety & Health
SRK	S Klyen, Group Manager - Safety & Health
ST	S Thompson, SEQ Manager - Gold (EOFT Coordinator June 96-Feb 97)

ACIL/SJ	ACIL - Consultants/Susan Johnston (ACIL)
B Units	Business Units
Chamber	WA Chamber of Minerals & Energy
DNV	Det Norske Veritas (owners of ISRS)
EOFT	Elimination of Fatalities Taskforce
EOFT SC	Elimination of Fatalities Taskforce Steering Committee
ExCo	Managing Director's Executive Committee
GIA	Group Internal Audit
ISRS	International Safety Rating System
KNR	Kwinana Nickel Refinery
MCA	Minerals Council of Australia
MINEX	Minerals Industry Excellence Awards for S&H
Prime	Prime Health Group - Consultants
Network	SWMC S&H Network

**WESTERN MINING CORPORATION HOLDINGS LTD.**



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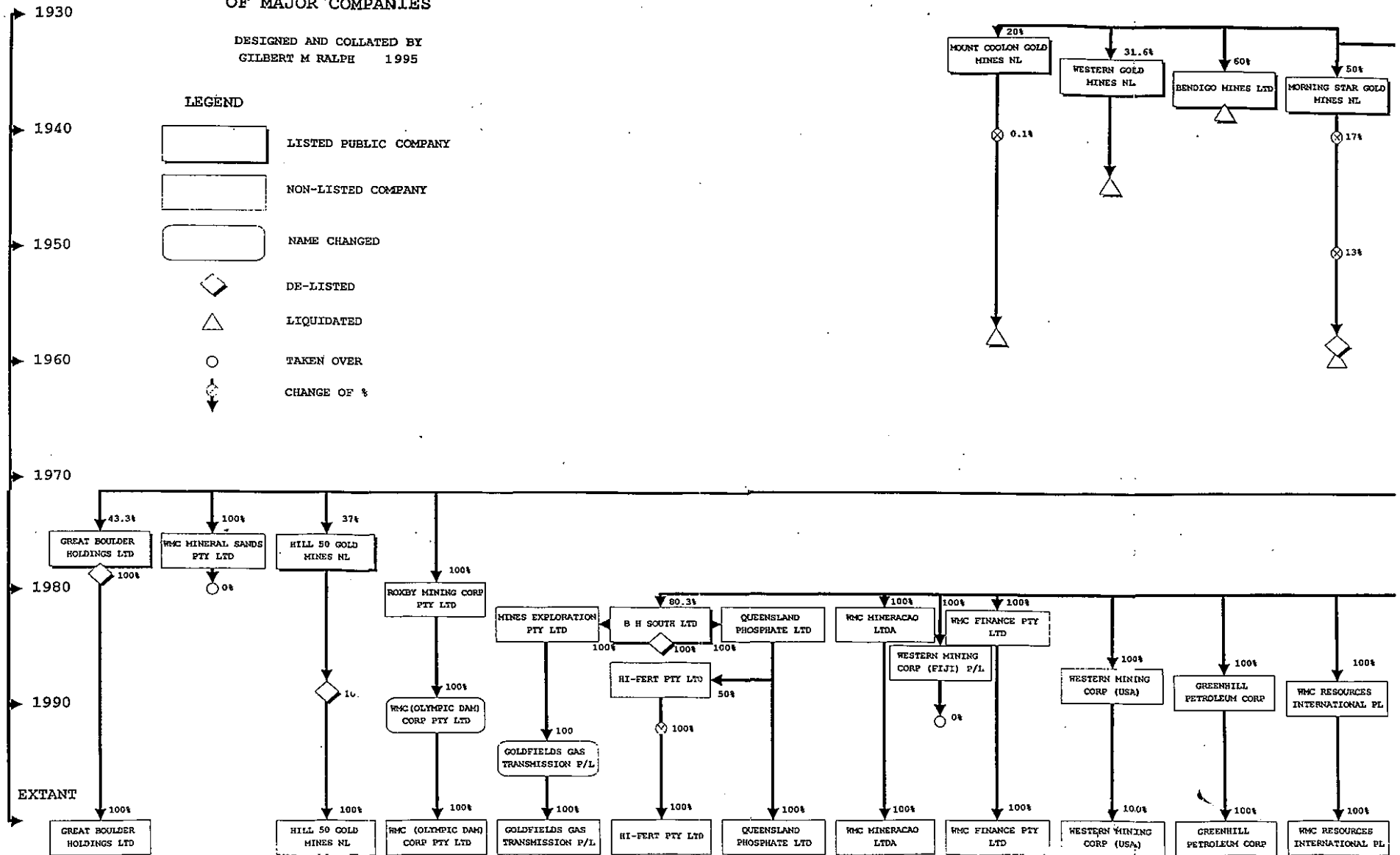
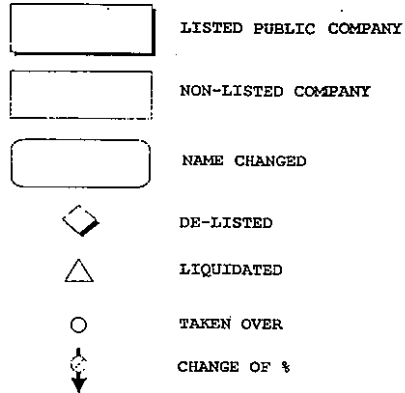
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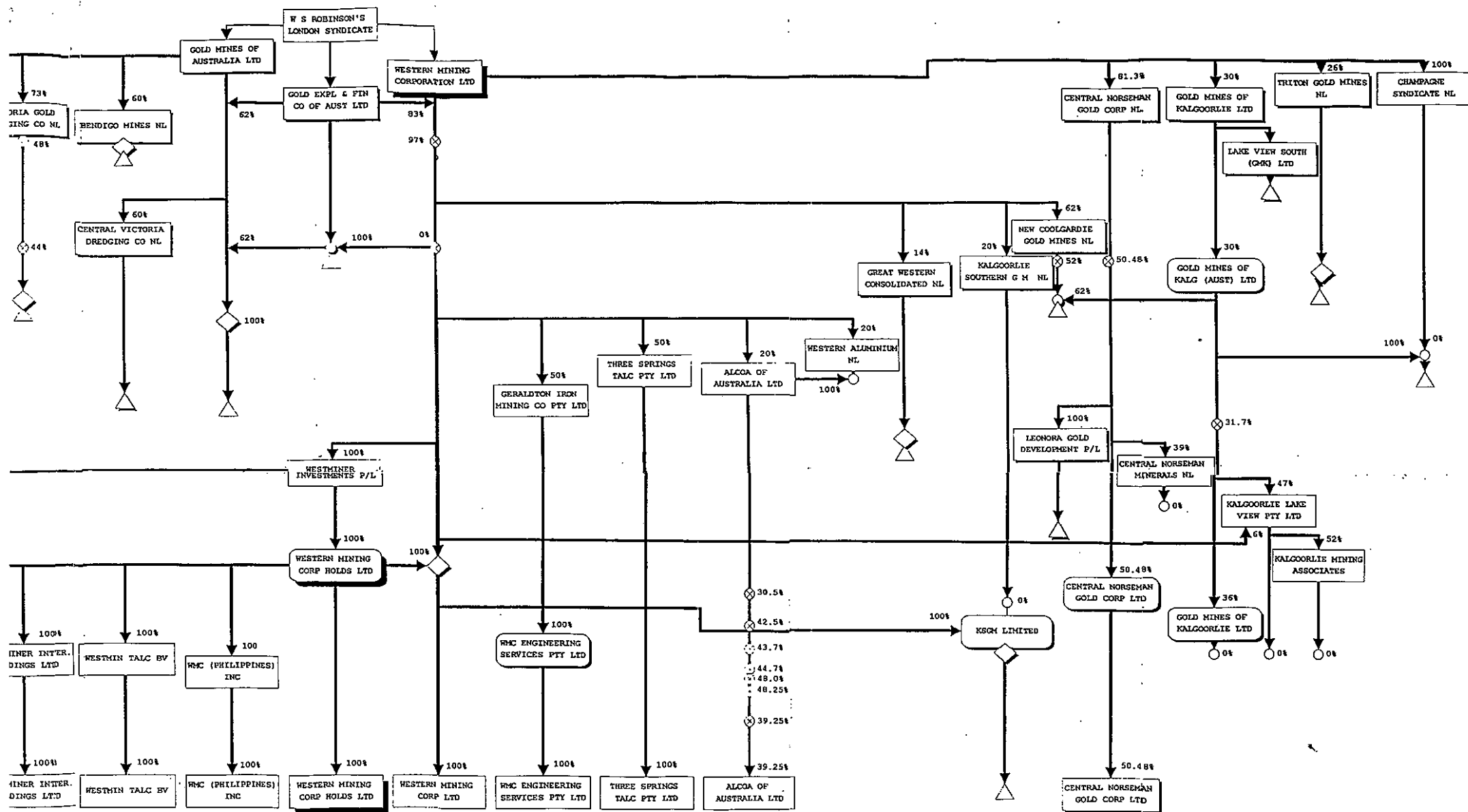
# SIMPLIFIED WMC GROUP HISTORICAL CORPORATE STRUCTURE OF MAJOR COMPANIES

DESIGNED AND COLLATED BY  
GILBERT M RALPH 1995

## LEGEND









# BOOK THREE

## *APPENDICES*

### VOLUME TWO

- Appendix XVI: Consumer Price Index 1974 to 1999 Australia and USA
- Appendix XVII: \$A/\$US Exchange Rate 1971 to 1997 and \$US Commodity Price Index 1984 to 1998
- Appendix XVIII: World Production, Consumption and Price of Nickel 1900 to 1998
- Appendix XIX: World Consumption and Price of Aluminium 1900 to 1998
- Appendix XX: Gold Chronology and Price of Gold 1946 to 1998
- Appendix XXI: World Consumption and Price of Copper 1900 to 1998
- Appendix XXII: Uranium Spot Price 1970 to 1992
- Appendix XXIII: Silver, Lead, Zinc Prices 1950 to 2001
- Appendix XXIV: Various Metal Prices
- Appendix XXV: Australian Population 1963-64 to 1999-2000
- Appendix XXVI: Australian Unemployment Rate 1961 to 2000
- Appendix XXVII: The Australian Economy 1960 to 2001
- Appendix XXVIII: Australian Gold Production 1851 to 2001
- Appendix XXIX: Accident Statistics – WA Mines
- Appendix XXX: World Nickel Laterite Producers 1997
- Appendix XXXI: Influences on the Gold Mining Industry in Australia by G M Ralph
- Appendix XXXII: Dispute with Broken Hill South Ltd in 1971
- Appendix XXXIII: Marketing in WMC, With Particular Reference to Olympic Dam By Dr I J Duncan



2000-2001

2001-2002

2002-2003

2003-2004

2004-2005

2005-2006

2006-2007

2007-2008

2008-2009

2009-2010

2010-2011

2011-2012

2012-2013

2013-2014

2014-2015

2015-2016

2016-2017

2017-2018

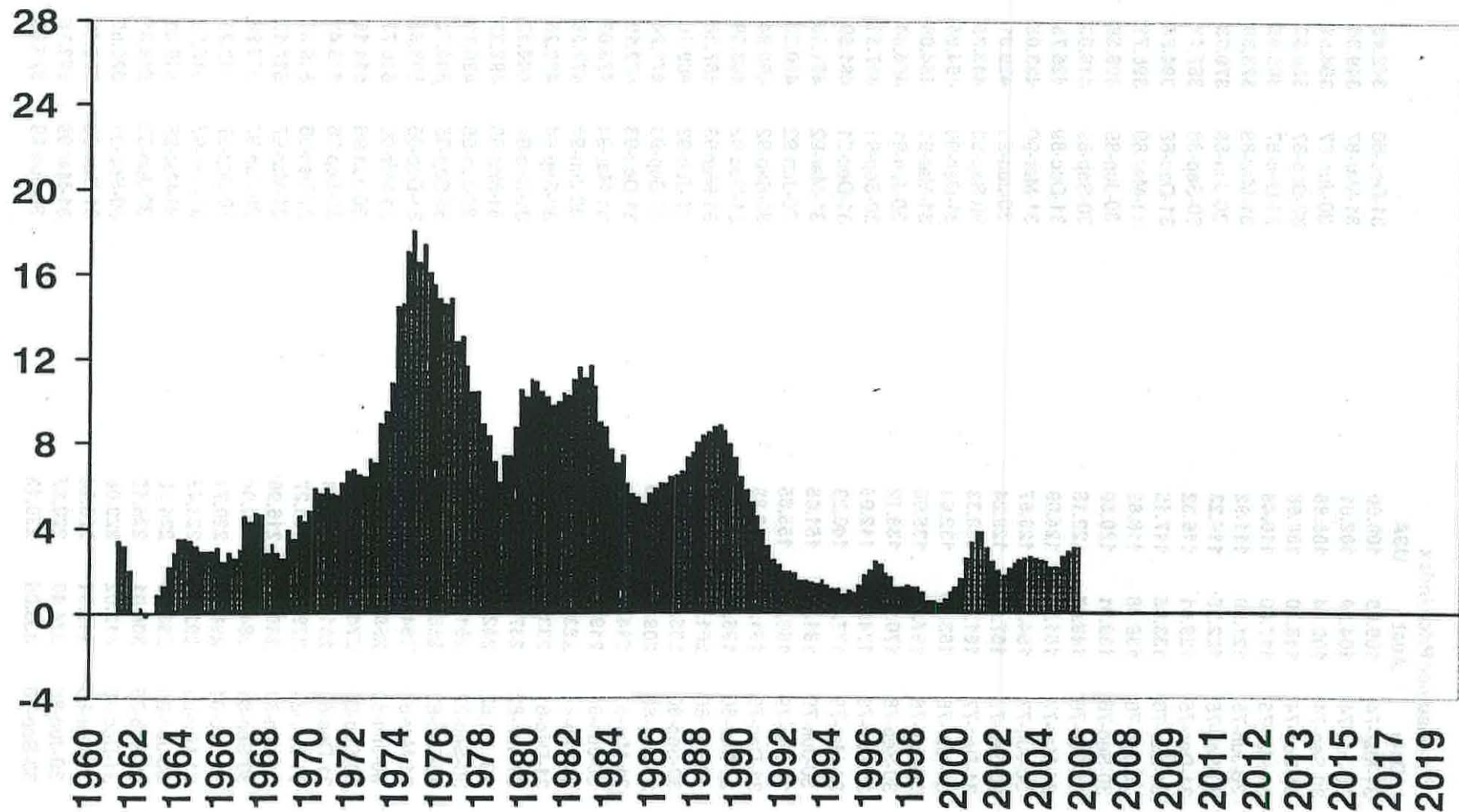
2018-2019

2019-2020

2020-2021

# Inflation: Australia

12 months growth rate (%) progressed in 4-quarters to December 2005  
Inflation (GDP Deflator)



Year ended June

Source: IBIS and Melb Institute (to J'02)

# Consumer Price Index

Date	Aust	USA		
31-Mar-74	100.00	100.00	31-Dec-86	342.49 231.80
30-Jun-74	104.29	102.51	31-Mar-87	349.36 234.94
30-Sep-74	109.44	105.86	30-Jun-87	354.51 237.66
31-Dec-74	113.30	108.58	30-Sep-87	360.52 240.17
31-Mar-75	117.60	110.46	31-Dec-87	366.95 242.05
30-Jun-75	121.89	111.92	31-Mar-88	373.39 243.93
30-Sep-75	122.75	114.23	30-Jun-88	379.83 247.07
31-Dec-75	129.61	116.32	30-Sep-88	387.12 250.21
31-Mar-76	133.05	117.15	31-Dec-88	394.85 252.72
30-Jun-76	136.48	118.62	31-Mar-89	398.71 255.86
30-Sep-76	139.91	120.50	30-Jun-89	408.58 259.62
31-Dec-76	148.07	122.18	30-Sep-89	418.03 261.30
31-Mar-77	151.50	124.69	31-Dec-89	425.75 264.44
30-Jun-77	154.94	126.57	31-Mar-90	433.05 269.04
30-Sep-77	157.94	128.24	30-Jun-90	439.91 271.97
31-Dec-77	161.80	130.33	30-Sep-90	443.35 277.41
31-Mar-78	163.95	132.64	31-Dec-90	454.94 280.96
30-Jun-78	167.38	135.98	31-Mar-91	454.08 282.22
30-Sep-78	170.39	139.12	30-Jun-91	454.94 284.73
31-Dec-78	174.25	142.05	30-Sep-91	457.51 286.82
31-Mar-79	177.25	146.23	31-Dec-91	461.80 289.33
30-Jun-79	181.97	151.05	31-Mar-92	461.80 291.21
30-Sep-79	186.27	155.65	30-Jun-92	460.52 293.31
31-Dec-79	191.85	160.88	30-Sep-92	460.94 295.40
31-Mar-80	196.14	167.57	31-Dec-92	463.09 297.91
30-Jun-80	201.72	172.59	31-Mar-93	467.38 300.00
30-Sep-80	205.15	175.52	30-Jun-93	469.10 302.09
31-Dec-80	209.44	180.75	30-Sep-93	471.24 303.56
31-Mar-81	214.59	185.36	31-Dec-93	472.10 306.28
30-Jun-81	219.31	189.33	31-Mar-94	473.82 307.95
30-Sep-81	223.61	194.77	30-Jun-94	477.25 309.62
31-Dec-81	233.05	196.86	30-Sep-94	480.26 312.55
31-Mar-82	237.34	198.12	31-Dec-94	484.12 314.23
30-Jun-82	242.92	202.93	31-Mar-95	492.27 315.53
30-Sep-82	251.50	204.39	30-Jun-95	498.71 319.04
31-Dec-82	258.80	204.39	30-Sep-95	504.72 320.50
31-Mar-83	264.38	205.23	31-Dec-95	508.58 322.38
30-Jun-83	269.96	207.95	31-Mar-96	510.73 325.52
30-Sep-83	274.68	210.04	30-Jun-96	514.16 328.03
31-Dec-83	281.12	212.13	30-Sep-96	515.45 330.13
31-Mar-84	279.83	215.27	31-Dec-96	516.31 332.85
30-Jun-84	280.69	216.95	31-Mar-97	517.17 334.52
30-Sep-84	284.12	219.04	30-Jun-97	515.88 335.36
31-Dec-84	288.41	220.71	30-Sep-97	513.73 337.45
31-Mar-85	292.27	223.43	31-Dec-97	515.02 338.49
30-Jun-85	299.14	224.90	31-Mar-98	516.31 339.12
30-Sep-85	306.01	226.15	30-Jun-98	519.31 341.00
31-Dec-85	312.02	229.08	30-Sep-98	520.60 342.26
31-Mar-86	319.31	228.24	31-Dec-98	523.18 343.93
30-Jun-86	324.46	228.87	31-Mar-99	522.75 345.19
30-Sep-86	333.05	230.13	30-Jun-99	524.89 347.70





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Li

Search

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Tax agents online

Tax return information

Lodgment, payment &amp; compliance

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Forums

Industries and business types

## What you can do

Rates &amp; calculators

Forms

Rulings, legislation &amp; law

New legislation

Rulings, law and objections

Legislation and supporting material

Tax topics explained

Aggressive tax planning

Capital gains (CGT)

Consolidation

Excise

Fringe benefits (FBT)

Fuel schemes

Goods &amp; services (GST)

Income tax for businesses

Income tax for individuals

International

PAYG

Superannuation

Booklets &amp; publications

A - Z index

Site map

Definitions

Your n

You are here: [Home](#) > [Tax Professionals](#) > [What you can do](#) > [Rates & calculators](#) > [Rates > Consumer price index \(CPI\) rates](#)

## Consumer Price Index (CPI) rates

All groups – weighted average of eight capital cities

The figure for the December quarter should be available late January 2006.



Give us your feedback

Year	Quarter ending			
	31 March	30 June	30 September	31 December
2005	147.5	148.4	149.8	150.6
2004	144.1	144.8	145.4	146.5
2003	141.3	141.3	142.1	142.8
2002	136.6	137.6	138.5	139.5
2001	132.7	133.8	134.2	135.4
2000	125.2	126.2	130.9	131.3
1999	121.8	122.3	*123.4	124.1
1998	120.3	121.0	121.3	121.9
1997	120.5	120.2	119.7	120.0
1996	119.0	119.8	120.1	120.3
1995	114.7	116.2	117.6	118.5
1994	110.4	111.2	111.9	112.8
1993	108.9	109.3	109.8	110.0
1992	107.6	107.3	107.4	107.9
1991	105.8	106.0	106.6	107.6
1990	100.9	102.5	103.3	106.0
1989	92.9	95.2	97.4	99.2
1988	87.0	88.5	90.2	92.0
1987	81.4	82.6	84.0	85.5
1986	74.4	75.6	77.6	79.8
1985	N/A	N/A	71.3	72.7

For further information please contact:

Tax agents 13 72 86 (Fast Key Code 2 1 4)

Other taxpayers 13 28 61

### \*Capital gains: indexation

Indexation is only relevant in working out the cost base of an asset acquired before 21 September 1999. If the indexation method (rather than the discount method) is used to work out a capital gain from such an asset, some of the cost base expenditure of the asset may be indexed to account for inflation up to the September 1999 quarter. Changes to the law mean that indexation is frozen at that time.

For further information on calculating your capital gain using the indexation method refer to the [Guide to capital gains tax 2004-05](#).



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# Property market index

## Direct property index on an accumulation basis

Index at 30 June and 31 December

Index

Jun-71	1.0046
Dec-71	1.0563
Jun-72	1.1065
Dec-72	1.1694
Jun-73	1.2665
Dec-73	1.3312
Jun-74	1.3983
Dec-74	1.4105
Jun-75	1.4617
Dec-75	1.5291
Jun-76	1.6529
Dec-76	1.8090
Jun-77	1.9276
Dec-77	2.0464
Jun-78	2.1781
Dec-78	2.3483
Jun-79	2.5008
Dec-79	2.6607
Jun-80	2.8584
Dec-80	3.0648
Jun-81	3.3117
Dec-81	3.6189
Jun-82	3.9910
Dec-82	4.3769
Jun-83	4.6275
Dec-83	4.9496
Jun-84	5.3476
Dec-84	5.7848
Jun-85	6.1644
Dec-85	6.6203
Jun-86	7.0564
Dec-86	7.6624
Jun-87	8.3420
Dec-87	9.6371
Jun-88	10.7637
Dec-88	12.2510
Jun-89	13.5003
Dec-89	14.5303
Jun-90	15.2733
Dec-90	14.8594
Jun-91	14.1528
Dec-91	12.7783
Jun-92	12.4126
Dec-92	11.9283
Jun-93	11.1566
Dec-93	10.9501
Jun-94	11.5200
Dec-94	12.0900
Jun-95	12.5960
Dec-95	13.0517
Jun-96	13.4519
Dec-96	13.9598
Jun-97	14.5631
Dec-97	15.2969
Jun-98	16.0106
Dec-98	16.7150
Jun-99	17.2805
Dec-99	17.9939

Source: InTech Management Pty Limited Property Index

# Historical wages growth

Year ended 30 June	Average weekly earnings (AWE) (a) \$	Wages growth Annual % change
1946	12.4	3.4
1947	14.0	12.9
1948	15.9	13.6
1949	17.5	10.1
1950	21.0	20.0
1951	25.8	22.9
1952	28.3	9.7
1953	30.8	8.8
1954	32.5	5.5
1955	34.7	6.8
1956	36.3	4.6
1957	37.3	2.8
1958	38.4	2.9
1959	41.4	7.8
1960	44.6	7.7
1961	46.7	4.7
1962	48.0	2.8
1963	49.2	2.5
1964	51.7	5.1
1965	55.5	7.4
1966	57.9	4.3
1967	62.9	8.6
1968	66.6	5.9
1969	71.6	7.5
1970	77.6	8.4
1971	86.3	11.2
1972	94.6	9.6
1973	103.2	9.1
1974	125.8	21.9
1975	147.7	17.4
1976	171.2	15.9
1977	188.8	10.3
1978	205.5	8.8
1979	221.1	7.6
1980	248.8	12.5
1981	280.1	12.6
1982	326.1	16.4
1983	346.5	6.3
1984	383.9	10.8
1985	397.4	3.5
1986	425.9	7.2
1987	451.5	6.0
1988	482.5	6.9
1989	520.0	7.8
1990	557.0	7.1
1991	571.5	2.6
1992	599.1	4.8
1993	614.3	2.5
1994	626.8	2.0
1995	654.4	4.4
1996	673.3	2.9
1997	688.9	2.3
1998	716.3	4.0
1999	734.8	2.6

Source: Australian Bureau of Statistics

Notes: (a) Total male earnings



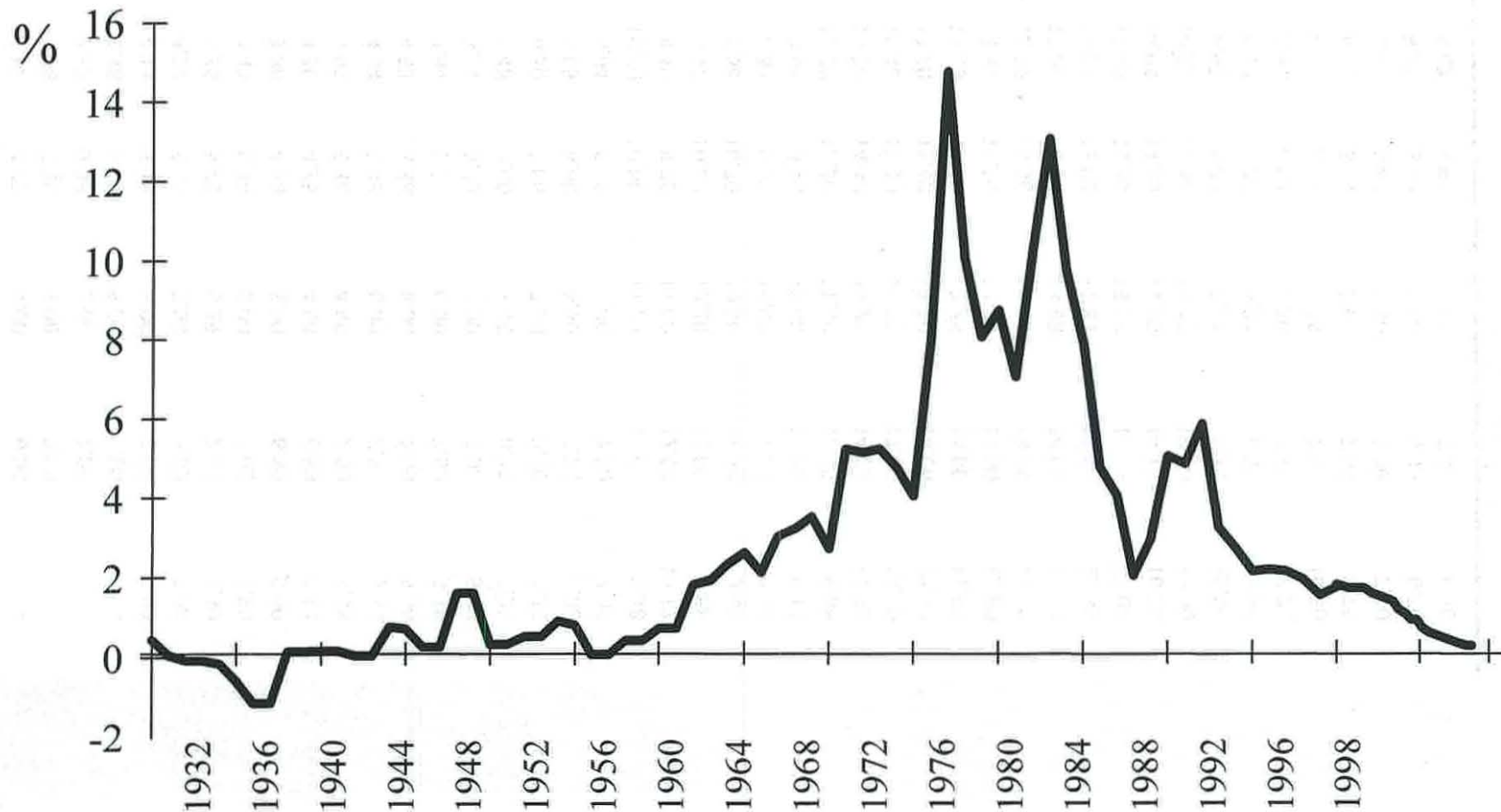
## Bond, debenture and mortgage rates

As at June	Bonds 2/3 years (a) %	Public issues (b) %	Debentures 2 years %	Debentures 5 years (c) %	Housing loans %
1955	3.87	4.75	4.00	6.00	-
1956	5.26	5.38	5.00	7.00	-
1957	4.75	5.38	5.00	7.00	-
1958	4.38	5.38	5.00	7.00	-
1959	4.13	5.38	5.00	7.00	5.00
1960	4.32	5.38	5.00	7.00	5.00
1961	5.36	5.75	6.25	7.50	5.50
1962	4.43	5.38	6.00	7.00	5.50
1963	3.88	4.88	5.00	6.50	5.00
1964	4.36	4.75	4.50	6.50	5.13
1965	4.95	5.38	4.50	7.00	5.38
1966	4.94	5.38	6.00	7.50	5.38
1967	4.52	5.38	6.00	7.50	5.38
1968	4.84	5.38	6.00	7.00	5.38
1969	5.01	5.38	6.00	7.00	5.88
1970	6.48	7.00	7.50	8.25	7.25
1971	6.30	7.00	7.50	8.50	7.25
1972	5.05	6.00	6.50	7.75	7.00
1973	6.04	6.30	6.00	7.50	7.00
1974	10.80	10.00	11.25	12.00	8.38
1975	8.49	9.70	11.00	12.50	10.13
1976	8.47	10.20	10.20	12.00	9.88
1977	8.88	10.70	10.50	12.50	9.88
1978	8.83	9.50	10.00	11.25	9.38
1979	8.94	10.40	10.00	11.00	9.13
1980	11.50	12.20	11.50	12.25	9.88
1981	13.20	14.40	14.25	14.75	11.50
1982	16.40	17.30	16.75	17.00	13.50
1983	13.70	15.40	13.50	14.00	12.50
1984	12.20	13.40	2.75	14.00	11.50
1985	13.45	13.70	13.75	13.50	12.00
1986	12.80	13.50	13.88	13.25	15.50
1987	13.00	14.10	13.98	14.00	15.50
1988	11.70	13.00	11.83	11.85	13.50
1989	15.40	15.30	15.38	15.15	17.00
1990	14.05	14.20	14.30	14.15	16.50
1991	10.55	11.40	10.20	10.50	13.00
1992	6.95	8.08	7.43	8.35	10.50
1993	6.22	6.77	5.93	6.55	9.50
1994	8.61	8.92	6.70	7.25	8.75
1995	8.27	8.57	7.75	7.85	10.50
1996	8.33	8.53	7.60	7.85	9.75
1997	5.93	6.47	5.50	5.90	7.20
1998	5.25	5.40	5.30	5.35	6.70
1999	5.63	5.93	5.10	5.45	6.50



# The world of inflation is in the past

Inflation in 24 major economies



Source : J.B. Were - The bank analyst research group

Table A. Consumer Price Indexes, Sixteen Countries, 1950-2003

2

Annual Indexes: 1982-84 = 100 (1)

Year	United States I(2)	Canada I(3)	Japan I	Australia I(4)	Austria I	Belgium I(5)	Denmark I(6)	France I(7)	Germany I(8)
1950	24.1	21.6	14.8	12.6		24.0	12.3	11.1	
1951	26.0	23.9	17.2	15.1		26.3	13.5	13.0	
1952	26.5	24.5	18.0	17.7		26.5	14.0	14.6	
1953	26.7	24.2	19.2	18.4		26.4	14.1	14.4	
1954	26.9	24.4	20.5	18.5		26.9	14.2	14.3	
1955	26.8	24.4	20.2	18.9		26.8	15.0	14.5	
1956	27.2	24.8	20.3	20.1		27.4	15.8	14.8	
1957	28.1	25.6	20.9	20.6		28.2	16.1	15.3	
1958	28.9	26.3	20.8	20.9	31.6	28.6	16.3	17.6	
1959	29.1	26.6	21.1	21.3	32.0	29.0	16.5	18.7	
1960	29.6	26.9	21.8	22.1	32.6	29.1	16.7	19.4	
1961	29.9	27.1	23.0	22.6	33.8	29.3	17.4	20.0	
1962	30.2	27.4	24.6	22.6	35.3	29.8	18.8	21.0	
1963	30.6	27.9	26.4	22.7	36.2	30.4	19.8	22.0	
1964	31.0	28.4	27.4	23.2	37.6	31.7	20.5	22.7	
1965	31.5	29.1	29.5	24.1	39.5	32.9	21.8	23.3	
1966	32.4	30.2	31.0	24.9	40.3	34.3	23.3	23.9	
1967	33.4	31.3	32.3	25.7	41.9	35.3	25.0	24.6	
1968	34.8	32.5	34.0	26.3	43.1	36.3	27.0	25.7	
1969	36.7	34.0	35.8	27.1	44.4	37.6	27.9	27.3	
1970	38.8	35.1	38.5	28.2	46.4	39.1	29.8	28.8	
1971	40.5	36.2	40.9	29.9	48.5	40.8	31.5	30.3	
1972	41.8	37.9	42.9	31.6	51.6	43.0	33.6	32.2	
1973	44.4	40.7	47.9	34.6	55.5	46.0	36.7	34.6	
1974	49.3	45.2	59.1	39.9	60.8	51.9	42.3	39.3	
1975	53.8	50.1	66.0	45.9	65.9	58.5	46.4	43.9	
1976	56.9	53.8	72.2	52.1	70.8	63.8	50.5	48.2	
1977	60.6	58.1	78.1	58.5	74.6	68.4	56.1	52.7	
1978	65.2	63.3	81.4	63.1	77.3	71.4	61.8	57.5	
1979	72.6	69.1	84.4	68.8	80.2	74.6	67.7	63.6	
1980	82.4	76.1	90.9	75.8	85.3	79.6	76.1	72.3	
1981	90.9	85.6	95.4	83.2	91.1	85.6	85.0	82.0	
1982	96.5	94.9	98.0	92.4	96.0	93.1	93.6	91.6	
1983	99.6	100.4	99.8	101.8	99.2	100.3	100.0	100.5	
1984	103.9	104.7	102.1	105.8	104.8	106.6	106.4	107.9	
1985	107.6	108.9	104.2	112.9	108.2	111.8	111.4	114.2	
1986	109.6	113.4	104.8	123.2	110.0	113.3	115.4	117.2	
1987	113.6	118.4	104.9	133.7	111.6	115.0	120.0	120.9	
1988	118.3	123.2	105.7	142.9	113.8	116.4	125.5	124.2	
1989	124.0	129.3	108.1	154.1	116.6	120.0	131.5	128.6	
1990	130.7	135.5	111.4	165.3	120.5	124.1	135.0	133.0	
1991	136.2	143.1	115.1	170.7	124.4	128.1	138.2	137.2	81.9
1992	140.3	145.3	117.0	172.4	129.5	131.2	141.1	140.6	86.1
1993	144.5	147.9	118.5	175.5	134.1	134.8	142.9	143.5	89.9
1994	148.2	148.2	119.3	178.8	138.2	138.0	145.8	145.9	92.3
1995	152.4	151.4	119.2	187.1	141.3	140.1	148.8	148.4	93.9
1996	156.9	153.8	119.3	192.0	143.9	142.9	151.9	151.3	95.3
1997	160.5	156.2	121.5	192.5	145.8	145.3	155.3	153.2	97.1
1998	163.0	157.7	122.2	194.1	147.1	146.7	158.2	154.3	98.0
1999	166.6	160.5	121.8	197.0	147.9	148.3	162.0	155.0	98.6
2000	172.2	164.8	121.0	205.8	151.4	152.1	166.8	157.7	100.0
2001	177.1	169.0	120.1	214.8	155.5	155.8	170.8	160.3	102.0
2002	179.9	172.8	119.1	221.2	158.2	158.4	174.8	163.4	103.4
2003	184.0	177.6	118.7	227.4	160.3	160.9	178.5	166.8	104.5

See notes at end of tables.







Table A. Consumer Price Indexes, Sixteen Countries, 1950-2003

3

Annual Indexes: 1982-84 = 100 (1)

Year	Italy	Netherlands	Norway	Spain	Sweden	Switzerland	United Kingdom
	I	II	I(9)	I(10)	I	I(11)	I
1950	8.3	21.4	13.6	5.5	13.4	33.2	9.8
1951	9.1	23.5	15.7	6.0	15.5	34.8	10.7
1952	9.5	23.8	17.1	5.9	16.7	35.7	11.7
1953	10.3	23.8	17.5	6.0	16.9	35.4	12.1
1954	10.6	24.7	18.2	6.1	17.1	35.7	12.3
1955	10.9	25.2	18.4	6.3	17.5	36.0	12.9
1956	11.2	25.4	19.1	6.7	18.4	36.5	13.5
1957	11.4	27.1	19.6	7.4	19.2	37.3	14.0
1958	11.7	27.5	20.6	8.4	20.0	37.9	14.4
1959	11.7	27.8	21.0	9.0	20.2	37.7	14.5
1960	11.9	28.6	21.1	9.1	21.0	38.2	14.6
1961	12.2	28.9	21.6	9.2	21.5	38.9	15.1
1962	12.7	29.6	22.8	9.7	22.5	40.6	15.8
1963	13.7	30.5	23.4	10.6	23.2	42.0	16.1
1964	14.5	32.3	24.7	11.3	23.9	43.3	16.6
1965	15.2	33.6	25.7	12.8	25.1	44.8	17.4
1966	15.5	35.5	26.6	13.6	26.8	46.9	18.1
1967	16.1	36.8	27.8	14.5	27.9	48.8	18.5
1968	16.3	38.1	28.7	15.2	28.4	50.0	19.4
1969	16.7	40.6	29.6	15.5	29.2	51.3	20.5
1970	17.5	42.1	32.8	16.4	31.3	53.1	21.8
1971	18.4	45.3	34.8	17.7	33.6	56.6	23.8
1972	19.4	48.9	37.3	19.2	35.6	60.4	25.5
1973	21.6	52.9	40.1	21.4	38.0	65.7	27.9
1974	25.7	58.1	43.8	24.8	41.7	72.1	32.3
1975	30.0	63.8	49.0	29.0	45.8	76.9	40.1
1976	35.1	69.6	53.5	34.1	50.5	78.2	46.8
1977	41.0	74.1	58.3	42.4	56.3	79.2	54.2
1978	46.0	77.2	63.1	50.8	61.9	80.1	58.7
1979	52.8	80.5	66.1	58.8	66.4	83.0	66.6
1980	64.0	86.1	73.3	67.9	75.5	86.3	78.5
1981	75.4	91.9	83.3	77.8	84.6	91.9	87.9
1982	87.8	97.2	92.7	89.0	91.9	97.1	95.4
1983	100.7	99.8	100.5	99.9	100.0	100.0	99.8
1984	111.5	103.0	106.8	111.1	108.1	102.9	104.8
1985	121.8	105.3	112.9	120.9	116.0	106.4	111.1
1986	129.0	105.6	121.0	131.5	121.0	107.2	114.9
1987	135.1	105.1	131.6	138.5	126.1	108.8	119.7
1988	141.9	106.1	140.4	145.1	133.4	110.8	125.6
1989	150.8	107.1	146.8	155.0	142.0	114.3	135.4
1990	160.5	109.9	152.8	165.4	156.7	120.5	148.2
1991	170.6	113.3	158.0	175.2	171.5	127.5	156.9
1992	179.4	116.9	161.7	185.6	175.6	132.7	162.7
1993	187.5	120.0	165.4	194.1	183.9	137.0	165.3
1994	195.0	123.3	167.7	203.3	187.8	138.3	169.3
1995	205.1	125.7	171.8	212.8	192.4	140.8	175.2
1996	213.4	128.2	174.0	220.3	193.5	141.9	179.4
1997	217.7	131.0	178.5	224.8	194.8	142.5	185.1
1998	222.0	133.6	182.5	228.8	194.2	142.7	191.4
1999	225.7	136.5	186.7	234.2	195.1	143.8	194.3
2000	231.4	140.0	192.5	242.1	196.9	146.0	200.1
2001	237.8	145.9	198.4	250.8	201.6	147.4	203.6
2002	243.7	150.7	200.9	259.6	206.0	148.4	207.0
2003	250.3	153.9	205.9	267.6	209.9	149.3	213.0

See notes at end of tables.

Confidence in 1990 and 1991. Government-owned trading enterprises were reformed. Enterprise reform questions were formulated by special committees. This reform program was on their own report in July 1991. Question was not by the Business Council but a statement and action plan issued by minister's a water effort put in the event it did not succeed. The main issue in the





Table B. Consumer Price Indexes, Sixteen Countries, 1950-2003

4

Average Annual Percent Change (1)

Years	United States I (2)	Canada I (3)	Japan I	Australia I (4)	Austria I	Belgium I (5)	Denmark I (6)	France I (7)	Germany I (8)
1950-2003	3.9	4.1	4.0	5.6		3.7	5.2	5.2	
1960-2003	4.3	4.5	4.0	5.6	3.8	4.1	5.7	5.1	
1970-2003	4.8	5.0	3.5	6.5	3.8	4.4	5.6	5.5	
1980-2003	3.6	3.8	1.2	4.9	2.8	3.1	3.8	3.7	
1990-2003	2.7	2.1	0.5	2.5	2.2	2.0	2.2	1.8	
2000-2003	2.2	2.5	-0.6	3.4	1.9	1.9	2.3	1.9	1.5
1950-1955	2.1	2.5	6.5	8.6		2.2	4.1	5.4	
1955-1960	2.0	1.9	1.5	3.1		1.7	2.2	6.0	
1960-1965	1.3	1.6	6.2	1.8	3.9	2.5	5.4	3.8	
1965-1970	4.3	3.8	5.5	3.1	3.3	3.5	6.4	4.3	
1970-1975	6.8	7.3	11.4	10.2	7.3	8.4	9.3	8.8	
1975-1980	8.9	8.7	6.6	10.6	5.3	6.4	10.4	10.5	
1980-1985	5.5	7.4	2.8	8.3	4.9	7.0	7.9	9.6	
1985-1990	4.0	4.5	1.3	7.9	2.2	2.1	3.9	3.1	
1990-1995	3.1	2.2	1.4	2.5	3.2	2.4	2.0	2.2	
1995-2000	2.5	1.7	0.3	1.9	1.4	1.7	2.3	1.2	1.3
1990-1991	4.2	5.6	3.3	3.2	3.3	3.2	2.4	3.2	
1991-1992	3.0	1.5	1.6	1.0	4.1	2.4	2.1	2.4	5.1
1992-1993	3.0	1.8	1.3	1.8	3.6	2.8	1.2	2.1	4.4
1993-1994	2.6	0.2	0.7	1.9	3.0	2.4	2.0	1.7	2.7
1994-1995	2.8	2.1	-0.1	4.6	2.2	1.5	2.1	1.7	1.7
1995-1996	3.0	1.6	0.1	2.6	1.9	2.1	2.1	2.0	1.5
1996-1997	2.3	1.6	1.8	0.3	1.3	1.6	2.2	1.2	1.9
1997-1998	1.6	0.9	0.6	0.9	0.9	1.0	1.9	0.7	0.9
1998-1999	2.2	1.7	-0.3	1.5	0.6	1.1	2.5	0.5	0.6
1999-2000	3.4	2.7	-0.7	4.5	2.3	2.5	3.0	1.7	1.4
2000-2001	2.8	2.6	-0.7	4.4	2.7	2.5	2.4	1.7	2.0
2001-2002	1.6	2.2	-0.9	3.0	1.8	1.6	2.3	1.9	1.4
2002-2003	2.3	2.8	-0.3	2.8	1.3	1.6	2.1	2.1	1.1

See notes at end of tables.





Table B. Consumer Price Indexes, Sixteen Countries, 1950-2003

5

Average Annual Percent Change (1)

Years	Italy		Netherlands		Norway	Spain	Sweden	Switzerland	United Kingdom
	I	II	I	II(9)	I(10)	II	I	I(11)	I
1950-2003		6.6		3.8	5.3	7.6	5.3	2.9	6.0
1960-2003	7.3	7.4		4.0	5.4	8.2	5.5	3.2	6.4
1970-2003	8.4	8.4	4.0	3.9	5.7	8.8	5.9	3.2	7.2
1980-2003	6.1	6.1	2.6	2.5	4.6	6.1	4.5	2.4	4.4
1990-2003	3.5	3.4	2.6	2.6	2.3	3.8	2.3	1.7	2.8
2000-2003	2.6	2.5	3.2	3.1	2.3	3.4	2.2	0.8	2.1
1950-1955		4.2		3.3	6.3	2.8	5.6	1.6	5.5
1955-1960	1.9	2.8		2.5	2.7	7.6	3.7	1.2	2.6
1960-1965	4.9	5.2		3.3	4.1	7.1	3.6	3.2	3.5
1965-1970	3.0	2.6		4.8	4.9	5.1	4.4	3.5	4.6
1970-1975	11.3	11.4	8.7	8.6	8.4	12.1	8.0	7.7	13.0
1975-1980	16.3	16.8	6.2	6.0	8.4	18.6	10.5	2.3	14.4
1980-1985	13.7	13.8	4.1	4.2	9.0	12.2	9.0	4.3	7.2
1985-1990	5.7	5.7	0.8	0.7	6.2	6.5	6.2	2.5	5.9
1990-1995	5.0	5.1	2.7	2.7	2.4	5.2	4.2	3.2	3.4
1995-2000	2.4	2.3	2.2	2.1	2.3	2.6	0.5	0.7	2.7
1990-1991	6.3	6.4	3.1	3.1	3.4	6.0	9.4	5.8	5.9
1991-1992	5.2	5.4	3.2	3.1	2.3	5.9	2.4	4.0	3.7
1992-1993	4.5	4.2	2.6	2.5	2.3	4.6	4.7	3.3	1.6
1993-1994	4.0	3.9	2.7	2.8	1.4	4.8	2.1	0.9	2.4
1994-1995	5.2	5.4	2.0	1.8	2.4	4.6	2.5	1.8	3.5
1995-1996	4.0	3.9	2.0	1.9	1.3	3.6	0.5	0.8	2.4
1996-1997	2.0	1.8	2.2	2.2	2.6	2.0	0.7	0.5	3.1
1997-1998	2.0	1.8	2.0	1.9	2.3	1.8	-0.3	0.1	3.4
1998-1999	1.7	1.7	2.2	2.2	2.3	2.3	0.5	0.8	1.5
1999-2000	2.5	2.5	2.6	2.5	3.1	3.4	0.9	1.5	3.0
2000-2001	2.7	2.8	4.2	4.1	3.0	3.6	2.4	1.0	1.8
2001-2002	2.5	2.3	3.3	3.2	1.3	3.5	2.2	0.7	1.7
2002-2003	2.7	2.5	2.1	2.0	2.5	3.1	1.9	0.6	2.9

See notes at end of tables.





**ANNUAL CPI INDEX NUMBERS**  
(Calendar Year Average)

1850	3.0	1904	2.6	1958	13.0
1851	3.1	1905	2.7	1959	13.3
1852	3.2	1906	2.7	1960	13.8
1853	3.9	1907	2.7	1961	14.1
1854	5.0	1908	2.9	1962	14.1
1855	5.8	1909	2.9	1963	14.2
1856	4.4	1910	2.9	1964	14.5
1857	4.6	1911	3.0	1965	15.1
1858	4.8	1912	3.3	1966	15.5
1859	4.1	1913	3.3	1967	16.0
1860	4.0	1914	3.4	1968	16.5
1861	4.0	1915	3.9	1969	17.0
1862	3.6	1916	4.0	1970	17.6
1863	3.3	1917	4.2	1971	18.6
1864	3.4	1918	4.5	1972	19.8
1865	3.6	1919	5.1	1973	21.6
1866	3.4	1920	5.8	1974	24.9
1867	2.8	1921	5.1	1975	28.7
1868	3.0	1922	4.9	1976	32.5
1869	2.6	1923	5.0	1977	36.5
1870	2.7	1924	5.0	1978	39.4
1871	2.7	1925	5.0	1979	43.0
1872	2.4	1926	5.1	1980	47.3
1873	2.7	1927	5.0	1981	51.9
1874	2.9	1928	5.0	1982	57.7
1875	3.0	1929	5.1	1983	63.5
1876	2.9	1930	4.9	1984	66.0
1877	3.0	1931	4.4	1985	70.5
1878	2.9	1932	4.2	1986	76.9
1879	2.6	1933	4.0	1987	83.4
1880	2.5	1934	4.1	1988	89.4
1881	2.6	1935	4.2	1989	96.2
1882	3.1	1936	4.2	1990	103.2
1883	3.1	1937	4.4	1991	106.5
1884	2.9	1938	4.5	1992	107.6
1885	3.0	1939	4.6	1993	109.5
1886	3.1	1940	4.8	1994	111.6
1887	2.9	1941	5.0	1995	116.8
1888	2.9	1942	5.5	1996	119.8
1889	2.9	1943	5.7	1997	120.1
1890	2.9	1944	5.6	1998	121.1
1891	2.8	1945	5.6	1999	122.9
1892	2.8	1946	5.7	2000	128.4
1893	2.7	1947	6.0	2001	134.0
1894	2.4	1948	6.6	2002	138.1
1895	2.3	1949	7.2	2003	141.9
1896	2.4	1950	7.9	2004	145.2
1897	2.3	1951	9.4	2005	
1898	2.3	1952	11.0		
1899	2.5	1953	11.5		
1900	2.4	1954	11.6		
1901	2.6	1955	11.9		
1902	2.8	1956	12.6		
1903	2.8	1957	12.9		

**FORMULA for calculating what X pounds in the year Y (before 1966) is worth in the year Z**

$$\text{Value in year Z} = \frac{\text{X pounds} \times \text{CPI in year Z} \times 2}{\text{CPI in year Y}}$$

**FORMULA for calculating what X dollars in the year Y (1966 or later) is worth in the year Z**

$$\text{Value in year Z} = \frac{\text{X dollars} \times \text{CPI in year Z}}{\text{CPI in year Y}}$$

Value in year 2004      69,765,766   or 69.8 million  
(of 1m pounds spent in 1935)

Value in year 2004      24,240,401   or 24.2 million  
(of 20m \$ spent in 1996)

Total      94,006,166

3.8  
3.3





**\$A/\$US Exchange Rate****APPENDIX XVI**

Average of daily figures

Noon buying rates in New York City for cable transfers payable in foreign currencies

Source: G.5 Release - Federal Reserve Board of Governors

DATE EXUSAL

1971.01	1.1181	1974.08	1.4824	1978.03	1.1383
1971.02	1.1238	1974.09	1.4487	1978.04	1.1397
1971.03	1.1243	1974.10	1.3093	1978.05	1.1276
1971.04	1.1238	1974.11	1.3110	1978.06	1.1383
1971.05	1.1243	1974.12	1.3172	1978.07	1.1494
1971.06	1.1243	1975.01	1.3295	1978.08	1.1541
1971.07	1.1241	1975.02	1.3480	1978.09	1.1529
1971.08	1.1316	1975.03	1.3585	1978.10	1.1687
1971.09	1.1478	1975.04	1.3416	1978.11	1.1453
1971.10	1.1577	1975.05	1.3404	1978.12	1.1415
1971.11	1.1589	1975.06	1.3355	1979.01	1.1404
1971.12	1.1748	1975.07	1.3095	1979.02	1.1312
1972.01	1.1910	1975.08	1.2815	1979.03	1.1215
1972.02	1.1910	1975.09	1.2687	1979.04	1.1085
1972.03	1.1910	1975.10	1.2626	1979.05	1.1057
1972.04	1.1910	1975.11	1.2626	1979.06	1.1111
1972.05	1.1910	1975.12	1.2538	1979.07	1.1283
1972.06	1.1910	1976.01	1.2565	1979.08	1.1283
1972.07	1.1910	1976.02	1.2585	1979.09	1.1263
1972.08	1.1911	1976.03	1.2479	1979.10	1.1131
1972.09	1.1910	1976.04	1.2372	1979.11	1.0934
1972.10	1.1907	1976.05	1.2337	1979.12	1.1030
1972.11	1.1909	1976.06	1.2275	1980.01	1.1097
1972.12	1.2074	1976.07	1.2359	1980.02	1.1041
1973.01	1.2716	1976.08	1.2418	1980.03	1.0903
1973.02	1.3546	1976.09	1.2425	1980.04	1.0910
1973.03	1.4129	1976.10	1.2340	1980.05	1.1302
1973.04	1.4150	1976.11	1.2066	1980.06	1.1529
1973.05	1.4150	1976.12	1.0529	1980.07	1.1585
1973.06	1.4158	1977.01	1.0853	1980.08	1.1577
1973.07	1.4178	1977.02	1.0904	1980.09	1.1704
1973.08	1.4148	1977.03	1.0994	1980.10	1.1743
1973.09	1.4683	1977.04	1.1053	1980.11	1.1675
1973.10	1.4823	1977.05	1.1031	1980.12	1.1686
1973.11	1.4822	1977.06	1.1080	1981.01	1.1819
1973.12	1.4833	1977.07	1.1220	1981.02	1.1626
1974.01	1.4823	1977.08	1.1047	1981.03	1.1629
1974.02	1.4850	1977.09	1.1037	1981.04	1.1532
1974.03	1.4855	1977.10	1.1190	1981.05	1.1406
1974.04	1.4841	1977.11	1.1270	1981.06	1.1407
1974.05	1.4844	1977.12	1.1336	1981.07	1.1427
1974.06	1.4834	1978.01	1.1382	1981.08	1.1399
1974.07	1.4799	1978.02	1.1356	1981.09	1.1486

\$A/\$US Exchange Rate

1981.10	1.1432	1985.09	0.6896	1989.08	0.7635
1981.11	1.1455	1985.10	0.7025	1989.09	0.7727
1981.12	1.1339	1985.11	0.6774	1989.10	0.7742
1982.01	1.1141	1985.12	0.6811	1989.11	0.7830
1982.02	1.0850	1986.01	0.7000	1989.12	0.7859
1982.03	1.0603	1986.02	0.6993	1990.01	0.7811
1982.04	1.0515	1986.03	0.7079	1990.02	0.7593
1982.05	1.0594	1986.04	0.7228	1990.03	0.7556
1982.06	1.0323	1986.05	0.7272	1990.04	0.7637
1982.07	1.0109	1986.06	0.6889	1990.05	0.7611
1982.08	0.9784	1986.07	0.6291	1990.06	0.7790
1982.09	0.9582	1986.08	0.6123	1990.07	0.7908
1982.10	0.9435	1986.09	0.6221	1990.08	0.8087
1982.11	0.9427	1986.10	0.6383	1990.09	0.8251
1982.12	0.9682	1986.11	0.6445	1990.10	0.8006
1983.01	0.9826	1986.12	0.6595	1990.11	0.7729
1983.02	0.9662	1987.01	0.6609	1990.12	0.7702
1983.03	0.8839	1987.02	0.6677	1991.01	0.7793
1983.04	0.8676	1987.03	0.6871	1991.02	0.7835
1983.05	0.8785	1987.04	0.7114	1991.03	0.7711
1983.06	0.8772	1987.05	0.7142	1991.04	0.7795
1983.07	0.8754	1987.06	0.7179	1991.05	0.7743
1983.08	0.8793	1987.07	0.7079	1991.06	0.7598
1983.09	0.8877	1987.08	0.7072	1991.07	0.7716
1983.10	0.9137	1987.09	0.7268	1991.08	0.7823
1983.11	0.9159	1987.10	0.7112	1991.09	0.7937
1983.12	0.9004	1987.11	0.6860	1991.10	0.7925
1984.01	0.9060	1987.12	0.7106	1991.11	0.7866
1984.02	0.9348	1988.01	0.7111	1991.12	0.7712
1984.03	0.9513	1988.02	0.7140	1992.01	0.7476
1984.04	0.9231	1988.03	0.7329	1992.02	0.7518
1984.05	0.9061	1988.04	0.7480	1992.03	0.7586
1984.06	0.8826	1988.05	0.7774	1992.04	0.7624
1984.07	0.8342	1988.06	0.8076	1992.05	0.7559
1984.08	0.8473	1988.07	0.8000	1992.06	0.7556
1984.09	0.8308	1988.08	0.8057	1992.07	0.7451
1984.10	0.8364	1988.09	0.7915	1992.08	0.7248
1984.11	0.8588	1988.10	0.8096	1992.09	0.7225
1984.12	0.8400	1988.11	0.8507	1992.10	0.7148
1985.01	0.8151	1988.12	0.8573	1992.11	0.6898
1985.02	0.7374	1989.01	0.8705	1992.12	0.6897
1985.03	0.6970	1989.02	0.8564	1993.01	0.6730
1985.04	0.6584	1989.03	0.8169	1993.02	0.6829
1985.05	0.6768	1989.04	0.8035	1993.03	0.7078
1985.06	0.6651	1989.05	0.7736	1993.04	0.7115
1985.07	0.6995	1989.06	0.7561	1993.05	0.6986
1985.08	0.7070	1989.07	0.7566	1993.06	0.6749

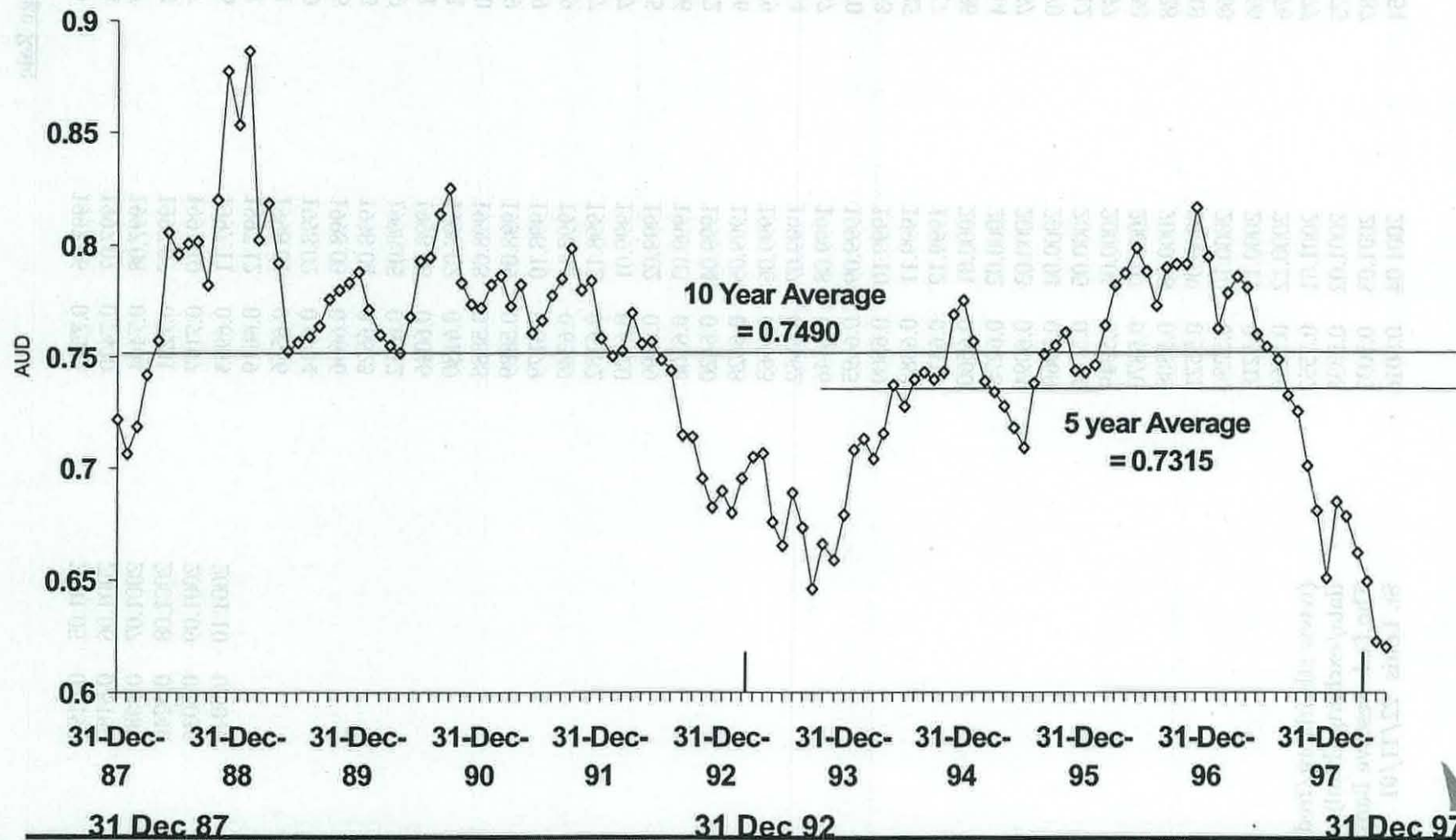


\$A/\$US Exchange Rate

1993.07	0.6779	1997.06	0.7542	2001.05	0.5199
1993.08	0.6774	1997.07	0.7420	2001.06	0.5180
1993.09	0.6517	1997.08	0.7404	2001.07	0.5089
1993.10	0.6610	1997.09	0.7231	2001.08	0.5246
1993.11	0.6647	1997.10	0.7197	2001.09	0.5036
1993.12	0.6736	1997.11	0.6953	2001.10	0.5042
1994.01	0.6961	1997.12	0.6619		
1994.02	0.7161	1998.01	0.6566		
1994.03	0.7109	1998.02	0.6744		
1994.04	0.7156	1998.03	0.6696		
1994.05	0.7243	1998.04	0.6523		
1994.06	0.7329	1998.05	0.6312		
1994.07	0.7341	1998.06	0.6046		
1994.08	0.7401	1998.07	0.6180		
1994.09	0.7420	1998.08	0.5888		
1994.10	0.7379	1998.09	0.5889		
1994.11	0.7549	1998.10	0.6179		
1994.12	0.7739	1998.11	0.6349		
1995.01	0.7647	1998.12	0.6182		
1995.02	0.7447	1999.01	0.6320		
1995.03	0.7345	1999.02	0.6399		
1995.04	0.7356	1999.03	0.6308		
1995.05	0.7272	1999.04	0.6420		
1995.06	0.7196	1999.05	0.6628		
1995.07	0.7279	1999.06	0.6563		
1995.08	0.7414	1999.07	0.6562		
1995.09	0.7537	1999.08	0.6446		
1995.10	0.7570	1999.09	0.6495		
1995.11	0.7453	1999.10	0.6509		
1995.12	0.7405	1999.11	0.6388		
1996.01	0.7417	1999.12	0.6410		
1996.02	0.7556	2000.01	0.6560		
1996.03	0.7714	2000.02	0.6278		
1996.04	0.7857	2000.03	0.6094		
1996.05	0.7970	2000.04	0.5960		
1996.06	0.7912	2000.05	0.5784		
1996.07	0.7897	2000.06	0.5949		
1996.08	0.7830	2000.07	0.5870		
1996.09	0.7928	2000.08	0.5808		
1996.10	0.7918	2000.09	0.5521		
1996.11	0.7968	2000.10	0.5280		
1996.12	0.7966	2000.11	0.5218		
1997.01	0.7776	2000.12	0.5466		
1997.02	0.7677	2001.01	0.5552		
1997.03	0.7875	2001.02	0.5338		
1997.04	0.7787	2001.03	0.5031		
1997.05	0.7751	2001.04	0.5016		

([www.stls.frb.org/fred/  
data/exchange.html](http://www.stls.frb.org/fred/data/exchange.html))  
The Fed. Reserve Bank  
St. Louis 22/11/01

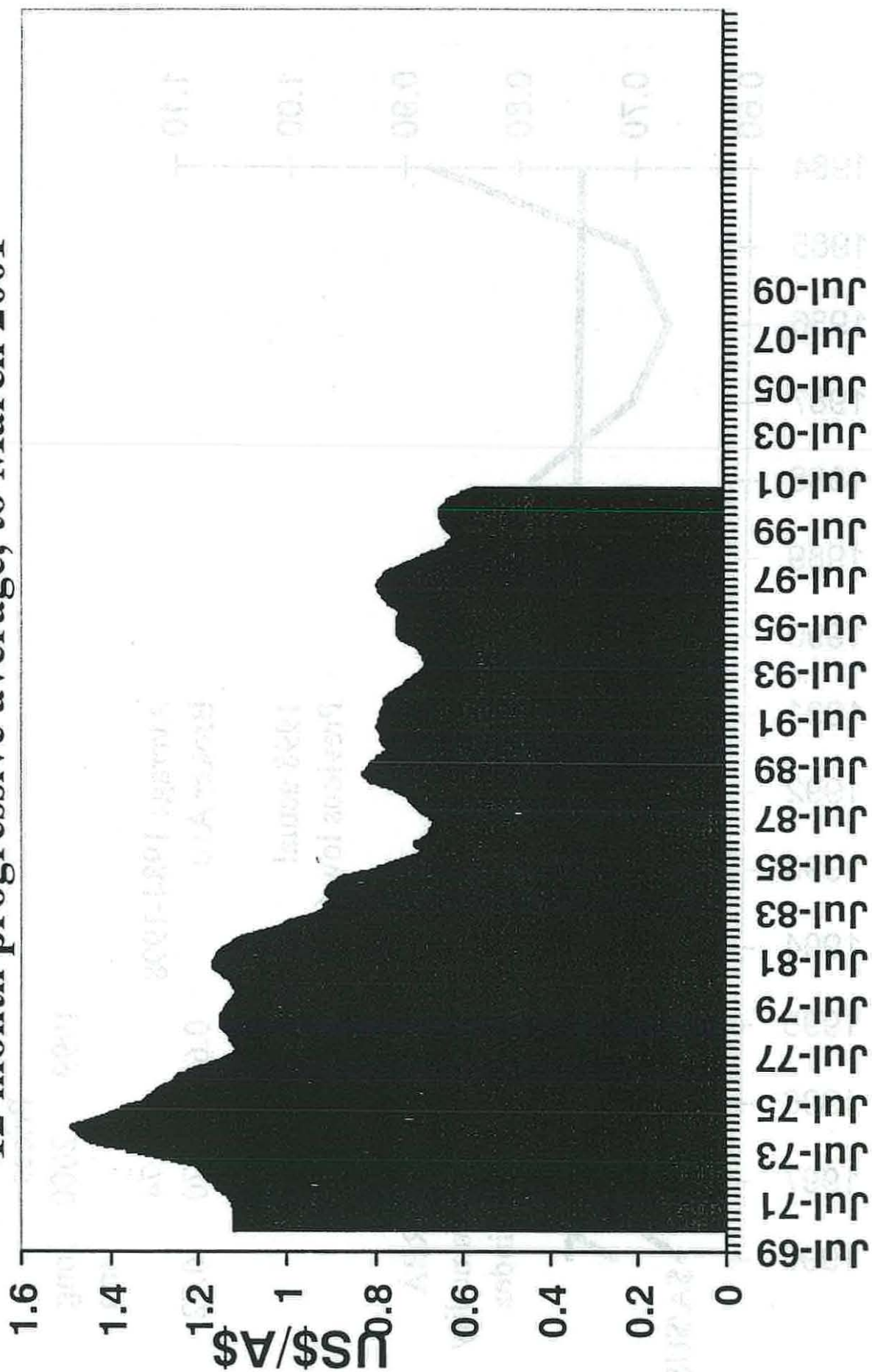
# AUD History





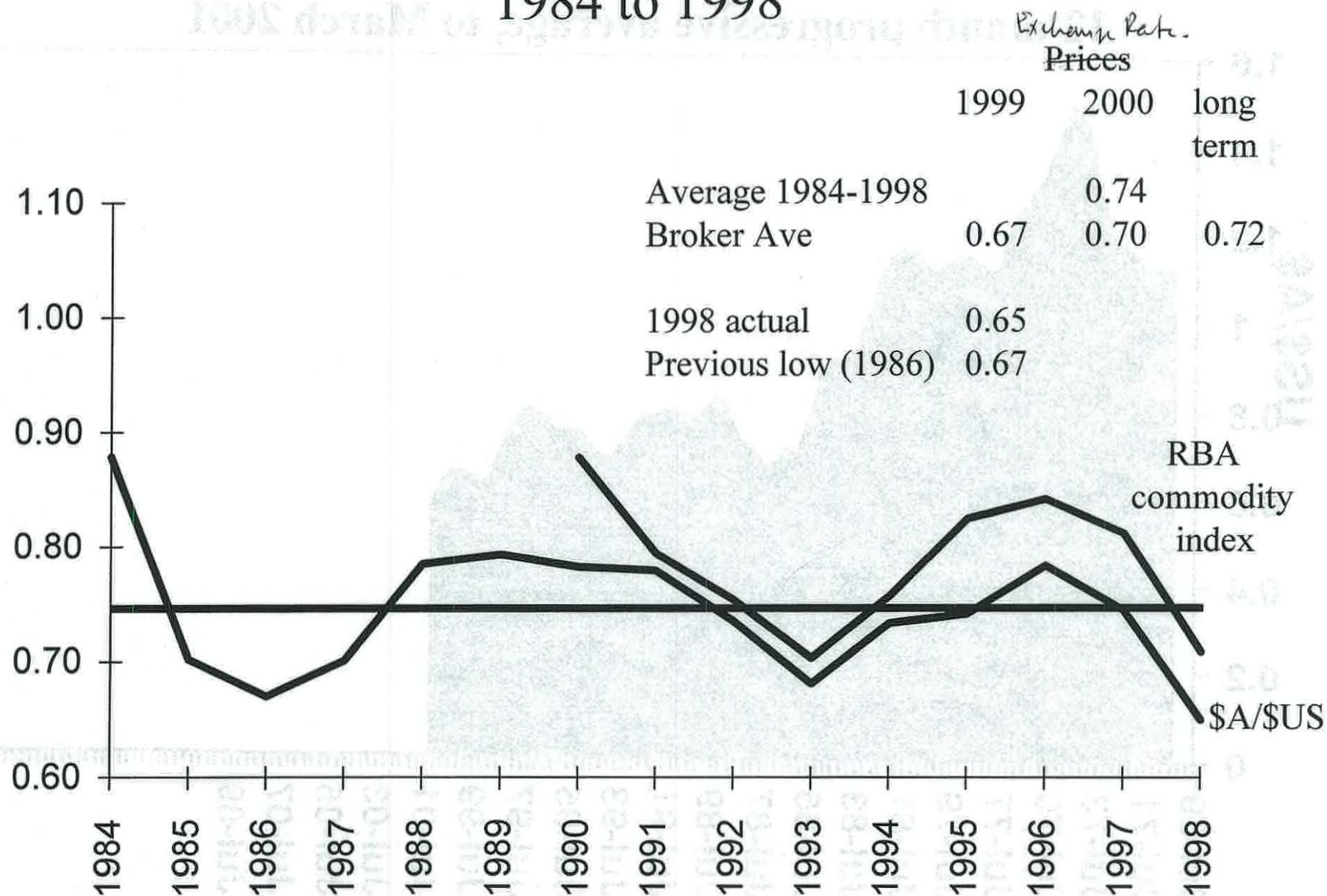
# Exchange Rate - US\$

## 12 month progressive average, to March 2001



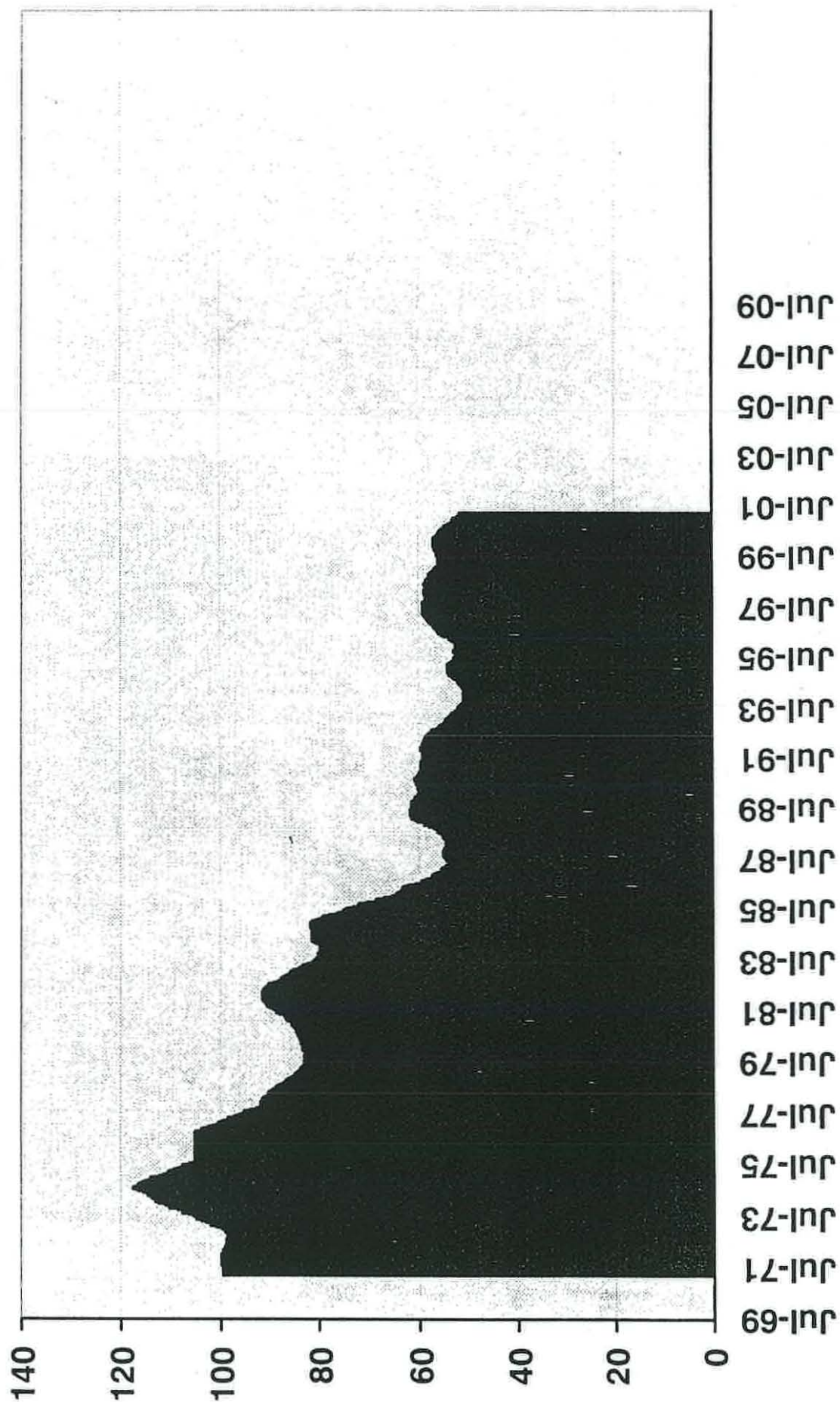


# \$A/\$US exchange rate and RBA \$US commodity index 1984 to 1998

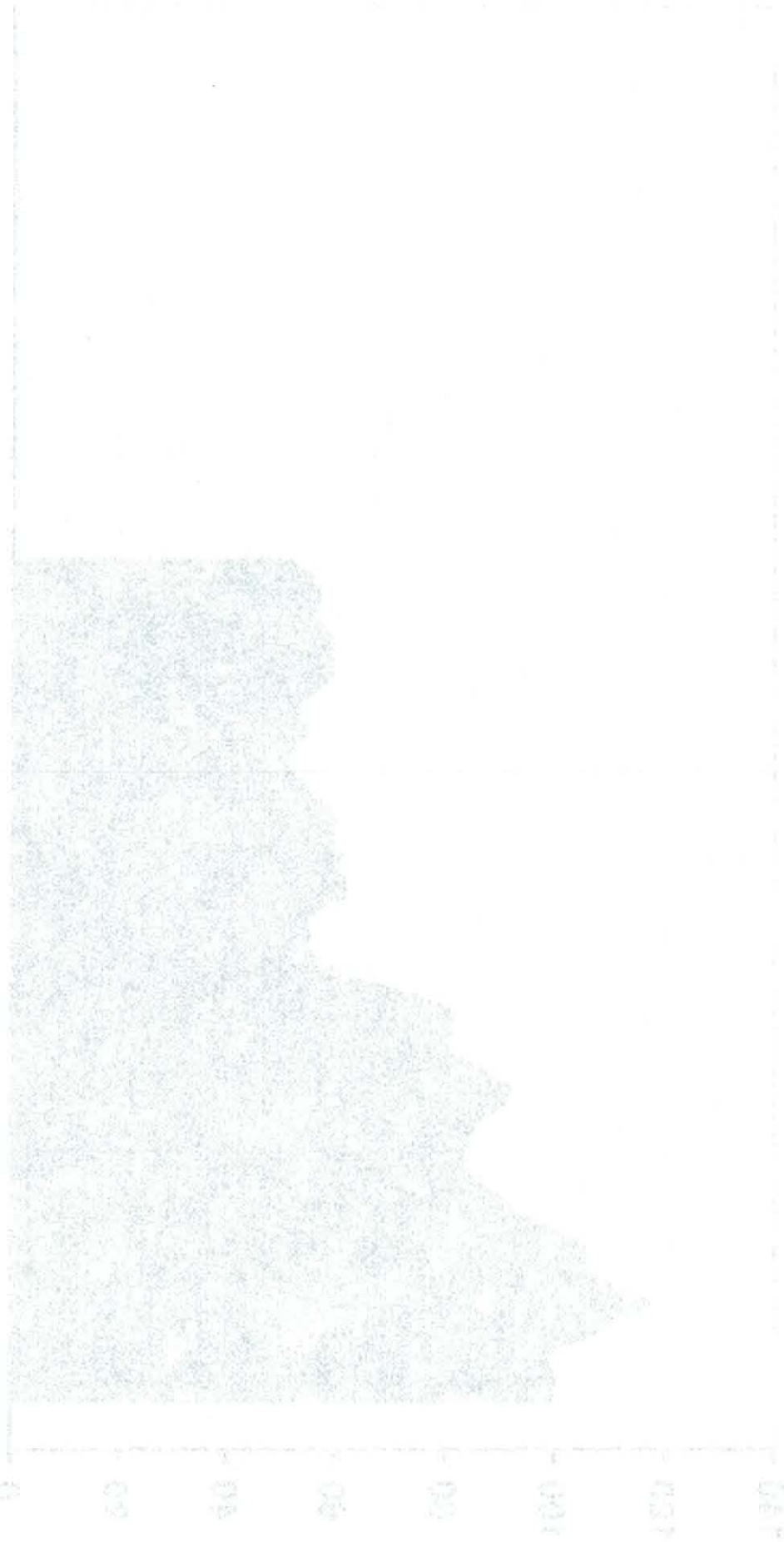


# Exchange Rate - Trade Weighted Index

## 12 month progressive average, to March 2001



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THE HISTORY OF THE UNITED STATES  
 FROM 1776 TO 1876  
 BY JAMES M. SMITH  
 VOL. I



**APPENDIX XV**

**WORLD PRODUCTION, CONSUMPTION, AND PRICE OF NICKEL 1900-1998**

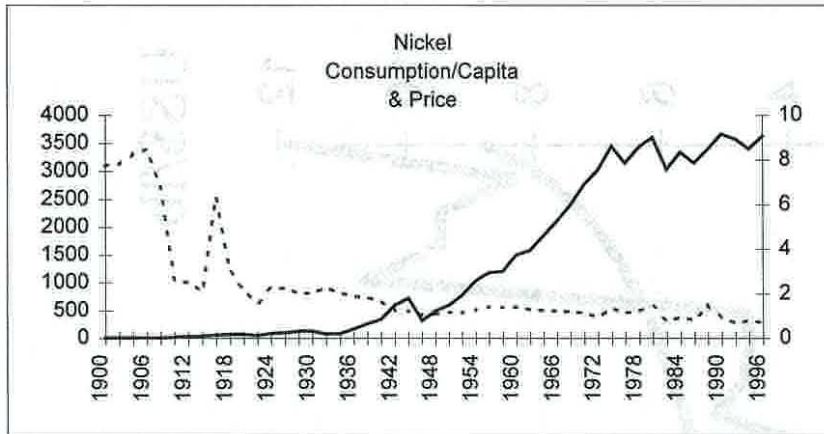
Year	Production 000's tonnes	Consumption 000's tonnes	Price US\$ of the day
1900	9.5		
1901	11.7		
1902	12.3		
1903	12.8		
1904	10.5		
1905	15.6		
1906	16.5		
1907	16.3		
1908	14.8		
1909	16.9		
1910	22.5		
1911	24.5		
1912	28.5		
1913	32.7		
1914	30.6		
1915	39.4		
1916	45.5		
1917	49.5		
1918	48		
1919	23.4		
1920	31		
1921	10.3		
1922	11.7		
1923	31.2		
1924	35.4		
1925	37		
1926	34		
1927	37.5		
1928	51.4		
1929	58		
1930	60		
1931	40		
1932	22		
1933	46		
1934	72		
1935	77		
1936	90		
1937	115		
1938	115		
1939	125		
1940	138		
1941	159		
1942	158		
1943	168		
1944	154		
1945	144		0.35
1946	118		0.35
1947	130		0.35
1948	143		0.37
1949	146		0.40
1950	148		0.45
1951	168		0.54
1952	187		0.57

## WORLD PRODUCTION, CONSUMPTION, AND PRICE OF NICKEL 1900-1998 contd.

Year	Production 000's tonnes	Consumption 000's tonnes	Price US\$ of the day
1953	204		0.60
1954	221		0.60
1955	249		0.66
1956	265		0.65
1957	299		0.74
1958	227		0.74
1959	290		0.74
1960	342		0.74
1961	378		0.78
1962	371		0.80
1963	366		0.79
1964	397		0.79
1965	437		0.79
1966	416		0.79
1967	479		0.88
1968	545		0.95
1969	514		1.05
1970	666		1.29
1971	681		1.33
1972	625		1.40
1973	674		1.53
1974	737	704	1.74
1975	744	576	2.07
1976	779	779	2.35
1977	790	642	2.08
1978	656	697	2.00
1979	676	750	3.23
1980	749	717	3.02
1981	723	662	2.72
1982	629	649	2.21
1983	652	689	2.17
1984	752	788	2.20
1985	809	786	2.23
1986	786	778	1.79
1987	817	837	2.21
1988	867	857	5.58
1989	897	848	5.81
1990	887	842	3.94
1991	872	799	3.82
1992	936	799	3.21
1993	846	804	2.40
1994	867	899	2.91
1995	974	982	3.83
1996	1027	927	3.40
1997	1022	970	3.13
1998			2.09

Reference (1990-1974): Schmitz J. Christopher "World Non-Ferrous Metal Production 1700-1976"; Frank Cass Publishing.

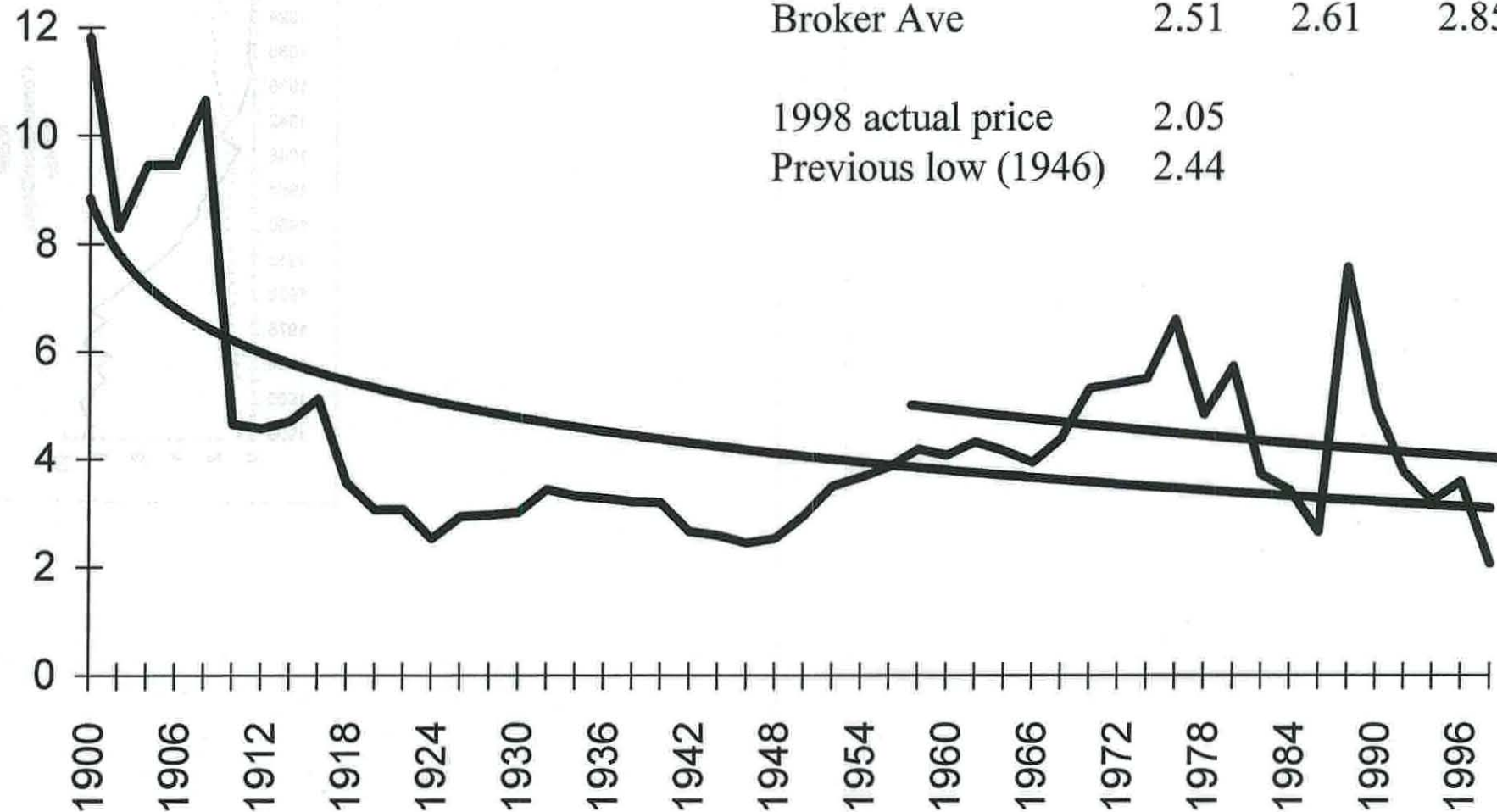
Reference (1975-1997): "World Metal Statistics Year Book"; World Bureau of Metal Statistics.



# Nickel Price - 1900 to 1998

## Real \$1998

US\$/lb



Trendline 1900-1998

Trendline 1960-1998

Broker Ave

1998 actual price

Previous low (1946)

Prices

1999

2000

long  
term

3.07

3.98

2.51

2.05

2.44

-0.5%p.a

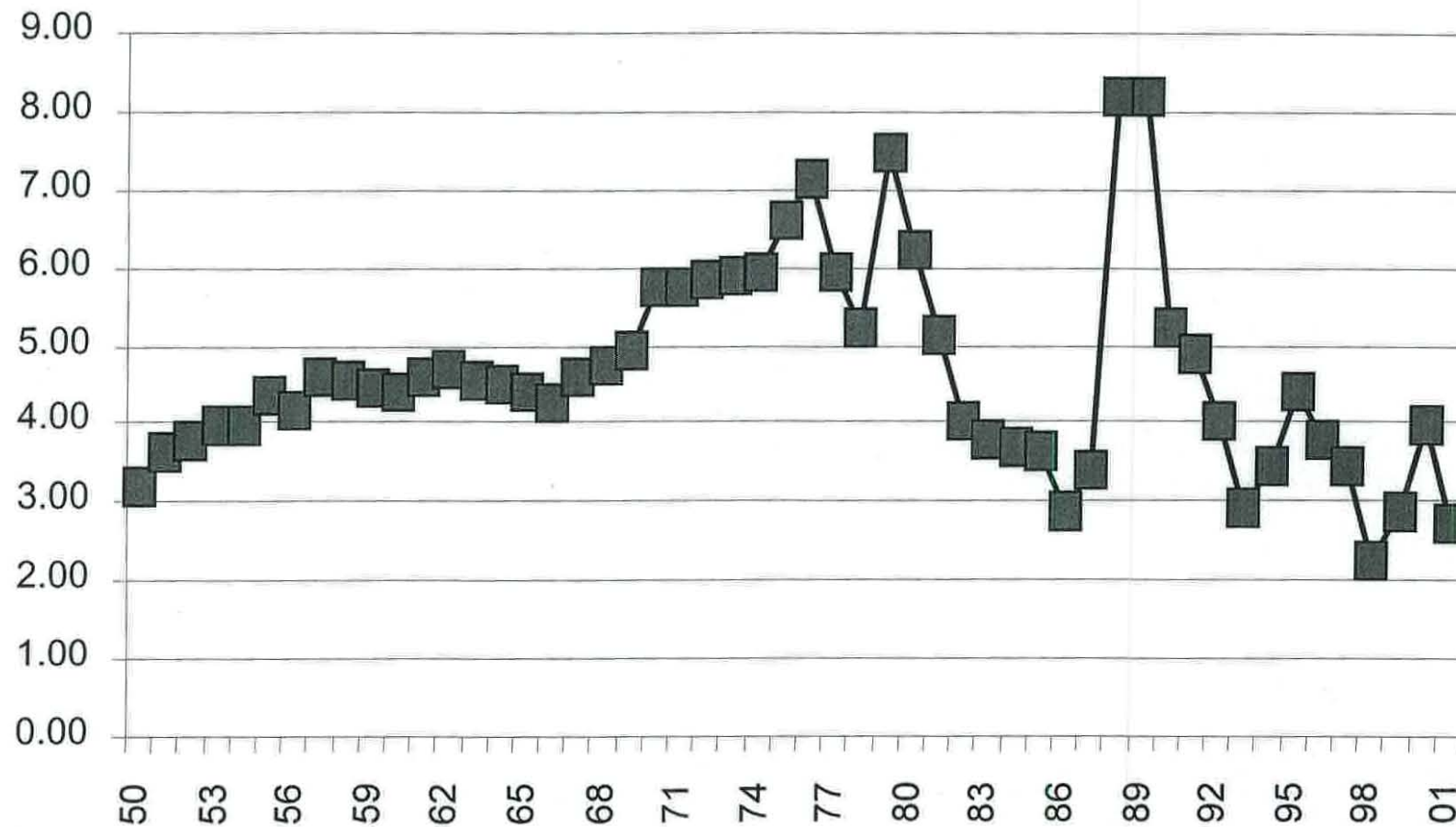
-0.5%p.a

2.85



# Nickel

US \$/ lb (Real price in 2001 dollars)

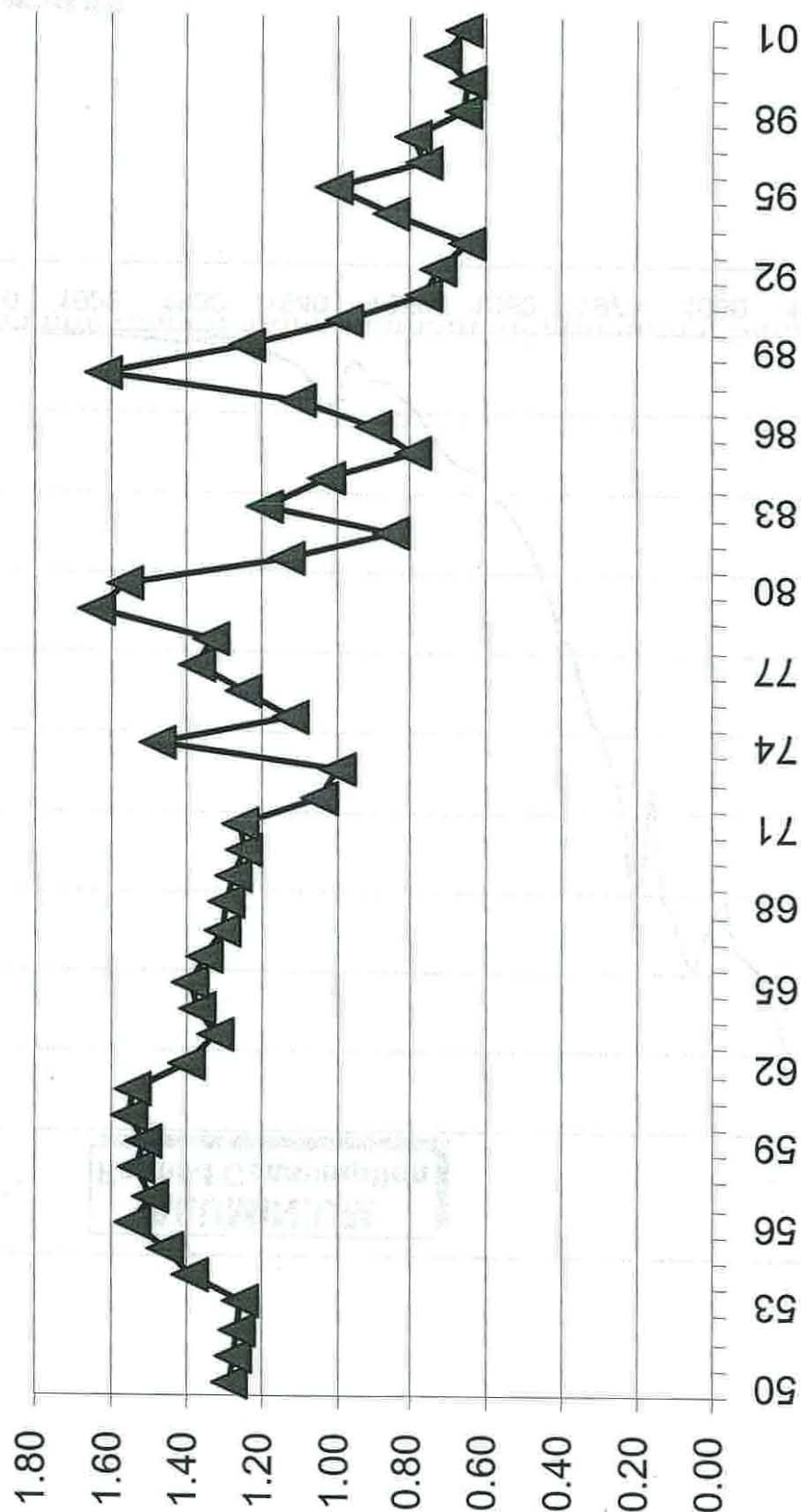




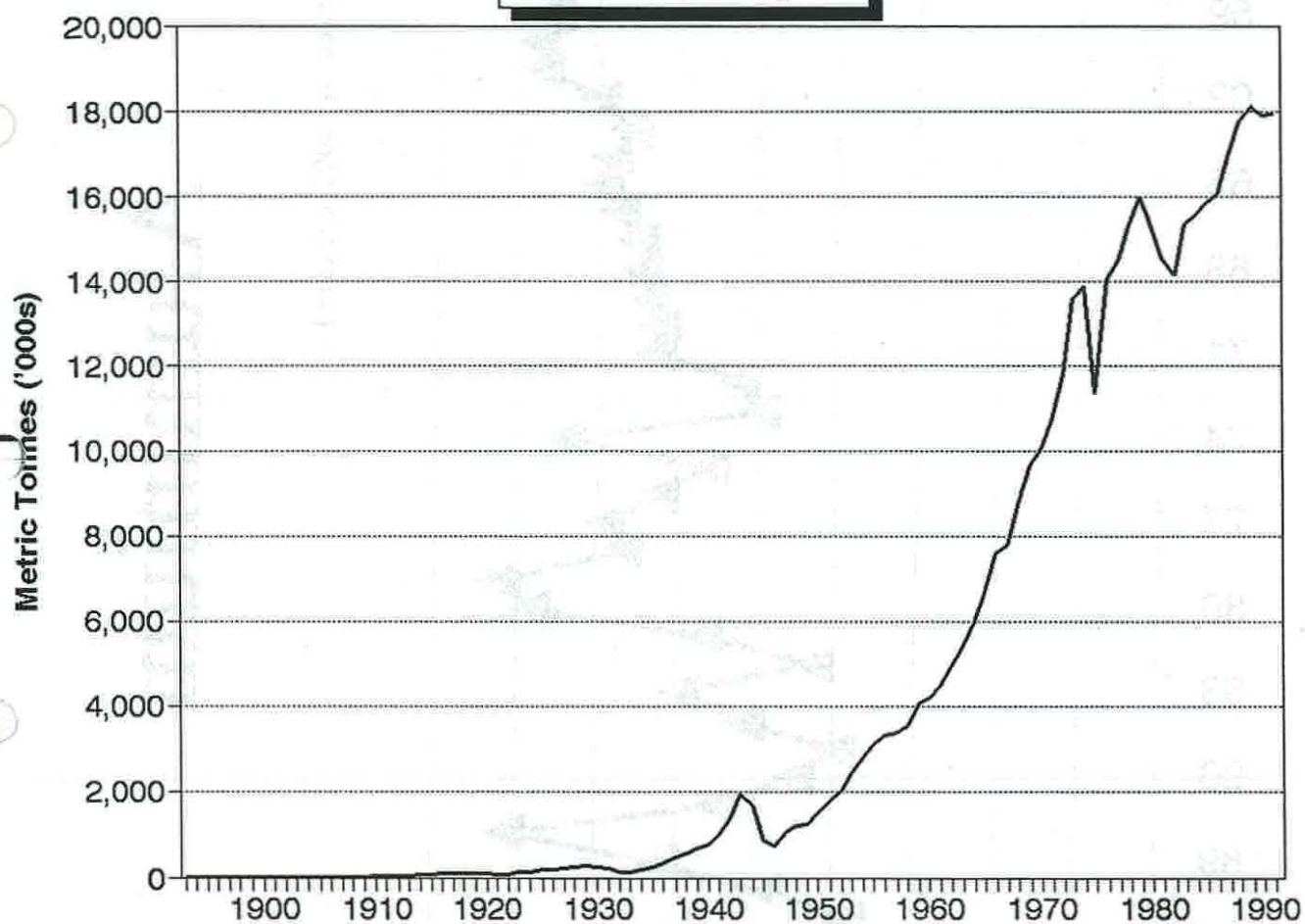


# Aluminium

US \$/ lb (Real price in 2001 dollars)



## ALUMINIUM Refined Consumption

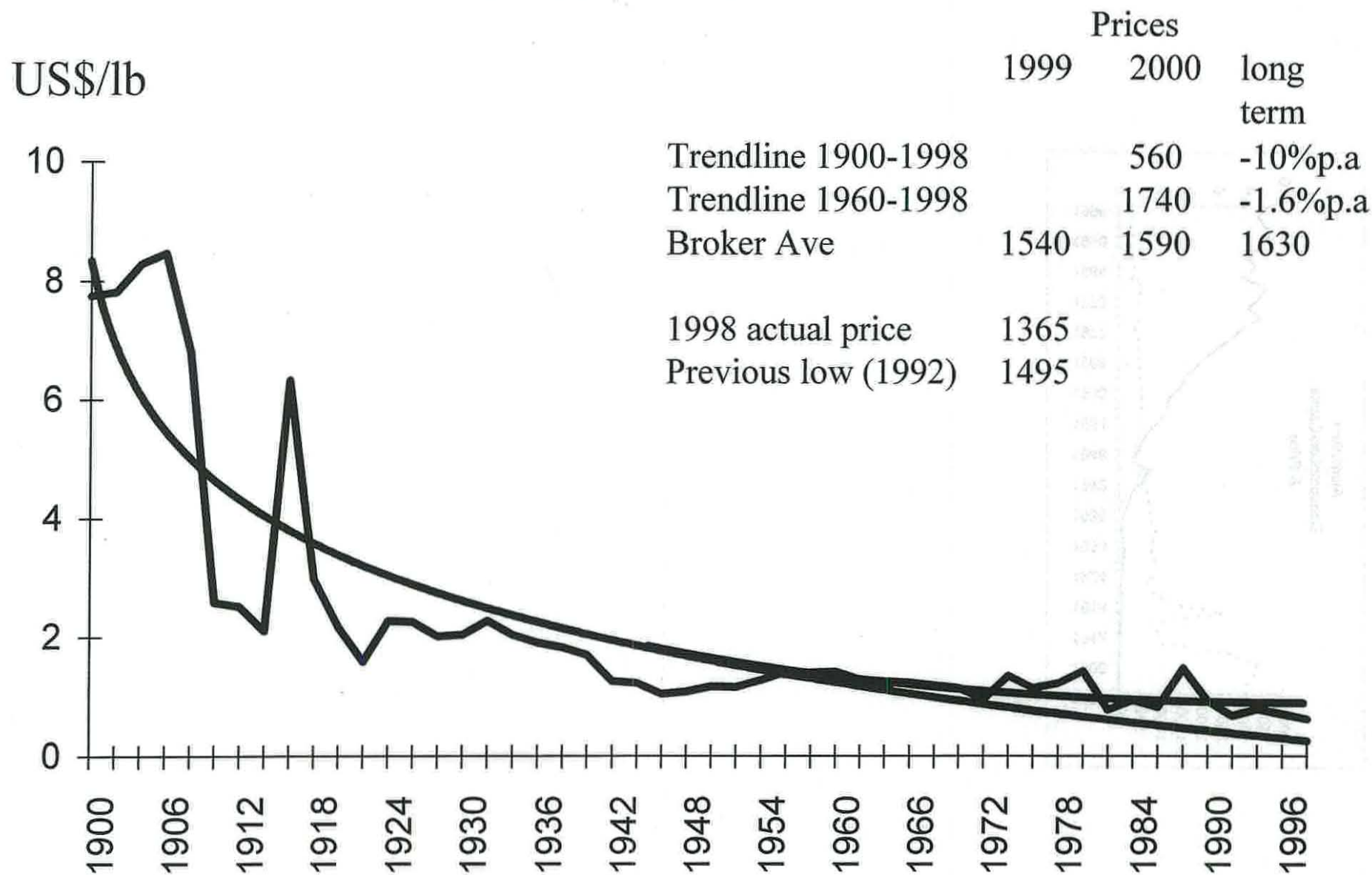


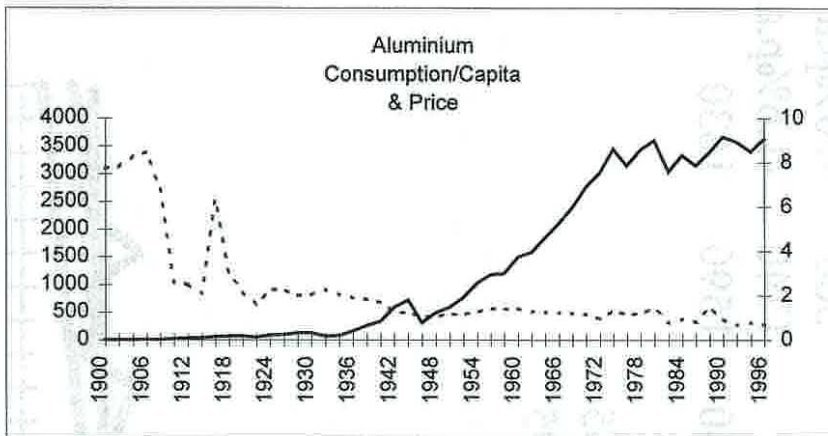
**Source:**

- World Metal Statistics Yearbook 1992
- World Non-Ferrous Metal Production and Prices 1700-1976

# Aluminium Price - 1900 to 1998

## Real \$1998









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# Gold and the International Monetary System—a Chronology

- |                 |  |
|-----------------|--|
| 1717            | In UK Sir Isaac Newton (Master of the Mint) gives guinea statutory valuation of 21sh (shillings). Mint price of gold 77sh 10½d per standard ounce. UK Gold Standard commences.   |
| 1797            | Napoleonic Wars. Bank of England suspends gold payments.   |
| 1816            | UK Coinage Act (Post-Napoleonic Wars). Sovereign the standard unit @ one standard ounce of gold (11/12 fine) = 77sh 10½d.  |
| 1844            | Bank of England obliged to buy gold @ 77sh 9d.   |
| 1870-1900       | All major countries, other than China, switch to the gold standard, linking their currencies to gold. Bimetallism is abandoned.  |
| 1913            | Federal Reserve Act establishes US system of reserve banks. At least 40% of note issue to be backed by gold.   |
| 1917 1 Sept.    | US prohibits gold exports.   |
| 1919 1 April    | UK prohibits gold exports without official permission. UK now off Gold Standard.   |
| June            | US gold exports permitted again.   |
| 12 Sept.        | London Gold Fixing established.  |
| 1925 28 April   | UK returns to Gold Standard at pre-War parity of \$4.86=£1   |
| May             | UK Gold Standard Act. Currency convertible @ 77sh 10½d per standard ounce. But only in amounts of 400 oz. Export of gold again permitted.  |
| 1931 September  | UK abandons Gold Standard.   |
| 1933 20 April   | US convertibility suspended (with gold @ \$20.67/oz). Export, all transactions and holding of gold forbidden.  |
| 1934 31 January | Presidential Proclamation makes dollar again convertible to gold (at new price of \$35/oz)   |
| 1936 September  | Tripartite Agreement. US, UK and France willing to buy and sell gold freely with each other in exchange for own currency.  |
| 1939 3 Sept.    | London gold market closed on outbreak of war.  |
| 1944 July       | Bretton Woods Conference sets basis of post-war monetary system. US dollar to maintain \$35=1 oz gold conversion rate. Other currencies to be fixed (but adjustable) in terms of US dollar, thus forming a Gold Exchange Standard. |
| 1945 27 Dec.    | IMF Articles of Agreement effective. Par values established for all members based on gold value of US dollar on 1 July 1944 (0.888671 grammes  |



1954	22 March	London gold market re-opens after World War 2.
1961	1 November	Gold Pool established (members Belgium, France, Germany, Italy, Netherlands, Switzerland, UK and Federal Reserve Bank of New York: France withdrew in June 1967). Members would sell (and later buy) gold in the London market to maintain prices close to par in that market.
1967	18 November	Sterling devalued from \$2.80 to \$2.40. This leads to pressure on the dollar and hence to substantial buying of gold.
1968	15 March	London market closed at request of US government.
	17 March	Gold Pool abolished and 2-tier market created. Central banks transact only among themselves at official price and neither buy nor sell from London or any other market. Private sector, however, free to do what it likes, with floating gold price. London market re-opens 1 April and now fixing in US\$ for first time.
	31 May	First amendment to IMF articles agreed. A new reserve asset, the Special Drawing Right (SDR) was created and given the value of 0.888571 gram of fine gold, the same value as the US dollar in July 1944.
1971	15 August	US\$ convertibility to gold suspended.
	18 Dec.	Smithsonian Agreement on new exchange rates.
1972	8 May	US\$ devalues to \$38/fine oz.
1973	12 February	US proposes further devaluation to \$42.22/fine oz.
	2-18 March	Major central banks suspend dealing in foreign exchange markets.
	19 March	Most major countries adopt floating exchange rate regime.
	18 October	US devaluation effective.
	13 November	2-tier gold market formally abandoned.
1975	1 January	US abolishes restrictions on citizens buying, selling or owning gold (formerly needed Treasury licence).
	January	First US gold auction (2 million oz auctioned; less than half bid for).
	30 June	Second US gold auction (½ million oz).
	31 August	Group of 10 major industrial countries and Switzerland agree that there would be no attempt to peg price of gold and that total stock held by the IMF and the monetary authorities of the G10 countries would not be increased.
		IMF's Interim Committee agrees to disposal of 50 mn oz (one third) of Fund's gold. 25 mn oz to be sold and surplus devoted to a Trust Fund which would extend concessional loans to low-income members and the other 25 mn oz to be restituted to members at the official price.
1976	2 June	First IMF gold auction.
1978	1 April	2nd Amendment to IMF Articles of Agreement comes into effect. Gold's formal role in



- 23 May US gold auctions resume.
- 1979 13 March European Monetary System established. Those participating in its exchange rate arrangements must - and other members can - swap 20% of gold and US\$ reserves on rolling quarterly basis with European Monetary Cooperation Fund for ECU
- November Final US gold auction. During the two phases (1975; 1978/79) some 530 tonnes (17 mn oz) were sold.
- 1980 7 May Last of 45 IMF gold auctions. 25 mn oz (= 778 tonnes) were sold in all at average price of \$240 (lowest/highest prices \$109/\$712).
- 1982 March US Gold Commission reports to Congress. Official holdings of 264 mn oz should certainly not be reduced to zero and a minority favoured no reduction at all.
- 1985 22 September Plaza Agreement on currencies.
- 1987 21/22 February Louvre Accord on currencies.
- 1992 7 February Treaty on European Union signed at Maastricht. This includes agreement for qualifying countries to proceed to Economic and Monetary Union (EMU - the single currency) on a default date of January 1999. Provision is made for the mutation of national central banks into the European System of Central Banks (ESCB) headed by the European Central Bank (ECB). The ECB will be able to call an initial amount of Ecu50bn (Euro 50bn) of gold and foreign reserve assets from participating countries. Reserve management of all ESCB banks, including that of gold holdings, will be subject to guidelines to be issued by the ECB council. (See *EMU and the ECB*)
- 1998 1-2 May Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain confirmed as participants in EMU, scheduled to start in January 1999.
- 1998 7 July The Governing Council of the European Central Bank decides that 15% of its initial reserves of 39.5bn Euro, due to be transferred to it on the first day of 1999, will consist of gold. The Council also agrees that before the end of the year it will adopt an ECB guideline which will subject all operations in foreign reserve assets remaining with the national central banks, including gold, to approval by the ECB.



Site Navigation:

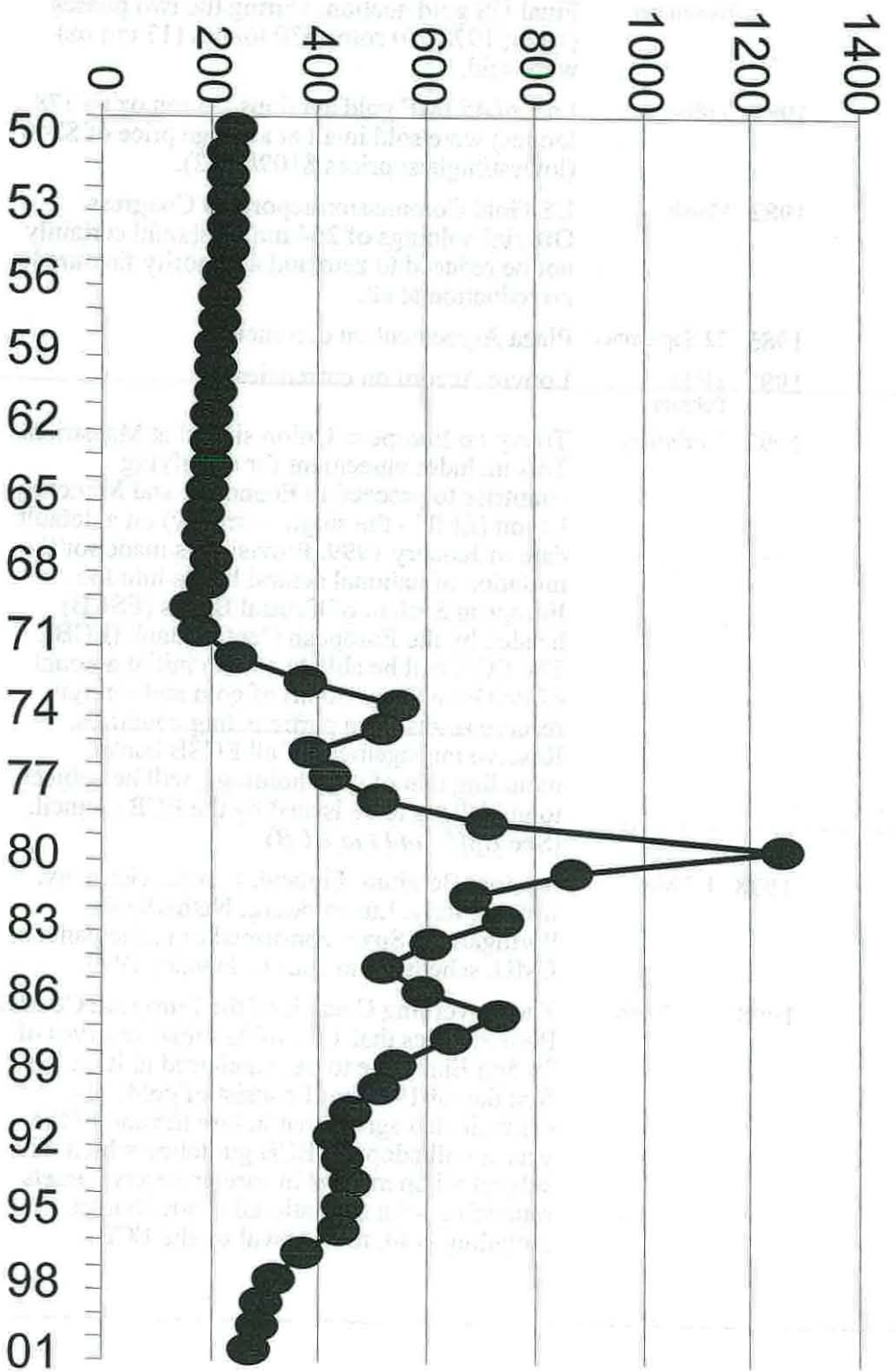
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[webmaster@gold.org](mailto:webmaster@gold.org)



# Gold

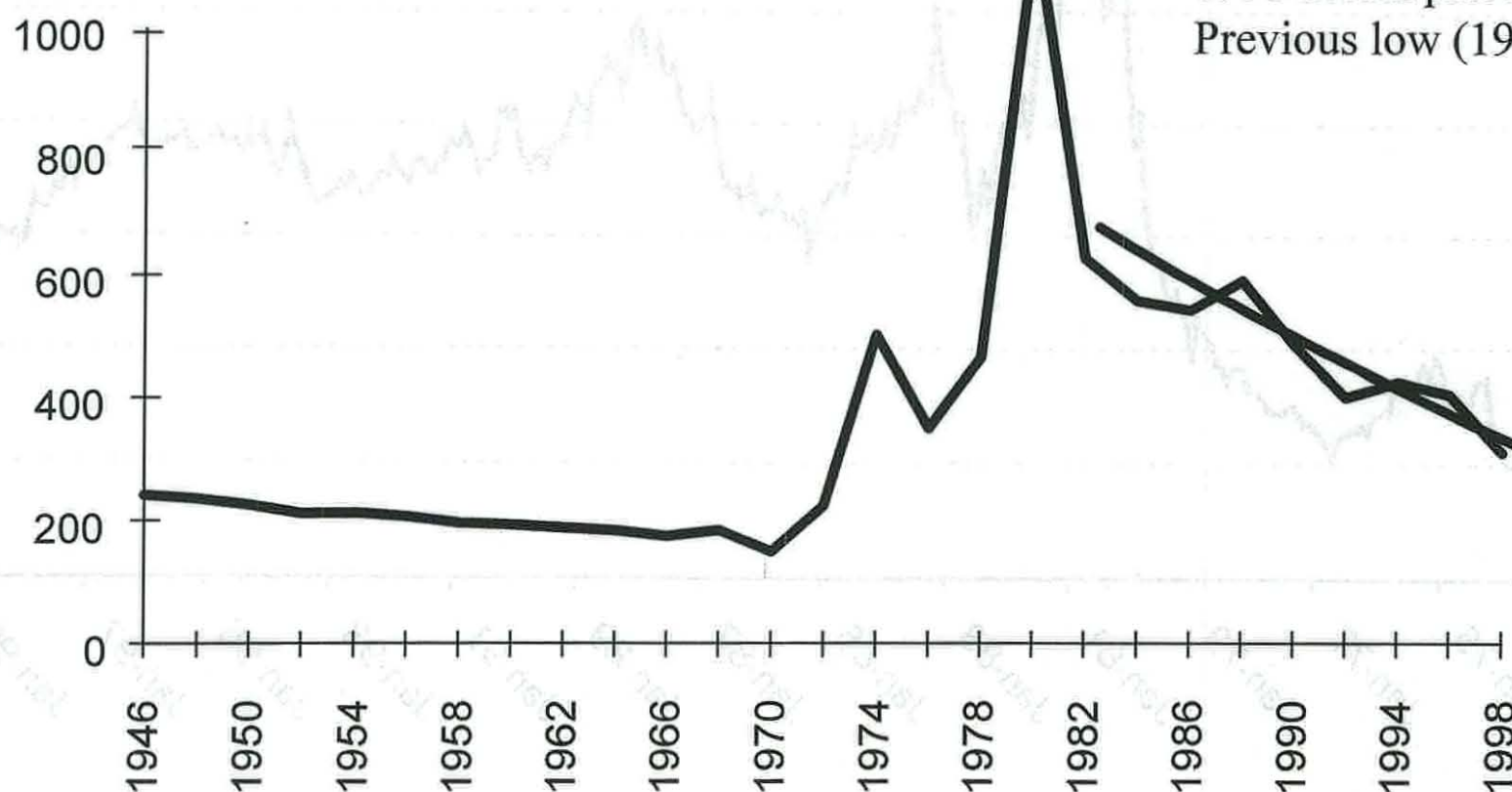
US \$/oz (Real price in 2001 dollars)



# Gold Price - 1946 to 1998

## Real \$1998

US\$/oz

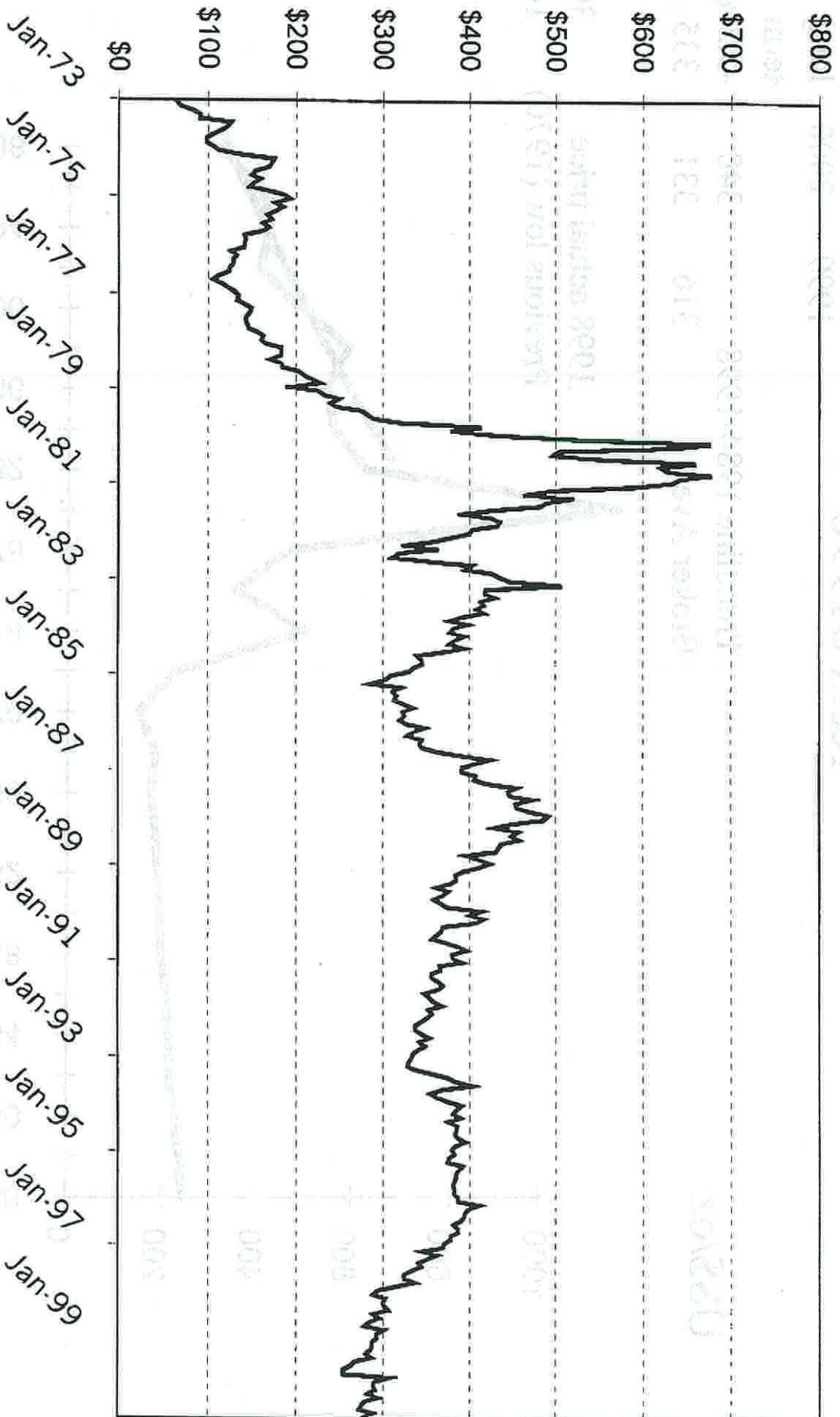


Trendline 1984-1998  
Broker Ave

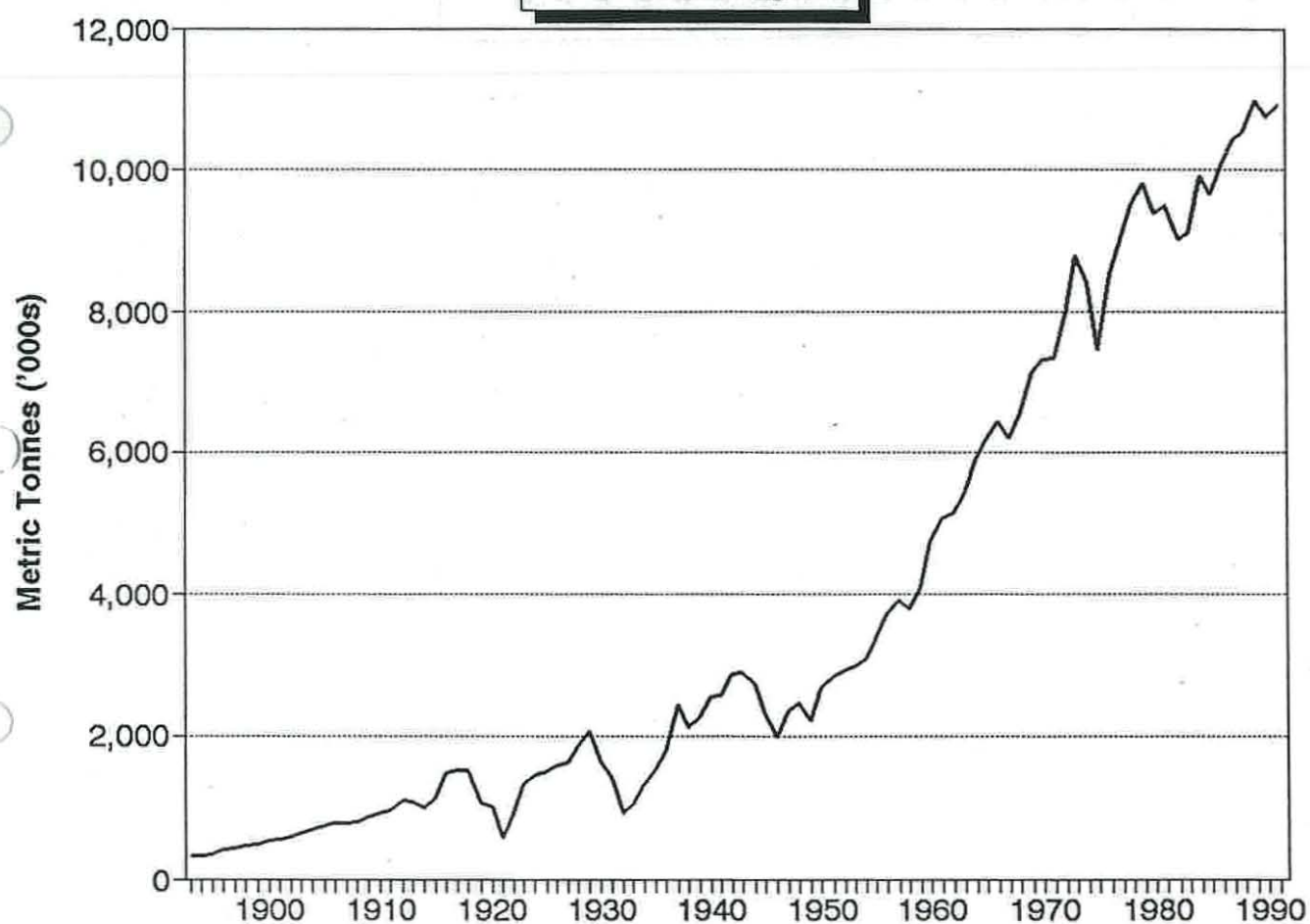
Prices		long term
1999	2000	
	340	-5.2%p.a.
316	331	335
1998 actual price		300
Previous low (1970)		149

US\$ per ounce

# Gold Price (Nominal US\$)

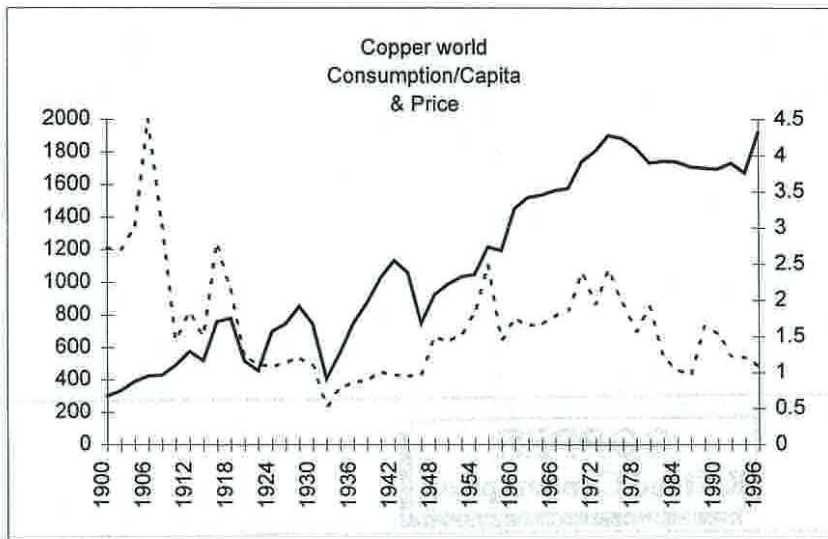


# **COPPER** **Refined Consumption**



## **Source:**

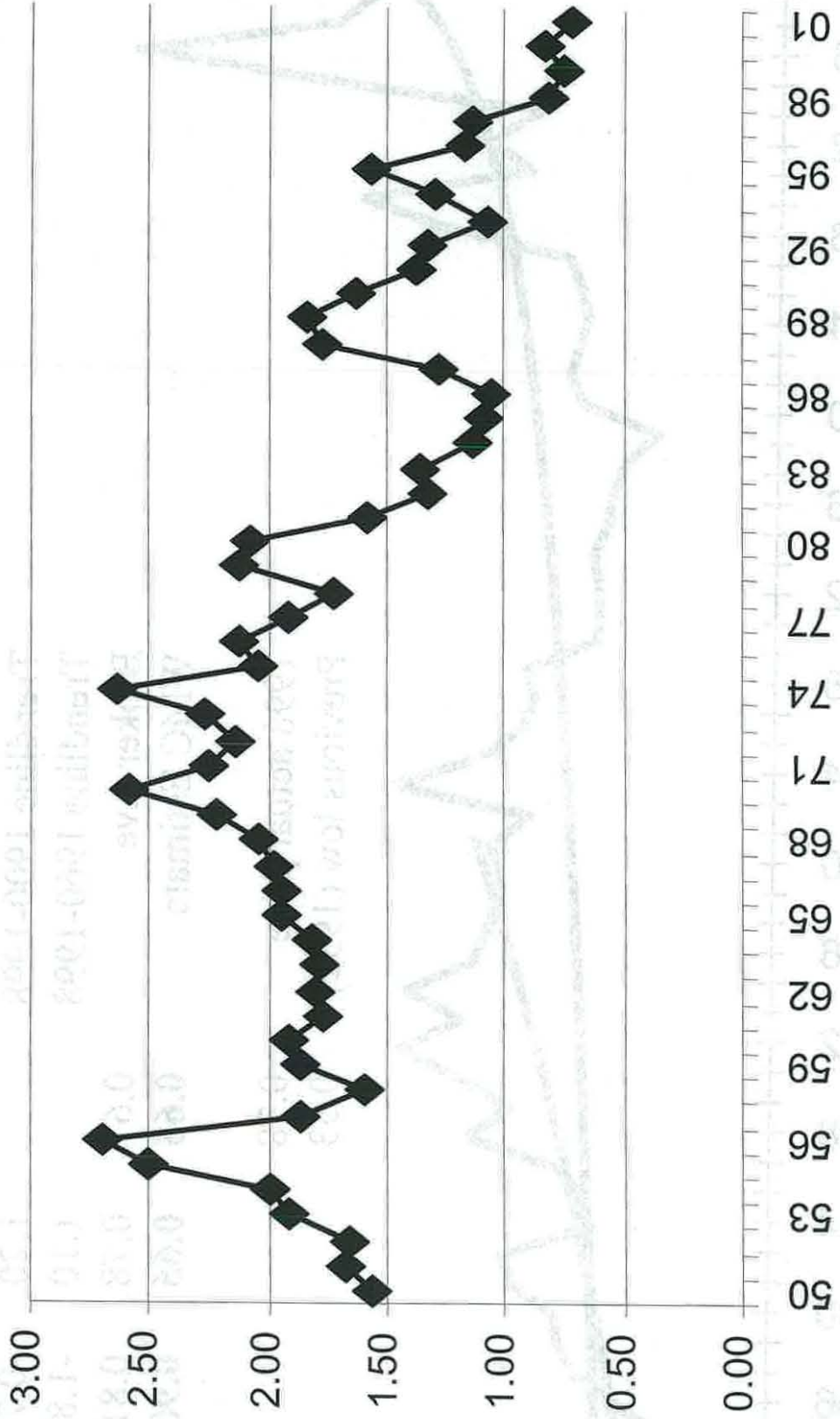
- World Metal Statistics Yearbook 1992
- World Non-Ferrous Metal Production and Prices 1700-1976





# Copper

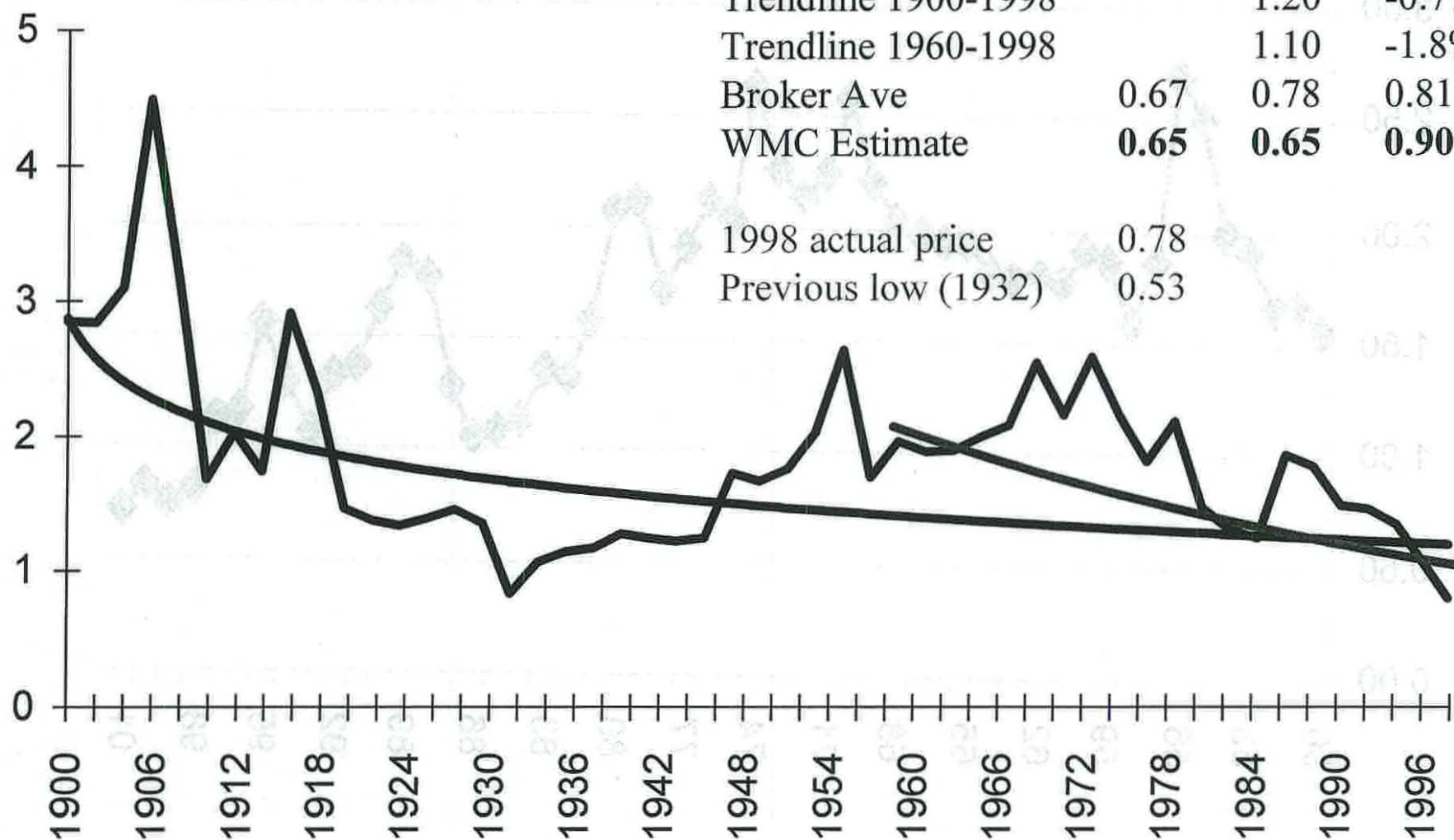
US \$/ lb (Real price in 2001 dollars)



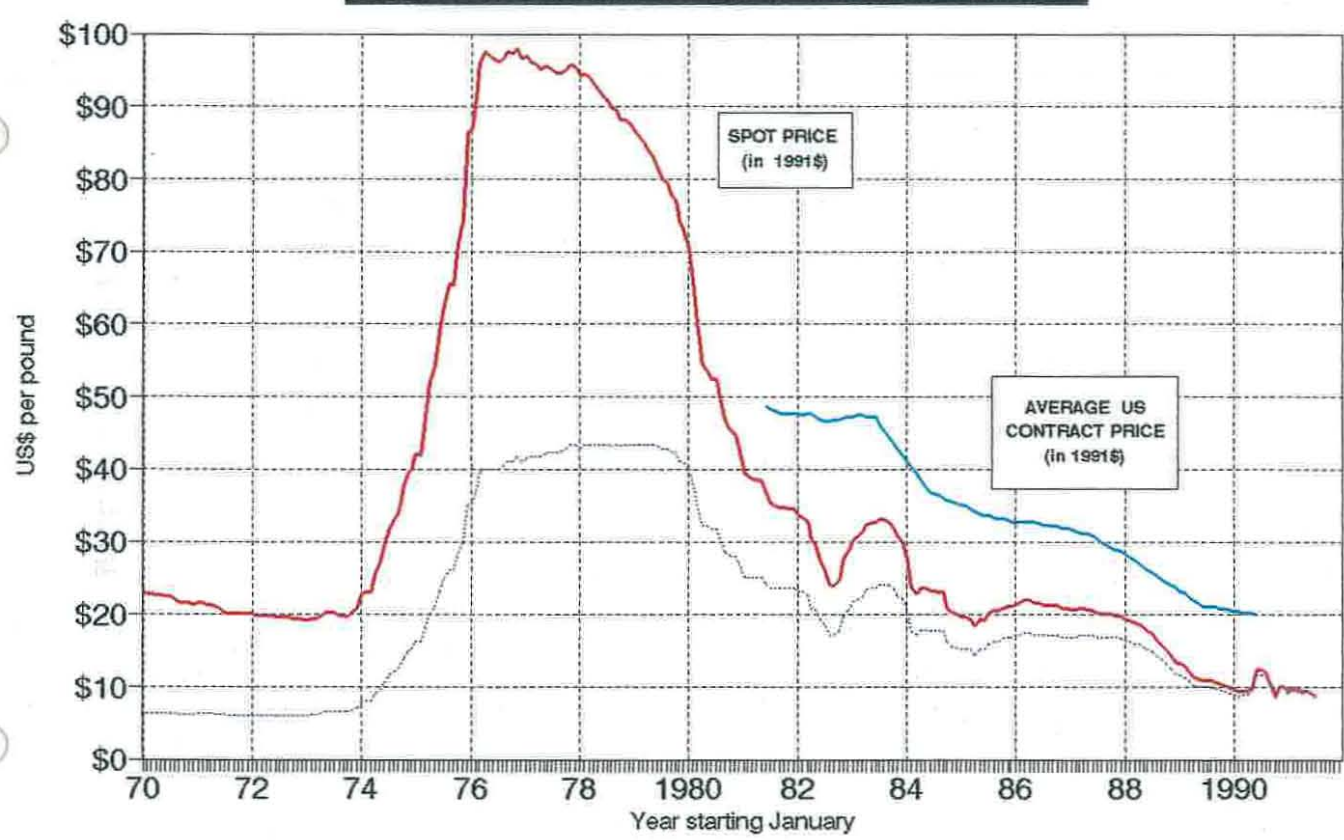
# Copper Price - 1900 to 1998

## Real \$1998

US\$/lb



# Uranium Oxide Prices : Monthly Average (Spot & Average US Contract Prices)



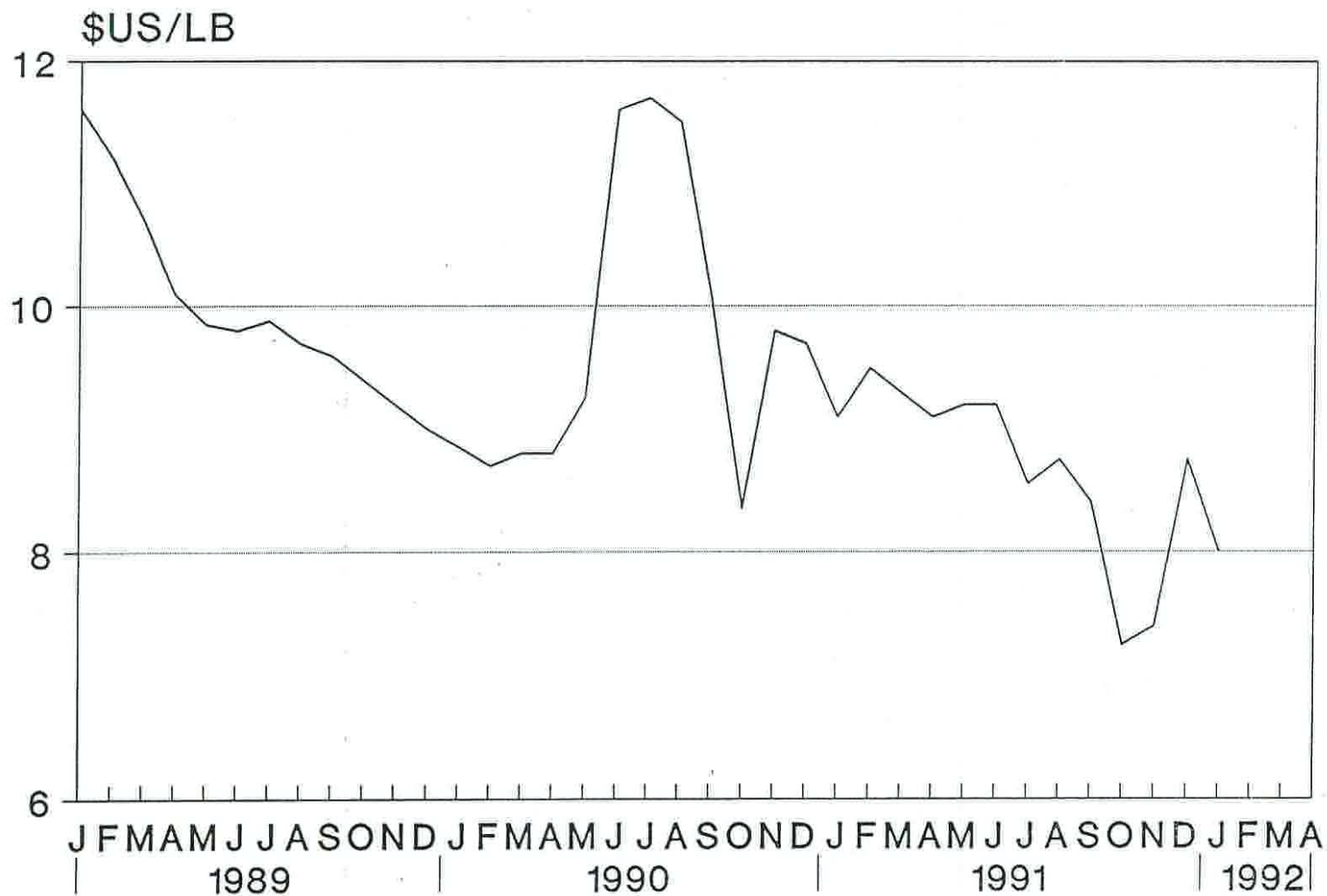
Source : Nukem Oct 1991

— Constant June 91 \$ — \$ of the day





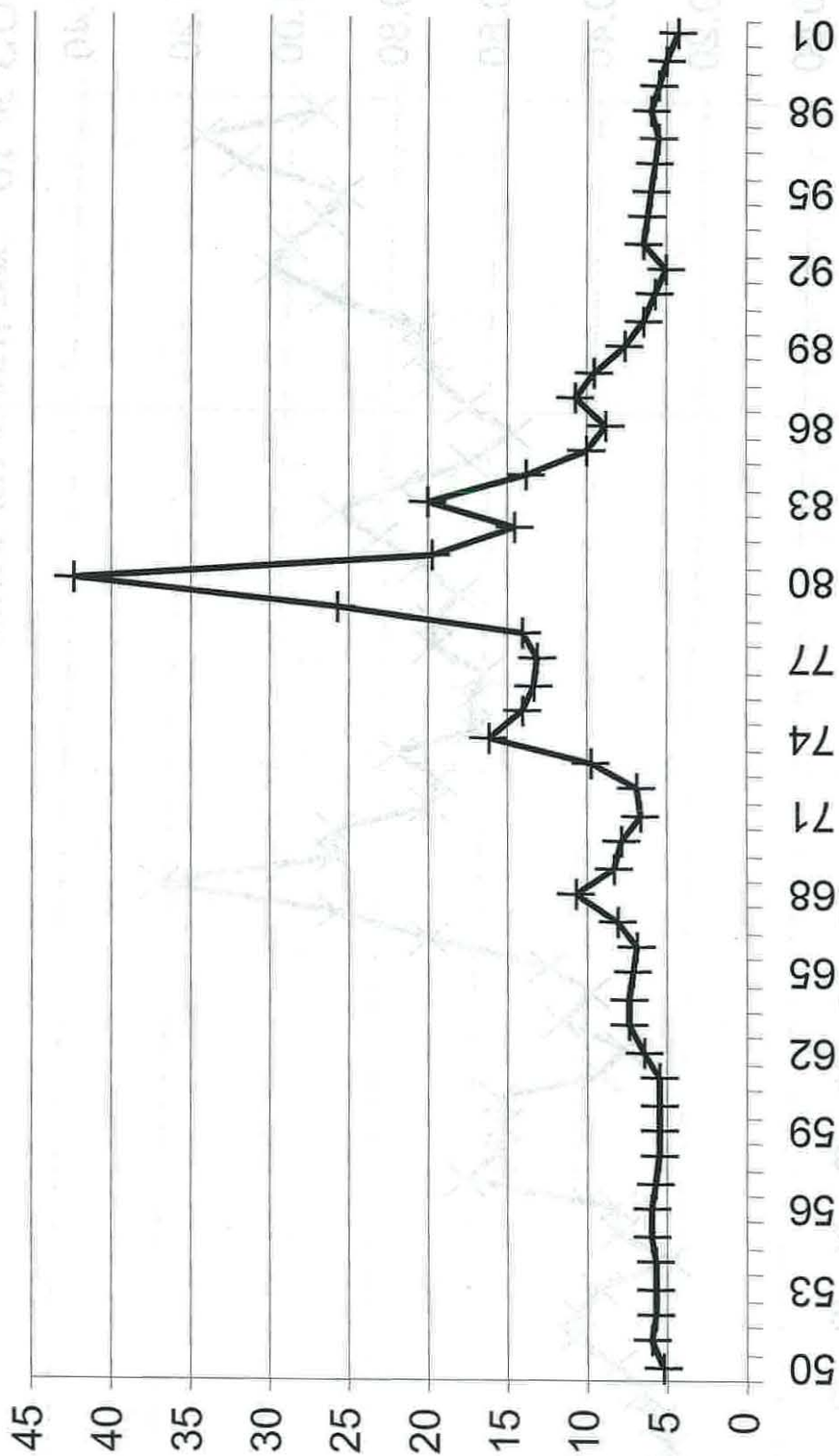
# URANIUM SPOT PRICE





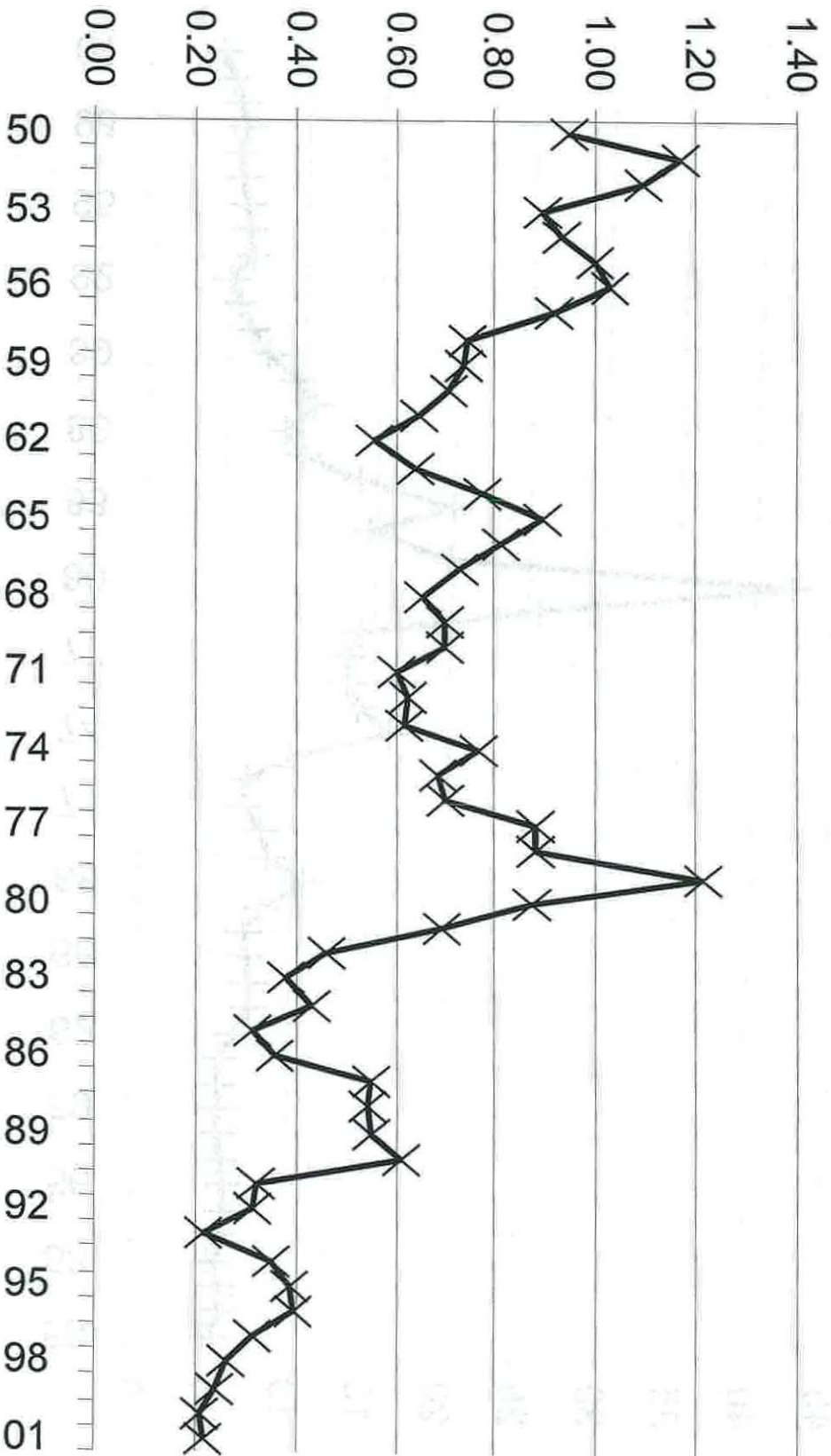
# Silver

US \$/ OZ (Real price in 2001 dollars)

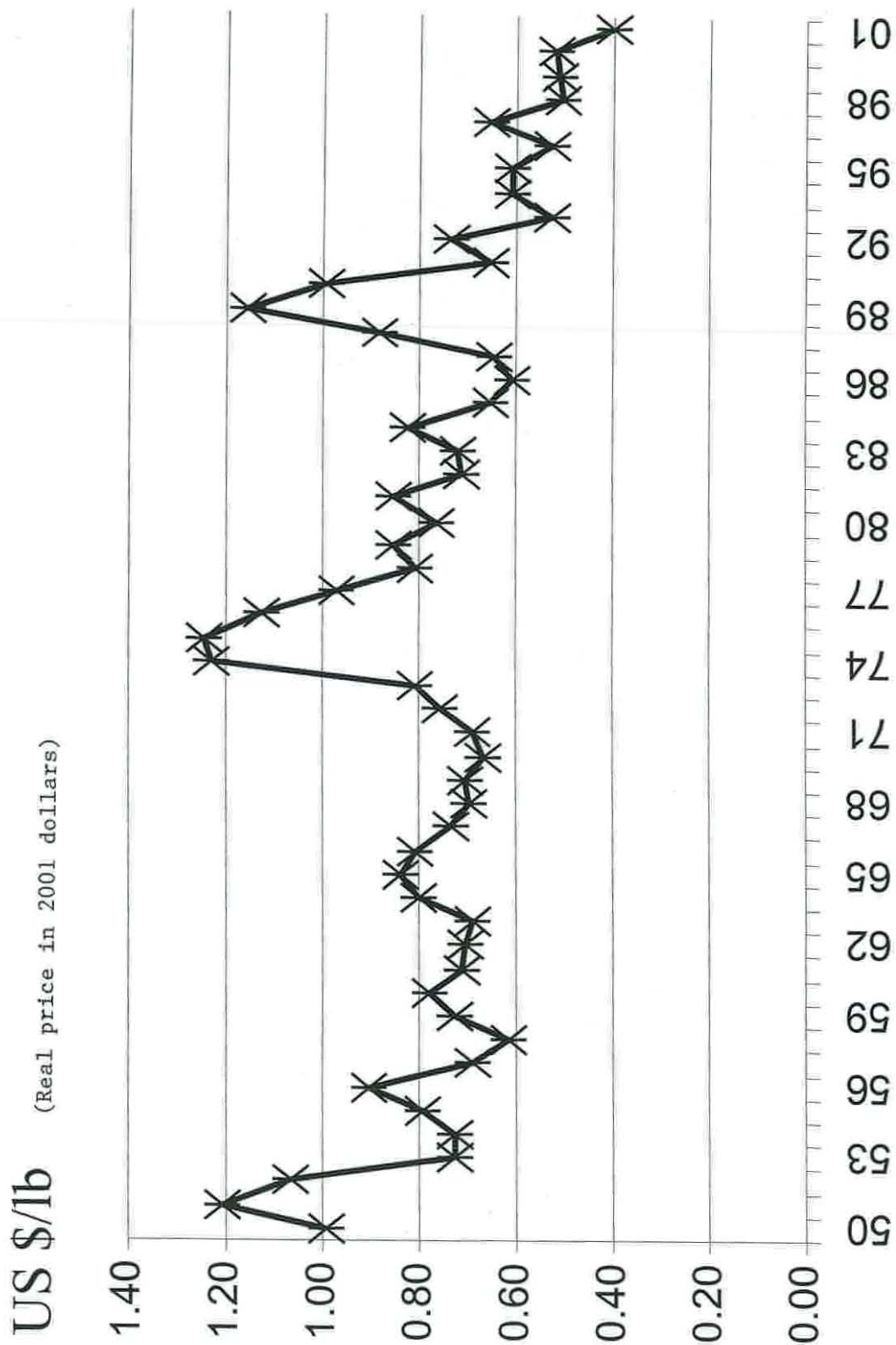


# Lead

US \$/lb (Real price in 2001 dollars)

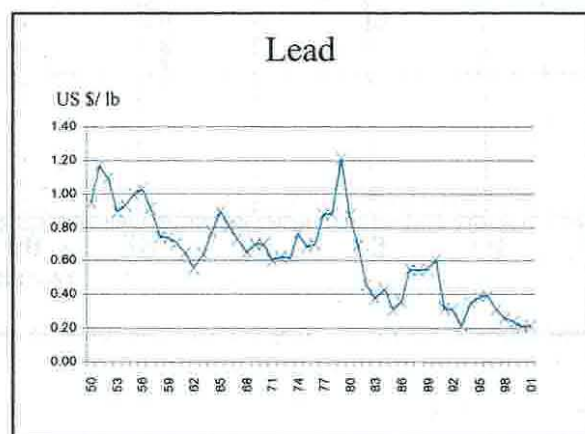
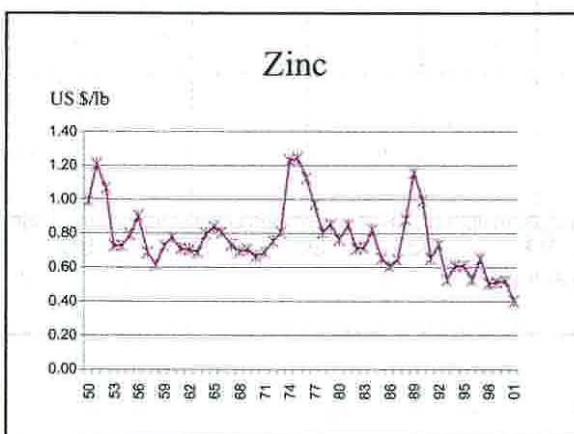
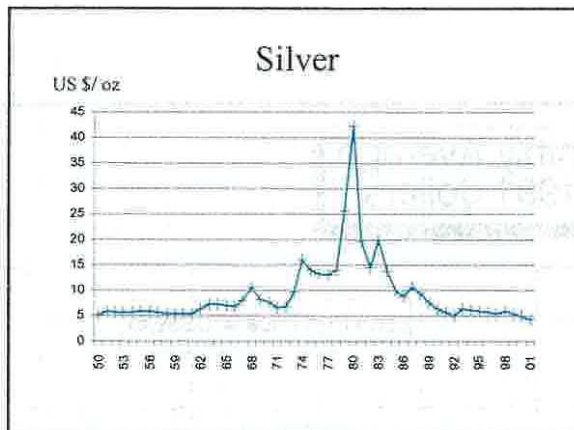


# Zinc



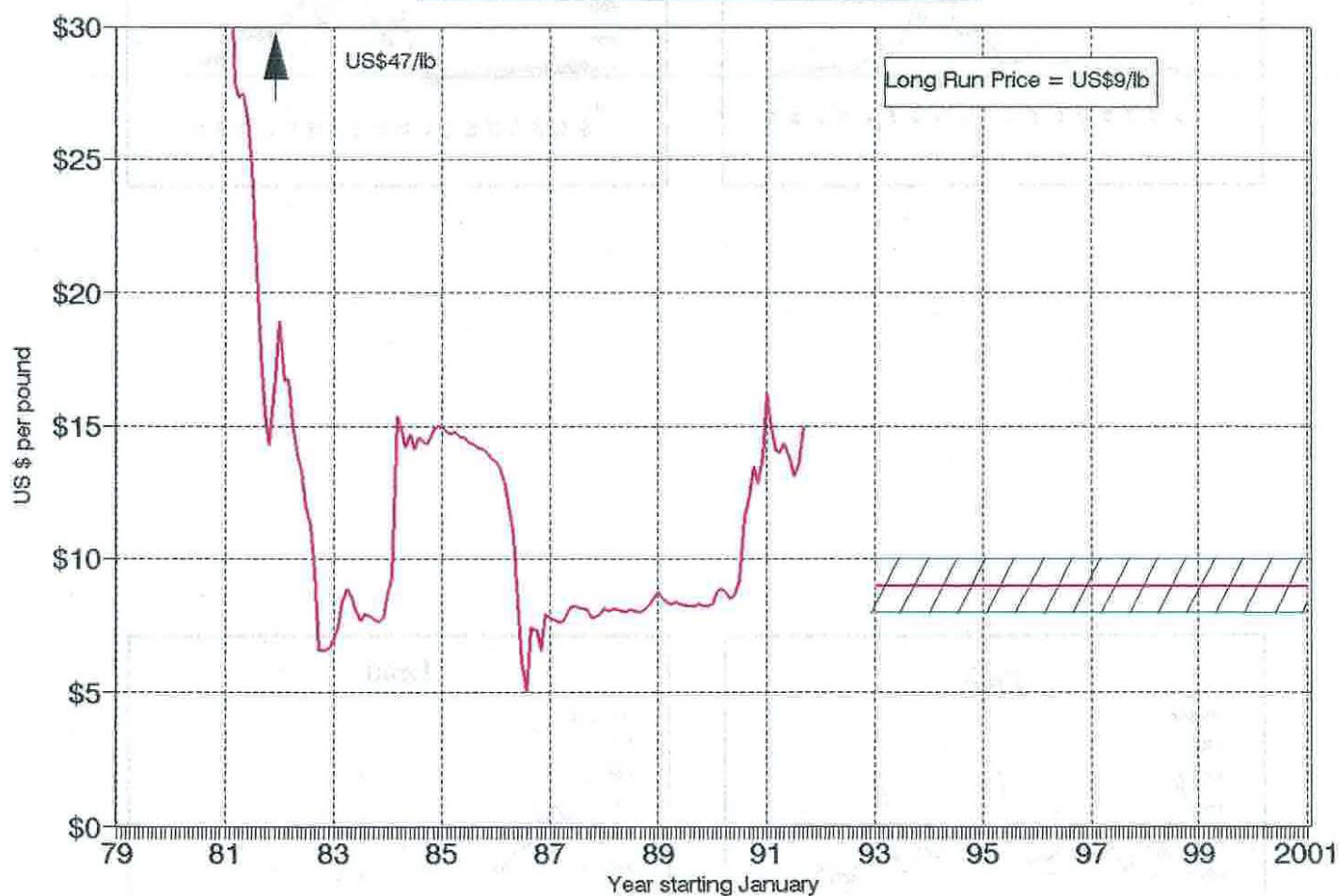


\* Real price in 2001 dollars

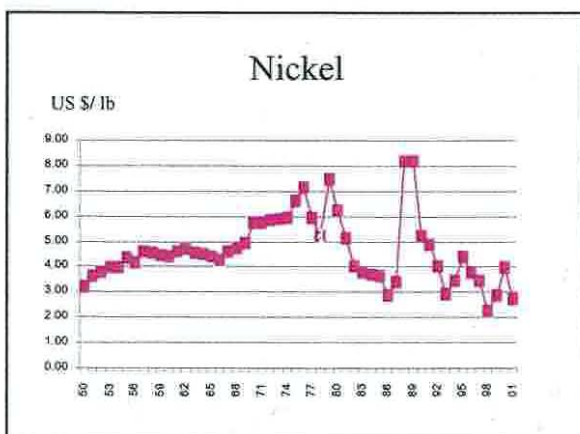
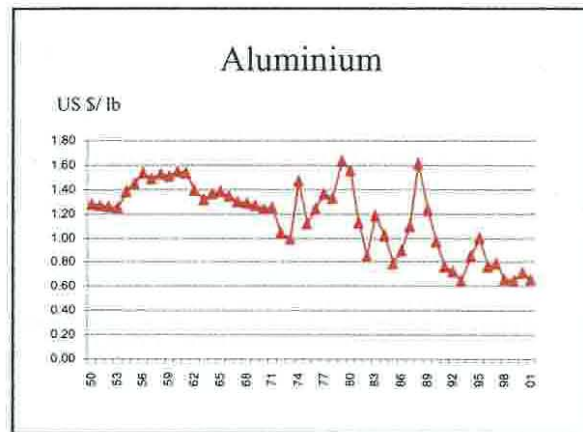
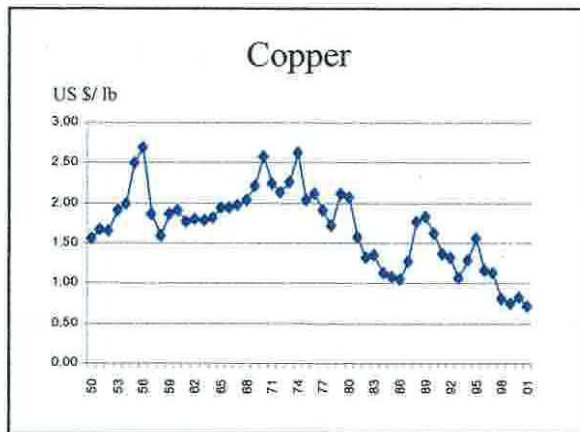




Cobalt Prices : Monthly Average  
in constant June 1991 dollars

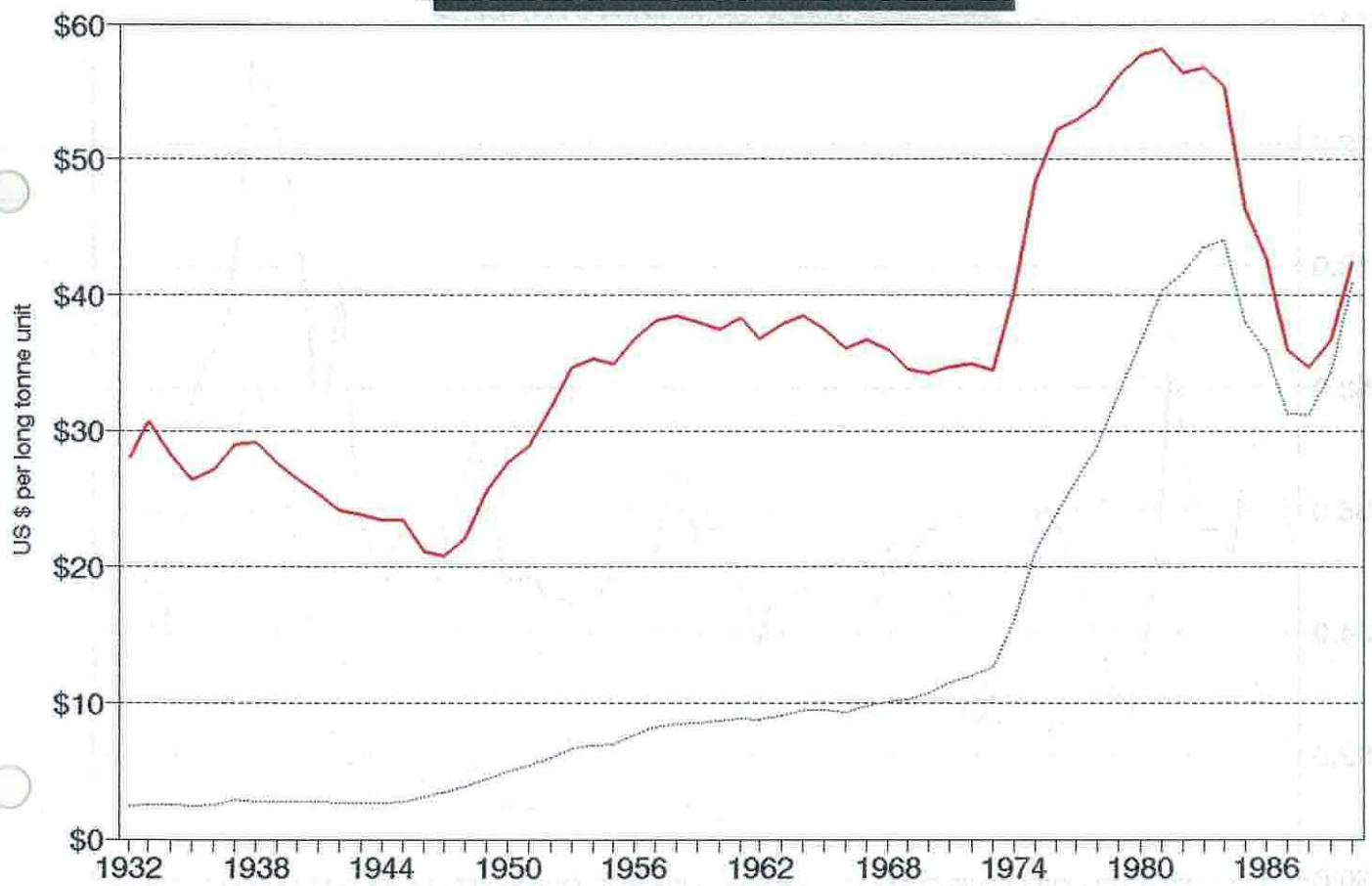


\* Real price in 2001 dollars





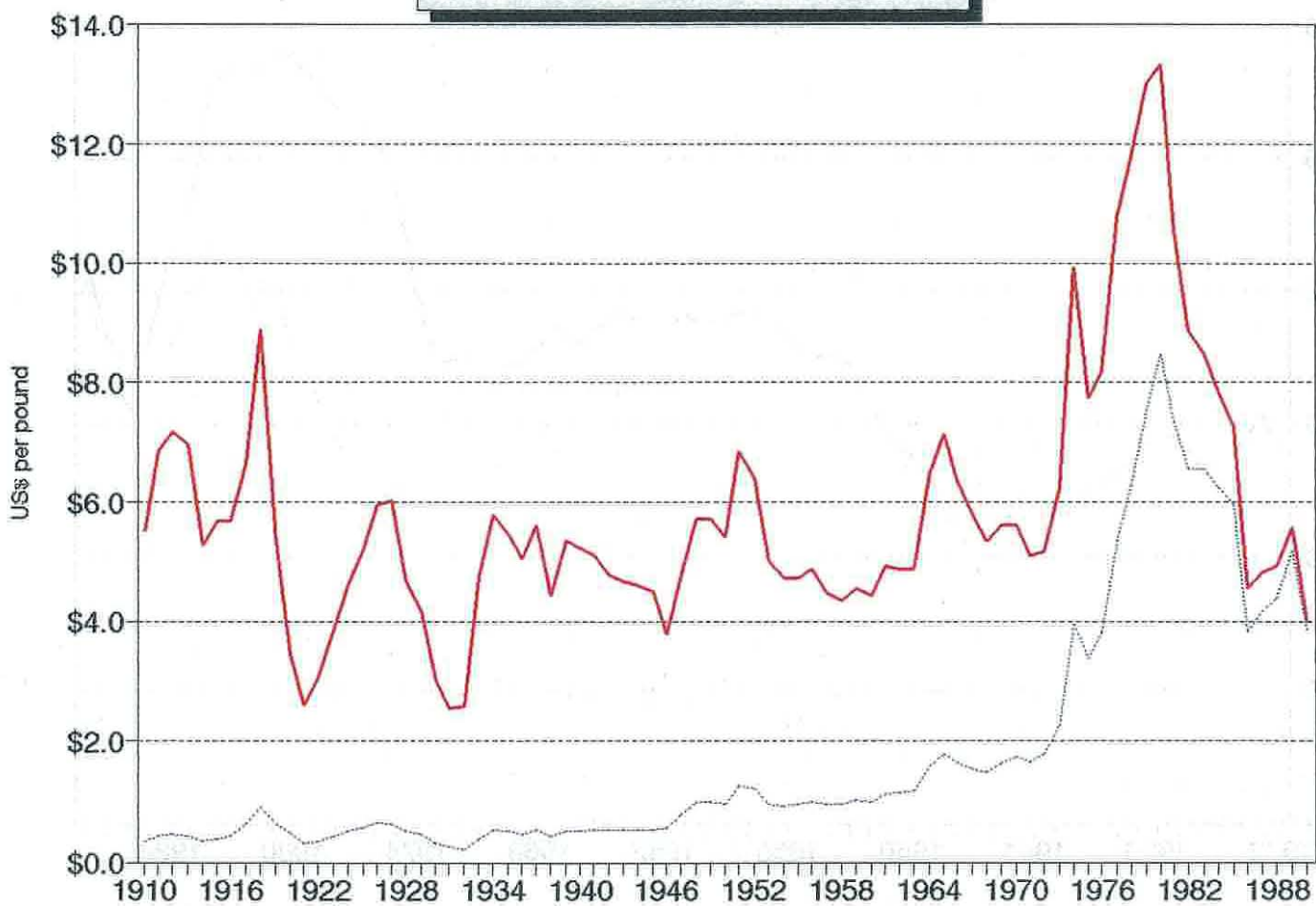
# IRON ORE - YEARLY AVERAGE



Source : Roskills

— Constant June 1991\$    ..... \$ of the day

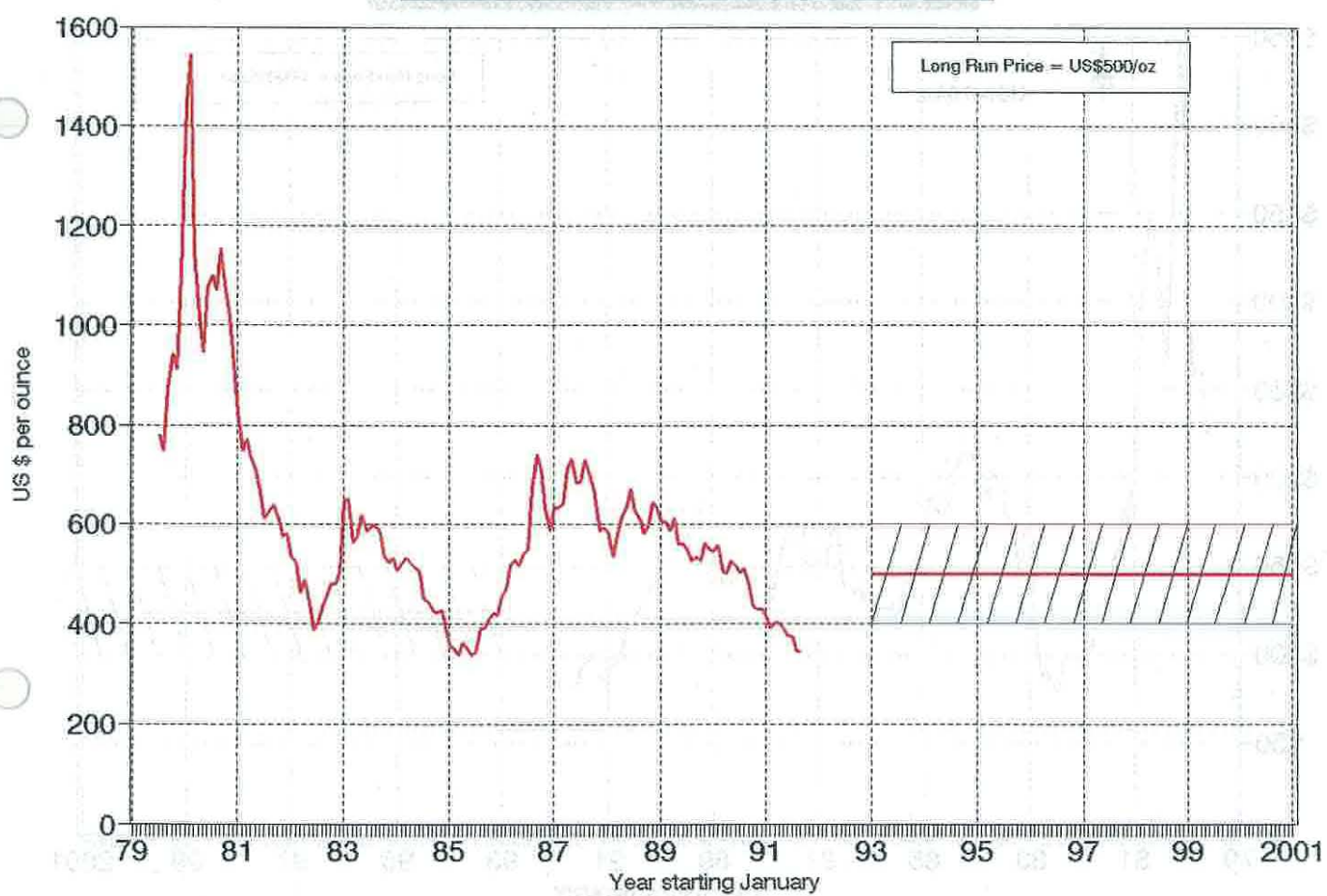
# TIN PRICE - YEARLY AVERAGE



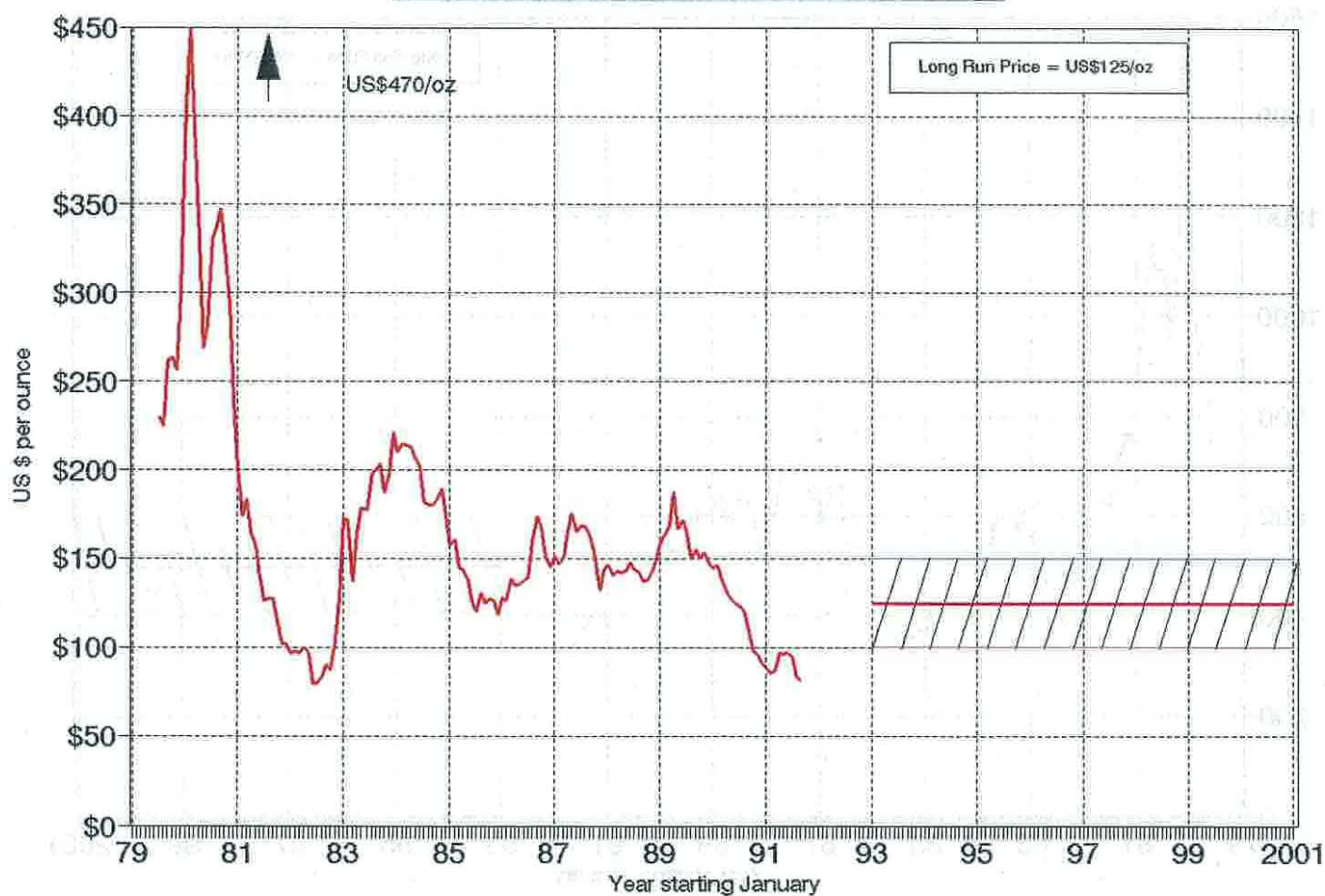
— Constant June 1991\$    ..... \$ of the day



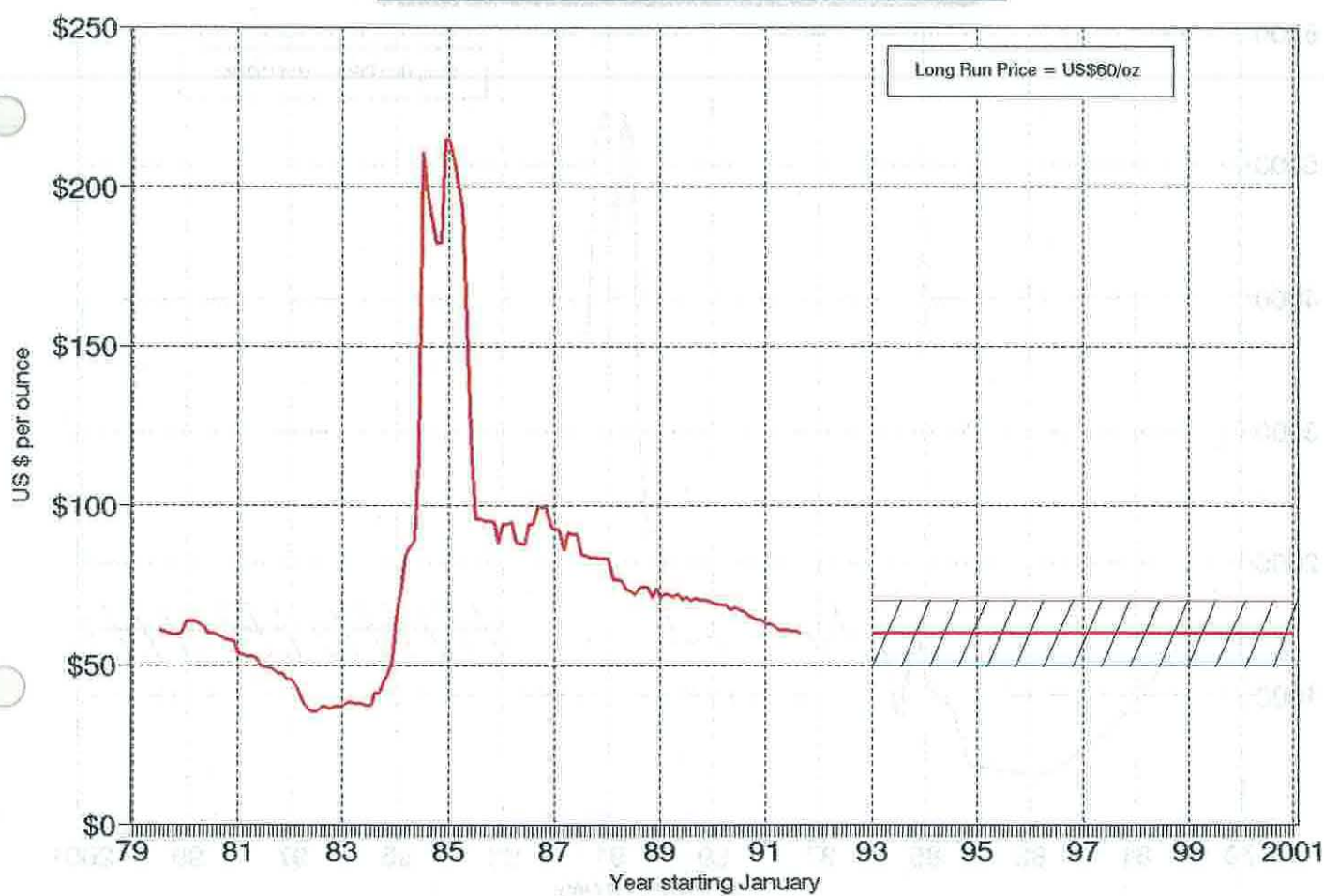
# Platinum Prices : Monthly Average in constant June 1991 dollars



Palladium Prices : Monthly Average  
in constant June 1991 dollars

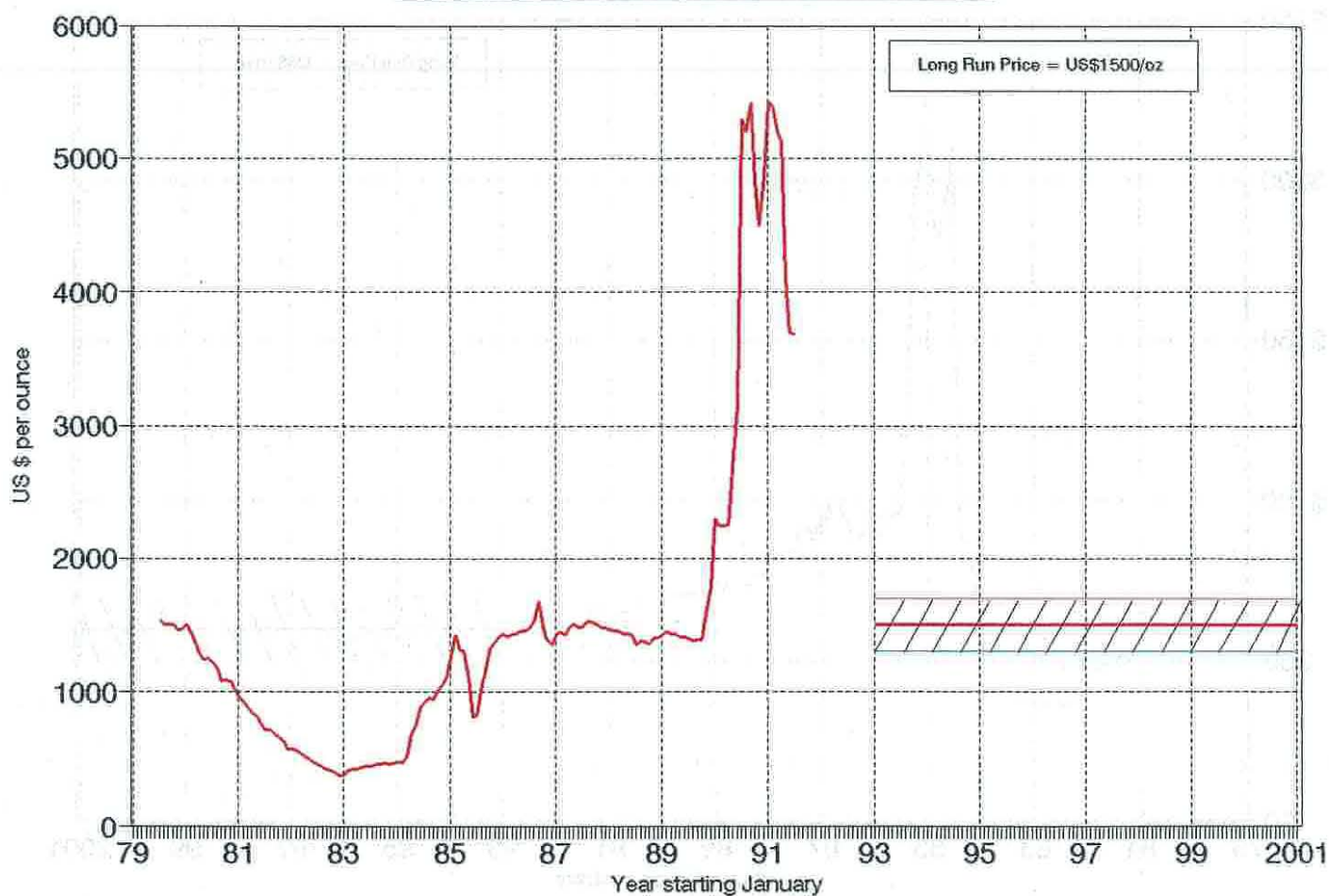


Ruthenium Prices : Monthly Average  
in constant June 1991 dollars

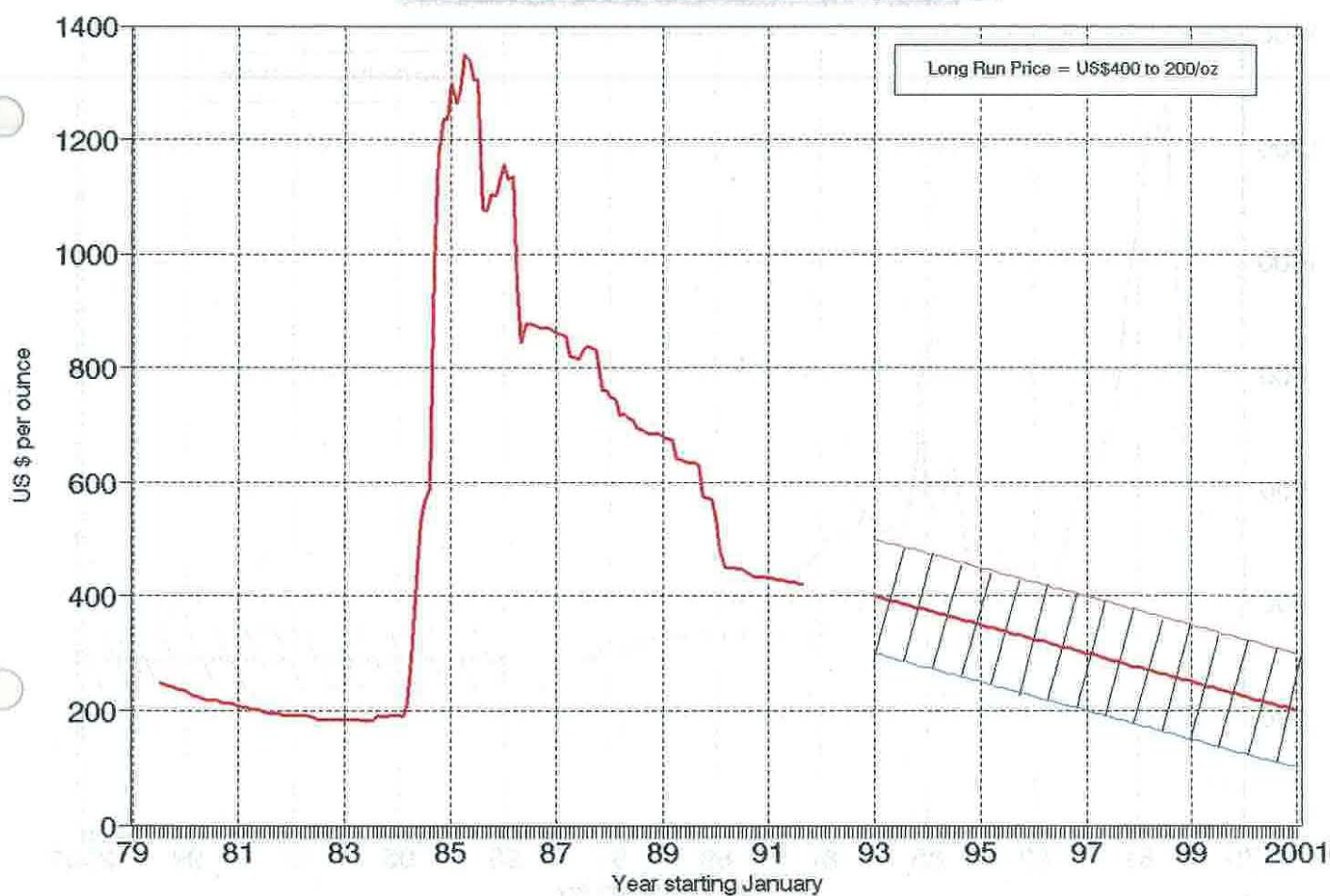




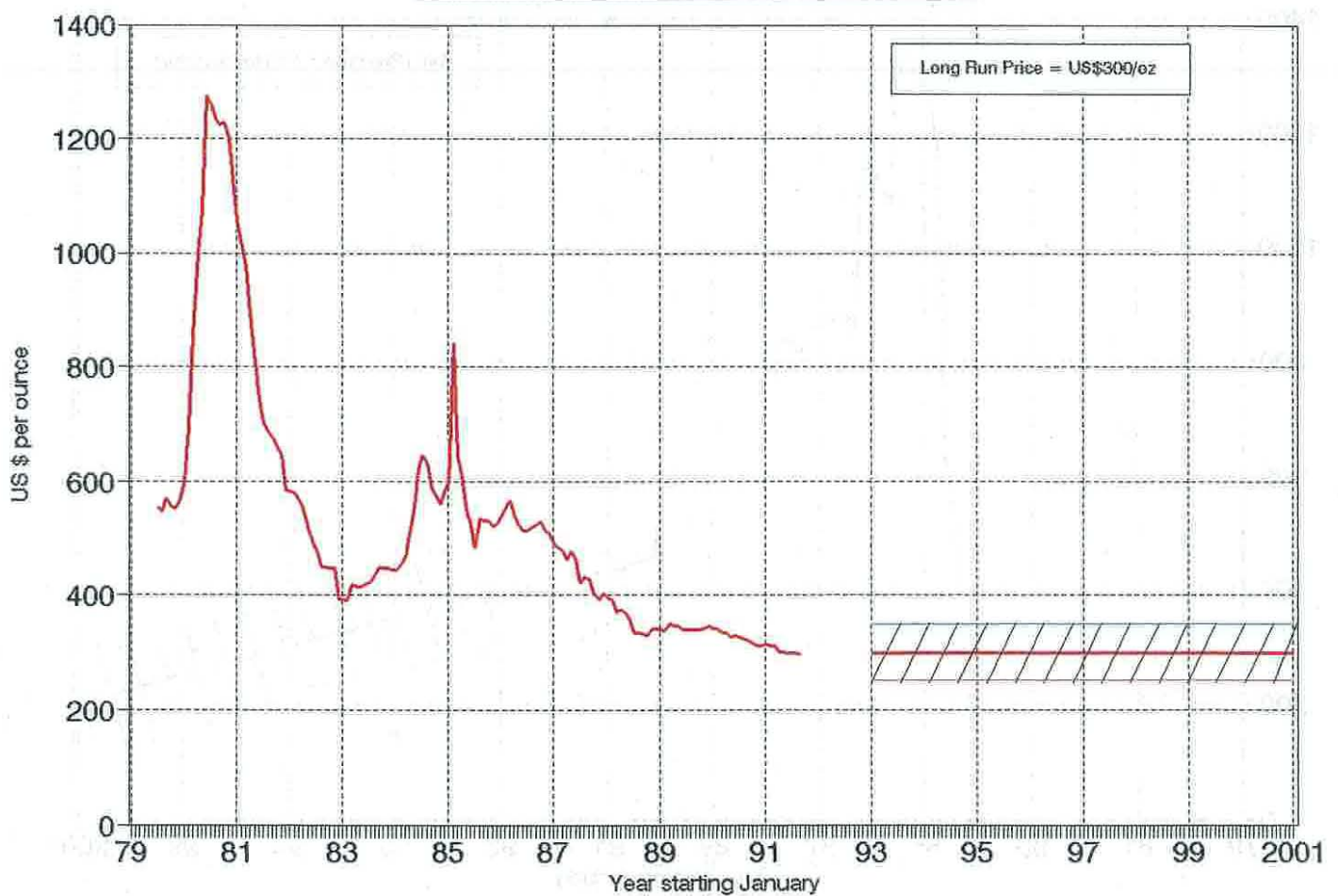
# Rhodium Prices : Monthly Average in constant June 1991 dollars



# Osmium Prices : Monthly Average in constant June 1991 dollars



Iridium Prices : Monthly Average  
in constant June 1991 dollars





# Monthly Economic and Social Indicators

## HISTORICAL SUPPLEMENT 1999

### 7.1c Population

Resident population (a) - '000

	September quarter	December quarter	March quarter	June quarter	Mean
1963-64	10 998.5	11 055.5	11 122.4	11 166.7	11 059.3
1964-65	11 215.6	11 280.4	11 341.5	11 387.7	11 278.6
1965-66	11 438.8	11 505.4	11 563.5	11 599.5	11 500.6
1966-67	11 641.5	11 704.8	11 764.6	11 799.1	11 702.7
1967-68	11 850.6	11 912.3	11 971.4	12 008.6	11 910.0
1968-69	12 074.2	12 145.6	12 217.0	12 263.0	12 144.0
1969-70	12 335.6	12 407.2	12 480.7	12 507.3	12 404.2
1970-71	12 583.5	12 663.5	12 741.5	13 067.3	12 683.5
1971-72	13 130.5	13 198.4	13 254.2	13 303.7	13 192.2
1972-73	13 353.9	13 409.3	13 459.2	13 504.5	13 406.6
1973-74	13 552.6	13 614.3	13 669.5	13 722.6	13 612.0
1974-75	13 772.1	13 832.0	13 862.6	13 893.0	13 818.2
1975-76	13 926.8	13 968.9	14 004.7	14 033.1	13 965.8
1976-77	14 066.0	14 110.1	14 155.6	14 192.2	14 111.0
1977-78	14 231.7	14 281.5	14 330.3	14 359.3	14 280.2
1978-79	14 396.6	14 430.8	14 478.4	14 515.7	14 436.4
1979-80	14 554.9	14 602.5	14 646.4	14 695.4	14 601.8
1980-81	14 746.6	14 807.4	14 874.4	14 923.3	14 809.8
1981-82	14 988.7	15 054.1	15 121.7	15 184.2	15 054.8
1982-83	15 239.3	15 288.9	15 346.2	15 393.5	15 291.5
1983-84	15 439.0	15 483.5	15 531.5	15 579.4	15 485.2
1984-85	15 628.5	15 677.3	15 736.7	15 788.3	15 681.9
1985-86	15 839.7	15 900.6	15 961.5	16 018.3	15 901.1
1986-87	16 075.0	16 138.8	16 204.0	16 263.9	16 139.7
1987-88	16 328.9	16 394.6	16 471.8	16 532.2	16 399.0
1988-89	16 612.6	16 687.1	16 764.0	16 814.4	16 685.6
1989-90	16 872.0	16 936.7	17 005.6	17 065.1	16 938.6
1990-91	17 121.1	17 169.8	17 237.4	17 284.0	17 176.9
1991-92	17 342.9	17 387.0	17 453.3	17 494.7	17 394.8
1992-93	17 543.4	17 581.3	17 637.8	17 667.1	17 587.4
1993-94	17 720.4	17 760.0	17 817.2	17 854.7	17 766.0
1994-95	17 912.9	17 951.5	18 014.0	18 071.8	17 961.4
1995-96	18 133.8	18 196.1	18 257.2	18 310.7	18 194.9

1995-96	18 133.8	18 196.1	18 257.2	18 310.7	18 194.9
1996-97	18 366.8	18 422.7	18 487.8	18 532.2	18 425.6
1997-98	18 588.6	18 631.1	18 709.7		

(a) At end of period.

Source: Australian Demographic Statistics, ABS (3101.0)



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population / 2.

Month	Year	Month	Year	Month	Year	Month	Year	Month	Year
January	1995	January	1996	January	1997	January	1998	January	1999
February	1995	February	1996	February	1997	February	1998	February	1999
March	1995	March	1996	March	1997	March	1998	March	1999
April	1995	April	1996	April	1997	April	1998	April	1999
May	1995	May	1996	May	1997	May	1998	May	1999
June	1995	June	1996	June	1997	June	1998	June	1999
July	1995	July	1996	July	1997	July	1998	July	1999
August	1995	August	1996	August	1997	August	1998	August	1999
September	1995	September	1996	September	1997	September	1998	September	1999
October	1995	October	1996	October	1997	October	1998	October	1999
November	1995	November	1996	November	1997	November	1998	November	1999
December	1995	December	1996	December	1997	December	1998	December	1999

# Monthly Economic and Social Indicators 2000-2001

## MESI

### Table 7.1 - Population

Quarter	1995-96	1996-97	1997-98	1998-99	1999-00
Natural increase - '000					
September	30.2	28.1	26.4	27.7	26.2
December	30.3	33.2	30.9	30.5	31.8
March	33.3	33.1	32.3	33.2	29.7
June	30.2	32.1	30.3	30.3	
Annual	124.0	126.4	119.9	121.7	
Net overseas migration - '000					
September	29.1	32.3	28.0	31.6	28.5
December	29.2	19.4	8.9	22.1	27.6
March	25.1	29.4	31.7	14.1	23.7
June	20.6	6.1	17.7	17.3	
Annual	104.1	87.1	86.4	85.1	
Resident population (a) - '000					
September	18 133.8	18 371.1	18 578.5	18 789.6	18 991.8
December	18 196.1	18 423.6	18 618.3	18 842.2	19 051.2
March	18 257.2	18 486.0	18 682.4	18 889.5	19 104.6
June	18 310.7	18 524.2	18 730.4	18 937.2	
Mean population	18 194.9	18 425.9	18 627.9	18 839.0	

(a) At end of period.

Update: Mid December

Source: Australian Demographic Statistics, ABS (3101.0)



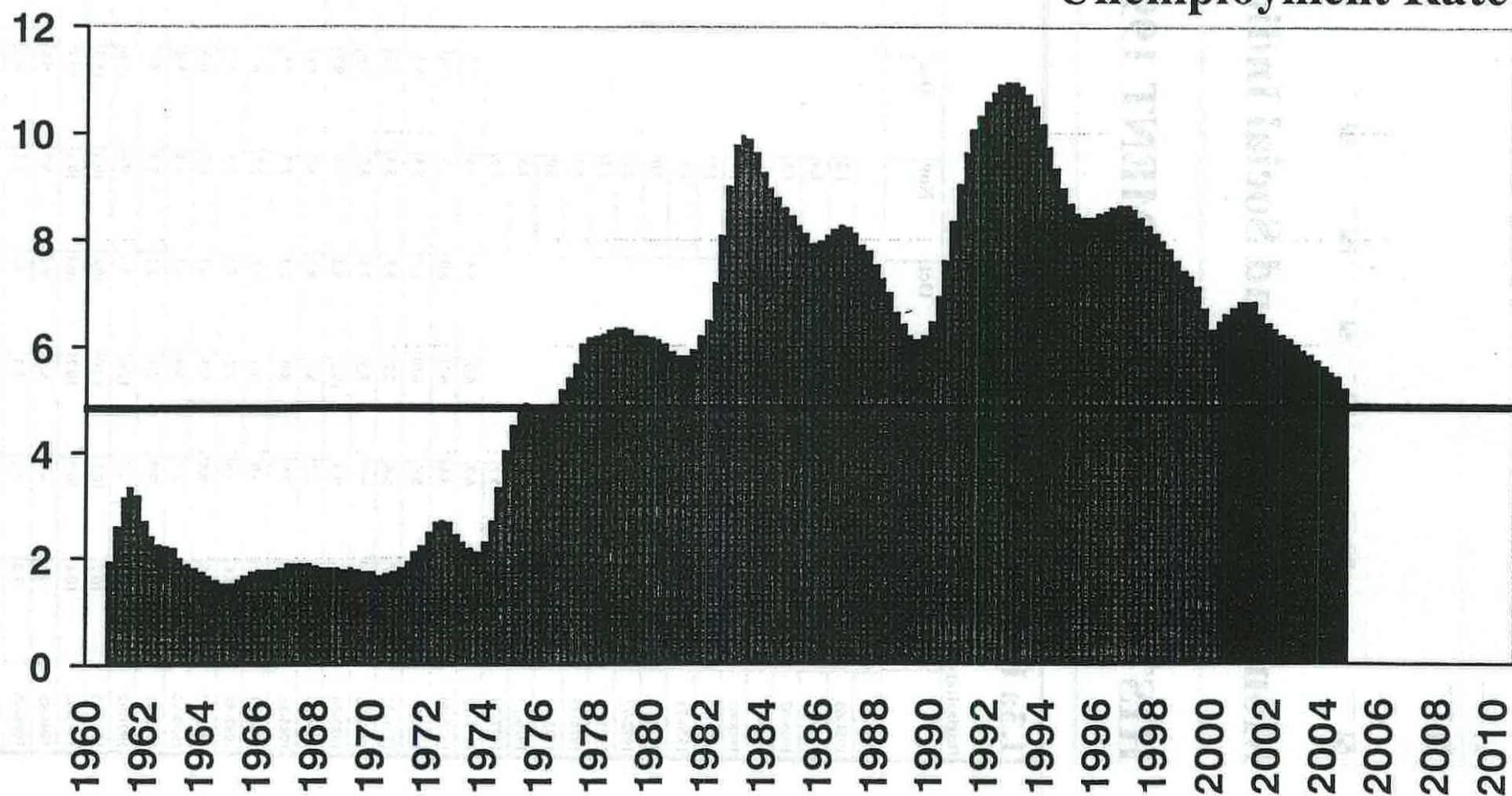


# Unemployment

To December 2000 and forecast to June 2005

4 quarter moving average

Unemployment Rate





# Monthly Economic and Social Indicators

## HISTORICAL SUPPLEMENT 1999

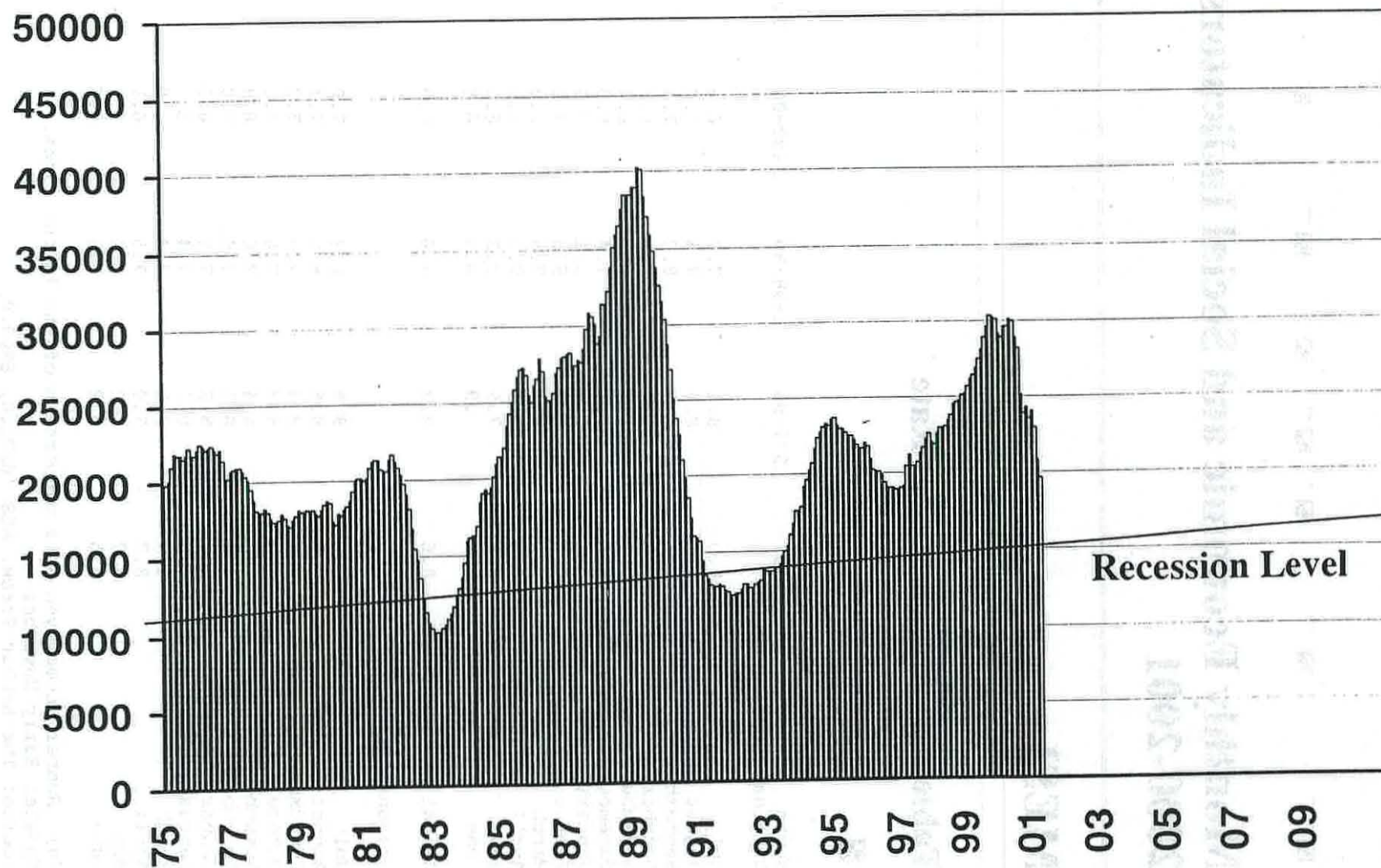
### 1.3a Unemployment Rate

Original (a) - per cent

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1963-64								1.8	
1964-65		1.2			1.2			1.4	
1965-66		1.2			1.4			1.8	
1966-67		1.6			1.5			2.2	
1967-68		1.7			1.6			2.2	
1968-69		1.6			1.6			2.1	
1969-70		1.5			1.8			1.9	
1970-71		1.4			1.5			2.1	
1971-72		1.7			2.0			2.9	
1972-73		2.5			2.7			3.1	
1973-74		1.8			2.1			2.6	
1974-75		2.4			3.7			5.4	
1975-76		4.6			5.0			5.4	
1976-77		4.7			4.5			5.9	
1977-78		5.7			5.5			7.5	6.6
1978-79	5.9	6.2	6.0	5.8	5.8	6.8	7.0	7.0	6.6
1979-80	6.0	5.8	6.1	6.0	5.5	6.4	6.7	6.7	6.2
1980-81	5.8	5.9	6.0	5.7	5.4	6.3	6.5	6.3	6.0
1981-82	5.6	5.6	5.7	5.5	5.5	6.3	6.5	7.1	6.7
1982-83	6.6	6.7	7.3	7.8	8.0	9.6	10.1	10.7	10.4
1983-84	9.8	9.9	10.2	9.3	8.9	9.7	10.3	10.4	9.7
1984-85	8.4	8.5	8.6	8.1	8.0	8.6	9.3	9.3	9.2
1985-86	7.8	7.9	8.0	7.3	7.3	7.9	8.5	8.8	8.4
1986-87	7.9	8.0	8.3	7.8	7.7	8.4	8.9	9.1	9.0
1987-88	7.8	7.8	7.7	7.5	7.3	7.8	8.3	8.2	8.0
1988-89	6.6	6.8	6.9	6.4	6.1	6.9	7.4	7.3	6.7
1989-90	5.9	5.7	6.0	5.5	5.4	5.9	6.7	7.1	6.5
1990-91	6.7	7.0	7.3	7.1	7.4	8.1	9.1	9.5	9.6
1991-92	9.5	9.5	10.0	9.4	9.6	10.6	11.2	11.5	11.0
1992-93	10.7	10.5	10.6	10.4	10.4	11.3	11.8	12.2	11.3
1993-94	10.4	10.7	10.7	10.4	10.3	10.7	11.3	11.5	10.8
1994-95	9.1	9.2	9.3	8.6	8.7	9.0	9.7	9.9	9.1
1995-96	7.9	8.1	8.4	8.2	8.1	8.2	9.2	9.4	8.9
1996-97	8.0	8.5	8.7	8.4	8.1	8.7	9.3	9.8	9.2

# ANZ Job Advertisements: Australia

Two month progressive to April 2001 (weekly averages)



Year commencing January



# Monthly Economic and Social Indicators 2000-2001

## MESI

**Table 1.3 - Uemployment Rate**

Month	1996-97	1997-98	1998-99	1999-00	2000-01
Original - per cent					
July	8.0	8.1	7.7	6.6	5.9
August	8.4	8.4	7.8	7.0	6.2
September	8.6	8.5	8.0	7.4	6.4
October	8.3	8.0	7.3	6.7	
November	8.0	7.9	7.6	6.4	
December	8.6	8.1	7.4	6.9	
January	9.3	8.8	8.1	7.4	
February	9.8	9.0	8.3	7.5	
March	9.1	8.6	7.8	7.3	
April	8.6	7.9	7.5	6.8	
May	8.6	7.9	7.3	6.7	
June	8.2	7.9	6.9	6.3	
Annual average	8.6	8.3	7.6	6.9	
Seasonally adjusted - per cent					
July	8.5	8.6	8.2	7.0	6.3
August	8.7	8.6	8.0	7.1	6.4
September	8.6	8.4	7.9	7.3	6.3
October	8.7	8.3	7.6	7.1	
November	8.5	8.4	8.0	6.8	
December	8.7	8.3	7.6	7.0	
January	8.6	8.2	7.5	6.9	
February	8.8	8.1	7.4	6.7	
March	8.7	8.2	7.4	6.9	
April	8.7	7.9	7.5	6.8	
May	8.7	8.0	7.4	6.7	
June	8.5	8.2	7.2	6.6	

(a) Number unemployed as a proportion of the labour force.

Update: Early November

Source: The Labour Force, ABS (6202.0, 6203.0)

1997-98	8.2	8.4	8.5	8.0	8.0	8.1	8.9	9.1	8.6
1998-99	7.8	7.9	8.1	7.3					

(a) Number unemployed as a proportion of the labour force.

Note: There are breaks in the series in August 1966 and April 1986. Care should be exercised when making comparisons over periods within which these da

Source: *The Labour Force*, ABS (6202.0, 6203.0)



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unemployment 2/.



**Table 5.1: Unemployment Rates in Selected OECD Countries, End 1996**  
(OECD standardised unemployment rates, fourth quarter 1996;  
per cent of labour force)

<u>Country</u>	<u>Unemployment Rate</u> (%)		
	<u>1959-67</u> Average	<u>1982-92</u> Average	<u>1996</u> Final Quarter
Japan	1.5	2.5	3.3
Switzerland	0.2	0.7	3.7
Austria	1.7	3.5	4.0
Norway	2.1	3.2	4.8
USA	5.3	7.1	5.3
Denmark	1.4	9.1	5.5
New Zealand			6.3
Netherlands	0.9	9.8	6.7
UK	1.8	9.7	7.5
<b>Australia</b>	<b>2.2</b>	<b>7.8</b>	<b>8.6</b>
Germany	1.2	7.4	9.3
Belgium	2.4	11.3	9.5
Canada	4.9	9.6	9.7
Sweden	1.3	2.3	10.6
Ireland	4.6	15.5	11.8
Italy	6.2	10.9	12.0
France	0.7	9.5	12.4
Finland	1.7	4.8	15.0
Spain	2.3	19.0	22.2
<b>OECD Total</b>	<b>(3.5)</b>	<b>7.4</b>	<b>7.5</b>

For example, while four countries had unemployment rates of 12% or more at the end of 1996, six had unemployment rates of 5.5% or less. In six countries the end 1996 rate was lower than the 1982-1992 average, and in four others the increase between these two time periods was less than one percentage point. Perhaps most importantly of all, in the most technologically advanced nation, the USA, the unemployment rate at the end of 1996 was the same as that for the 1959-67 period, and was nearly two percentage points lower than the average over 1982-92 (Figure 5.1).

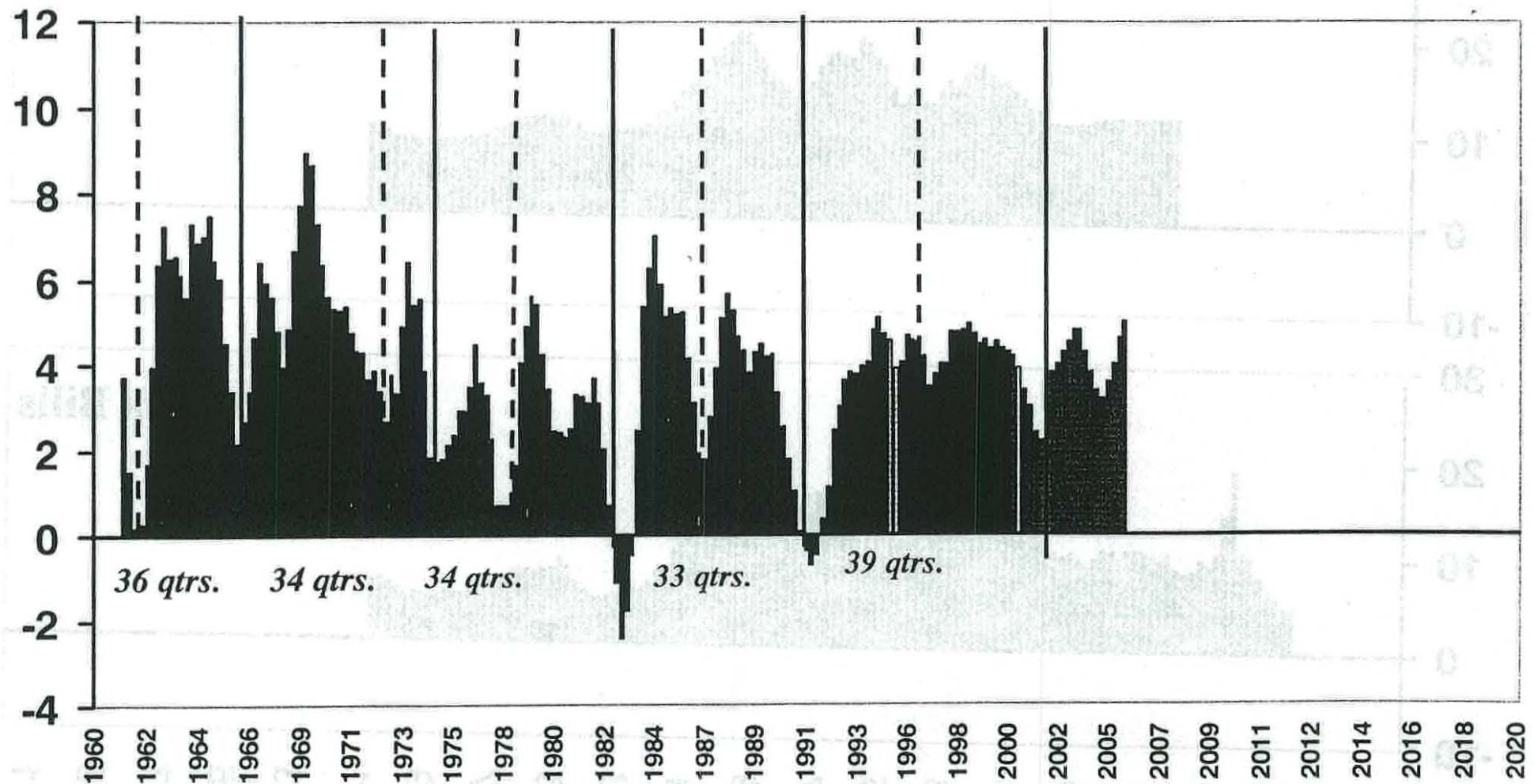




# Economic Growth

**Gross Domestic Product** (constant 1998-99 prices)

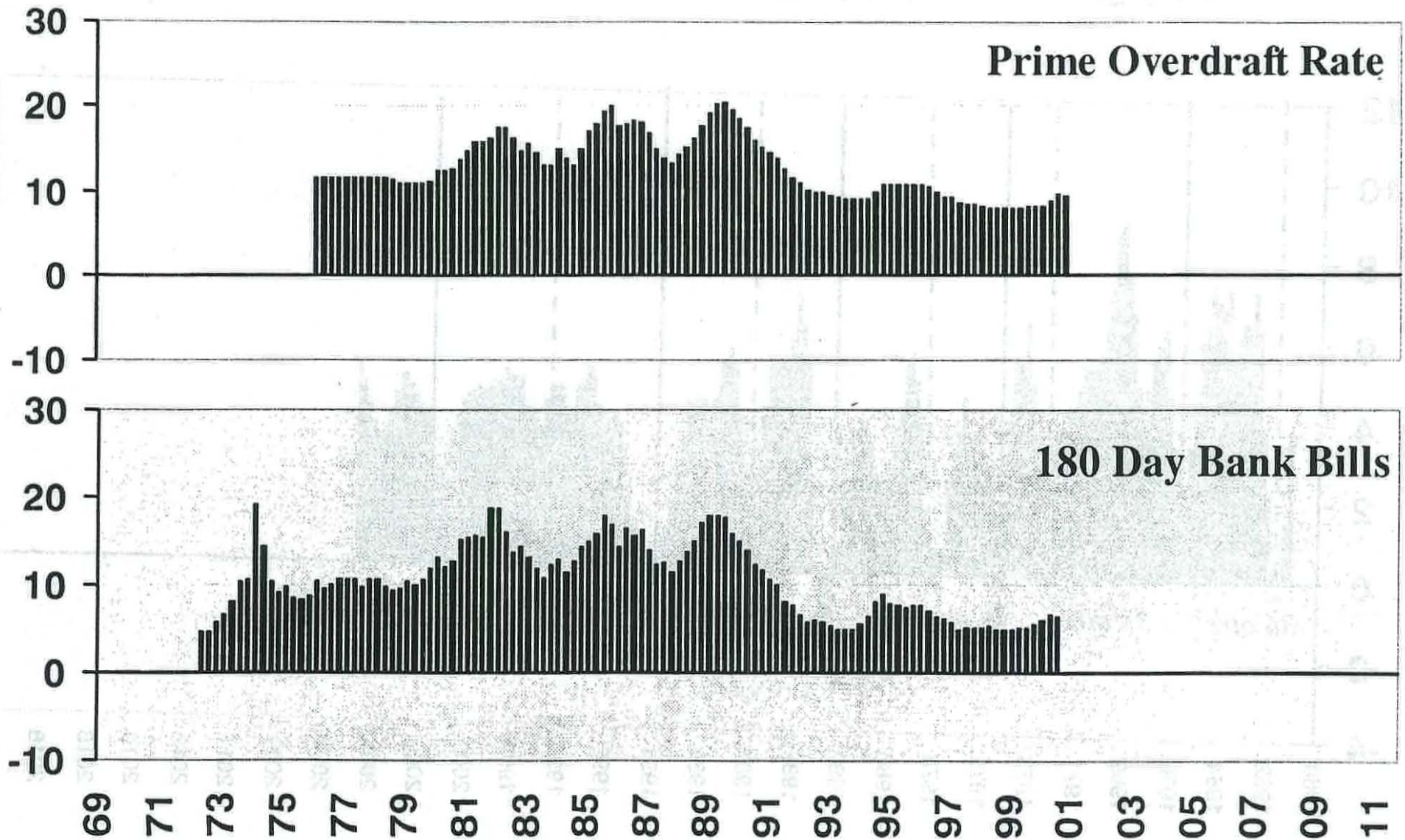
Yearly growth rate (%) progressed in quarters to December 2005



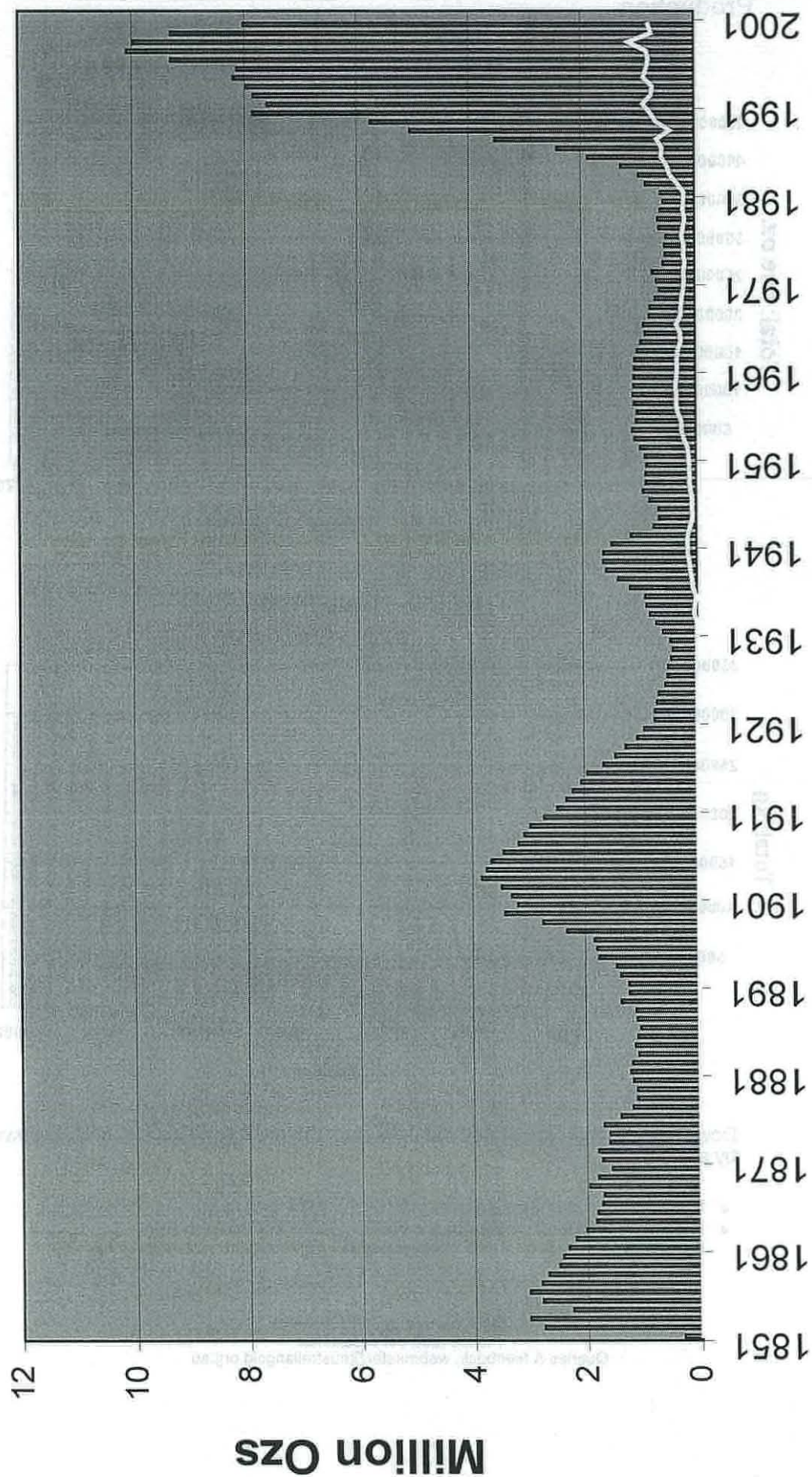


# Commercial Interest Rates

12 month average (%), progressed in quarters to March 2001



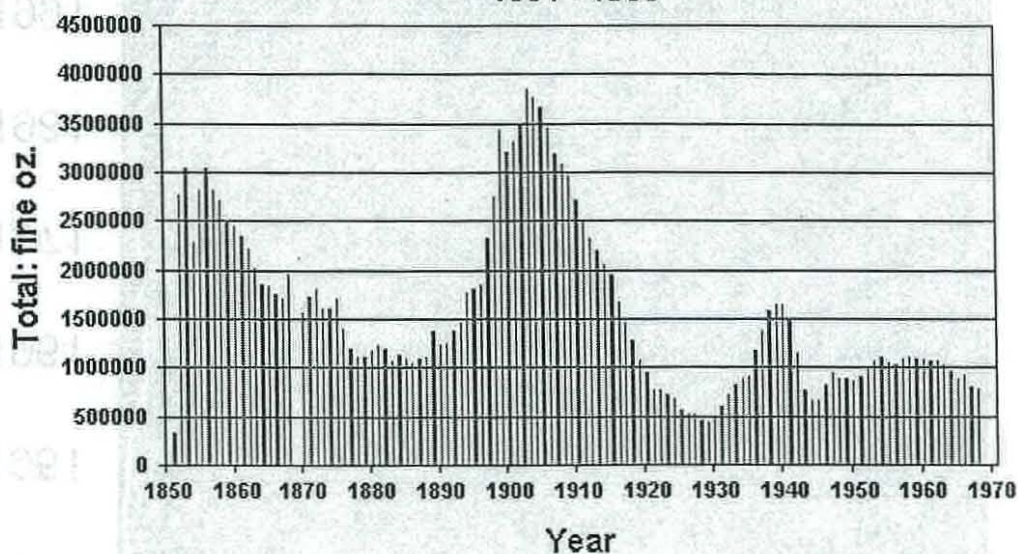
**Australian Gold Production 1851-2001**  
(Showing WMC Group's Australian production)



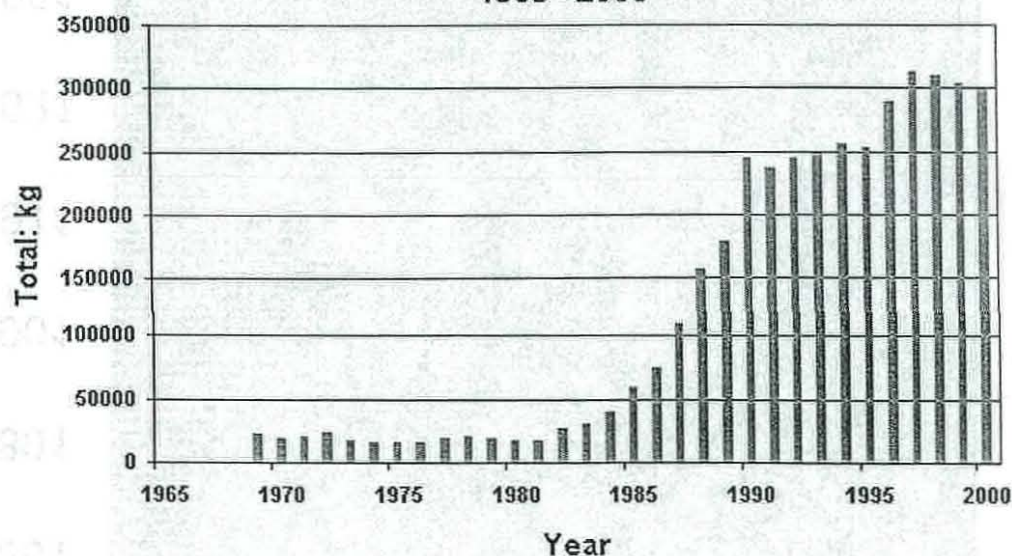


## Production

### Australian Gold Production 1851 - 1968



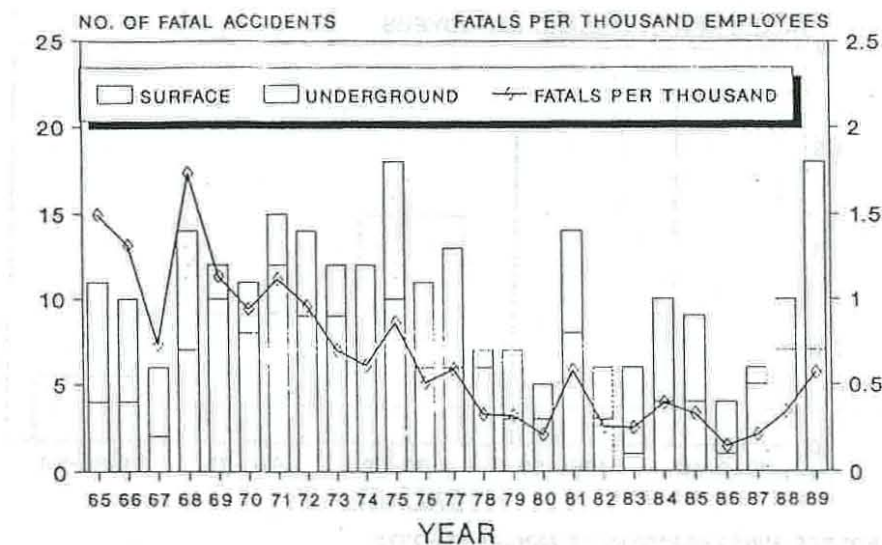
### Australian Gold Production 1969 - 2000



Download the .pdf files of Australia's Historical Production Figures, broken down by state:

- Historical Production Summary 1851 - 1968 (fine oz.)
  - Historical Production Summary 1969 - 2000 (kg)
- (Note that for the period of 1969 - 2000, statistics are in kilograms rather than fine oz.)

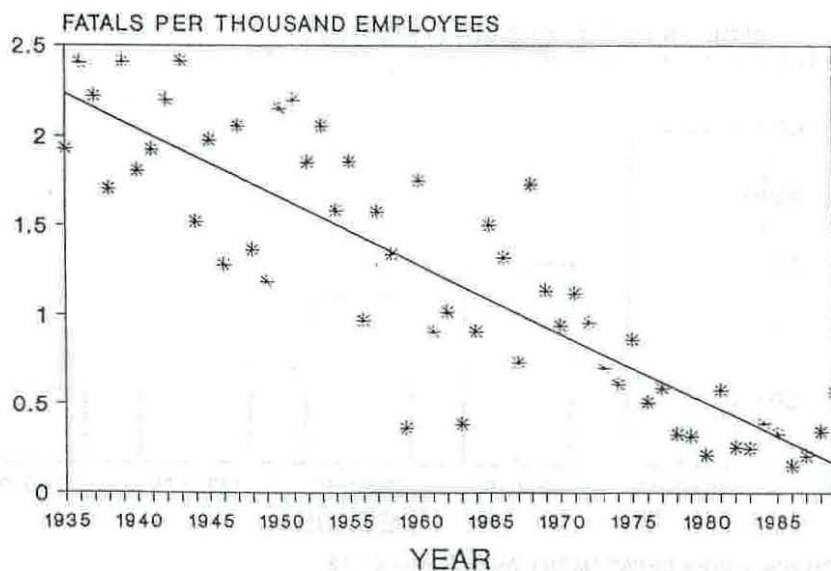
## WESTERN AUSTRALIAN MINES FATAL ACCIDENTS



SOURCE: MINES DEPARTMENT ANNUAL REPORTS

Figure 1

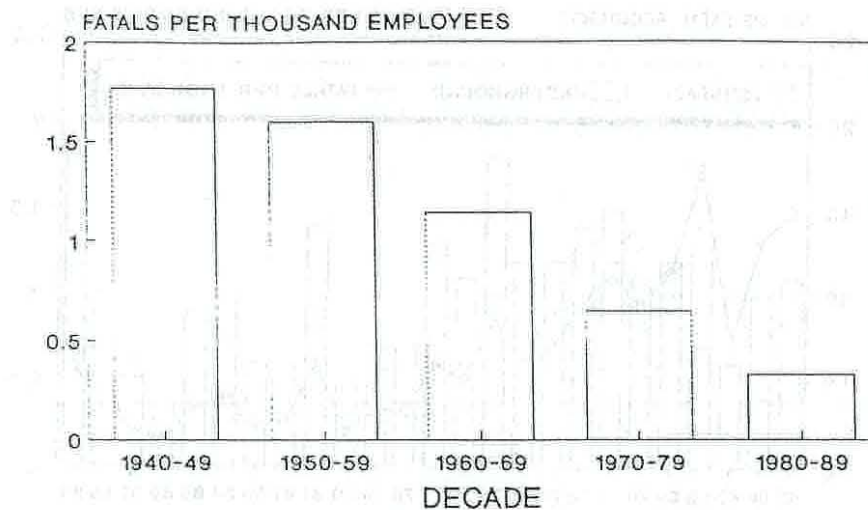
## WESTERN AUSTRALIAN MINES FATAL INCIDENCE



SOURCE: MINES DEPARTMENT ANNUAL REPORTS

Figure 2

# WESTERN AUSTRALIAN MINES FATAL ACCIDENT INCIDENCE YEARLY AVERAGE BY DECADE



SOURCE: MINES DEPARTMENT ANNUAL REPORTS

Figure 3

# WESTERN AUSTRALIAN MINES SERIOUS ACCIDENT INCIDENCE YEARLY AVERAGE BY DECADE



SOURCE: MINES DEPARTMENT ANNUAL REPORTS

Figure 4



# WESTERN AUSTRALIAN METALLIFEROUS MINES INCIDENCE BY MINERAL MINED

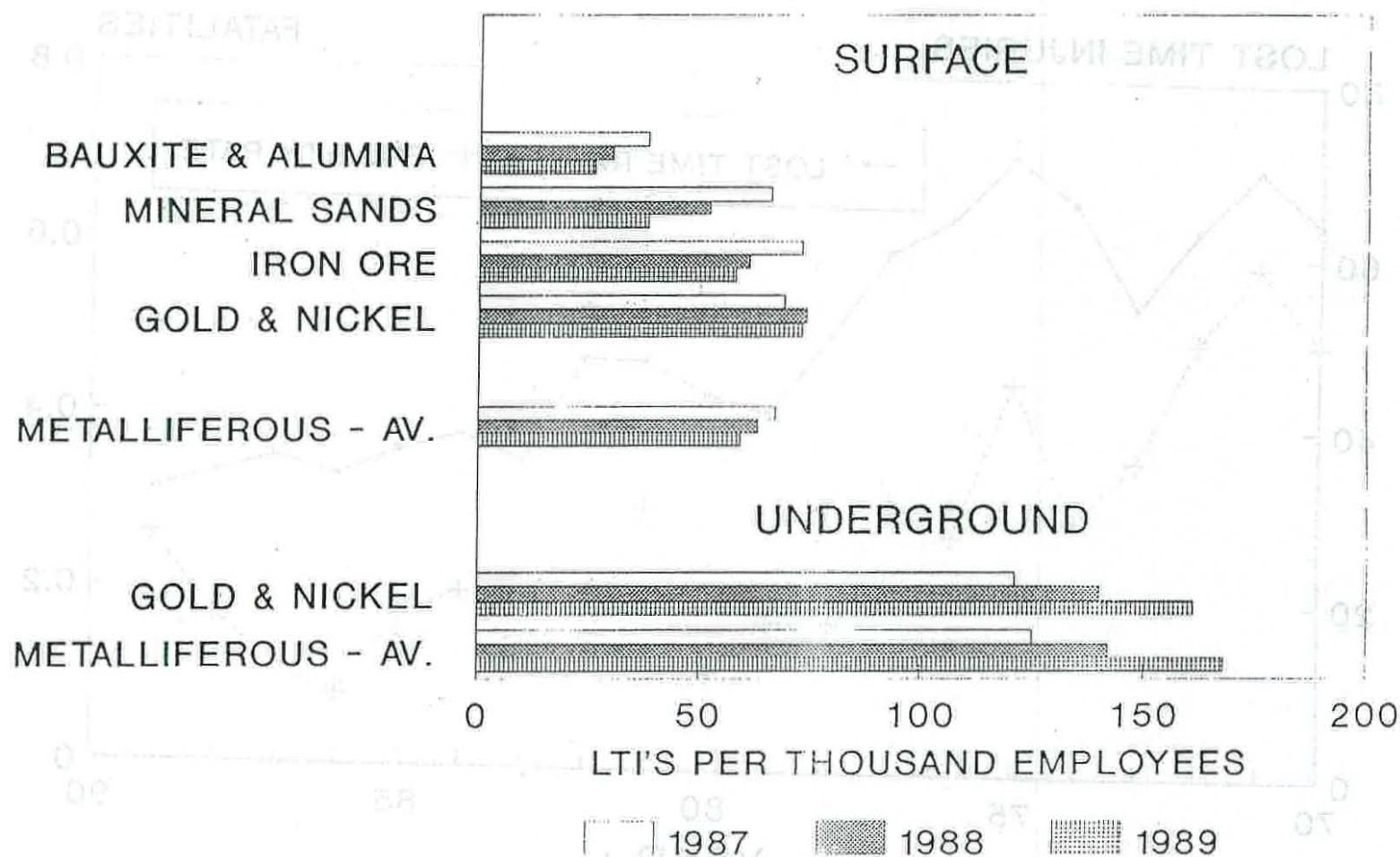


Figure 5

# WESTERN AUSTRALIAN METALLIFEROUS MINES

## LOST TIME INJURIES AND FATALITIES

NUMBER PER MILLION HOURS WORKED

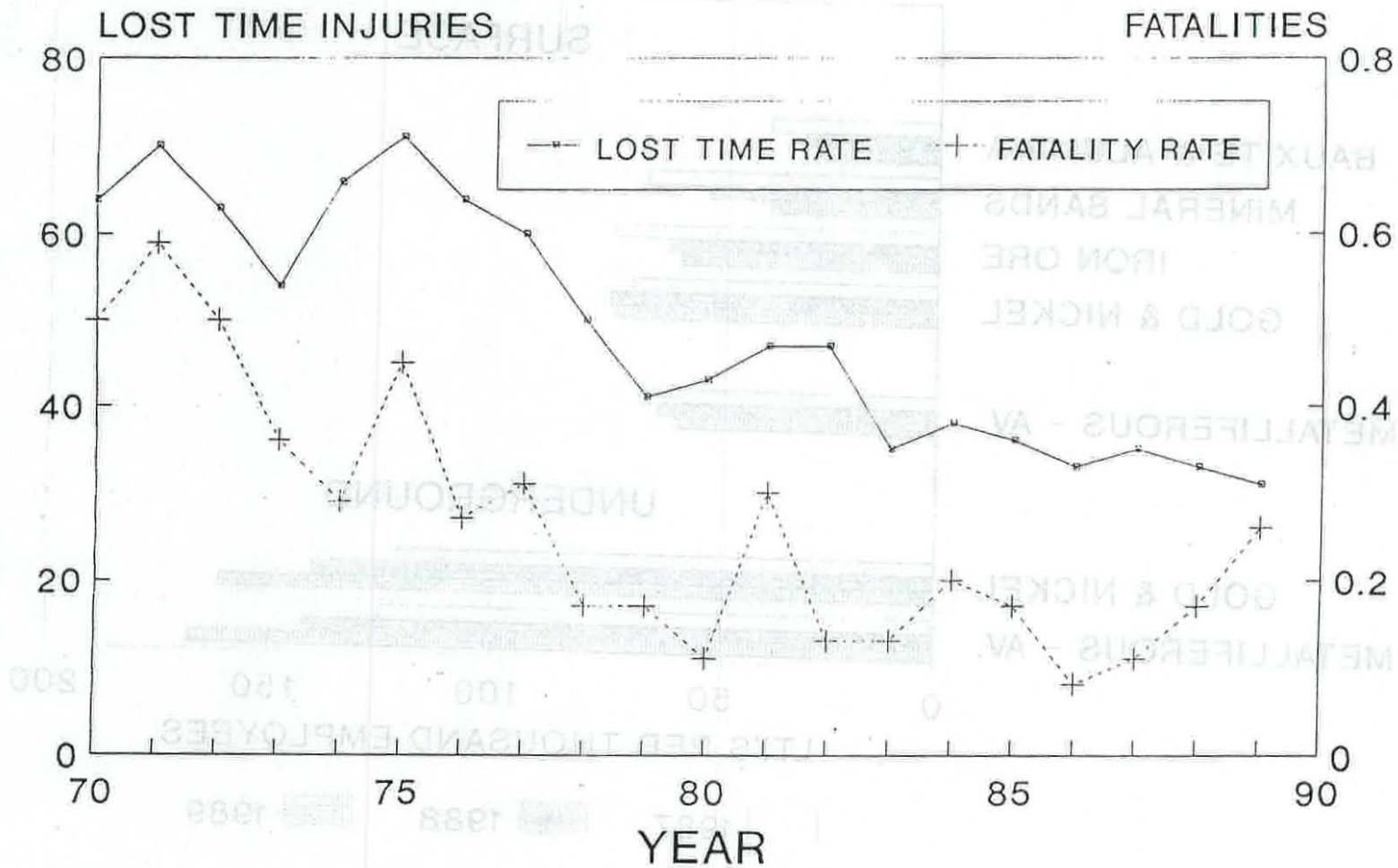
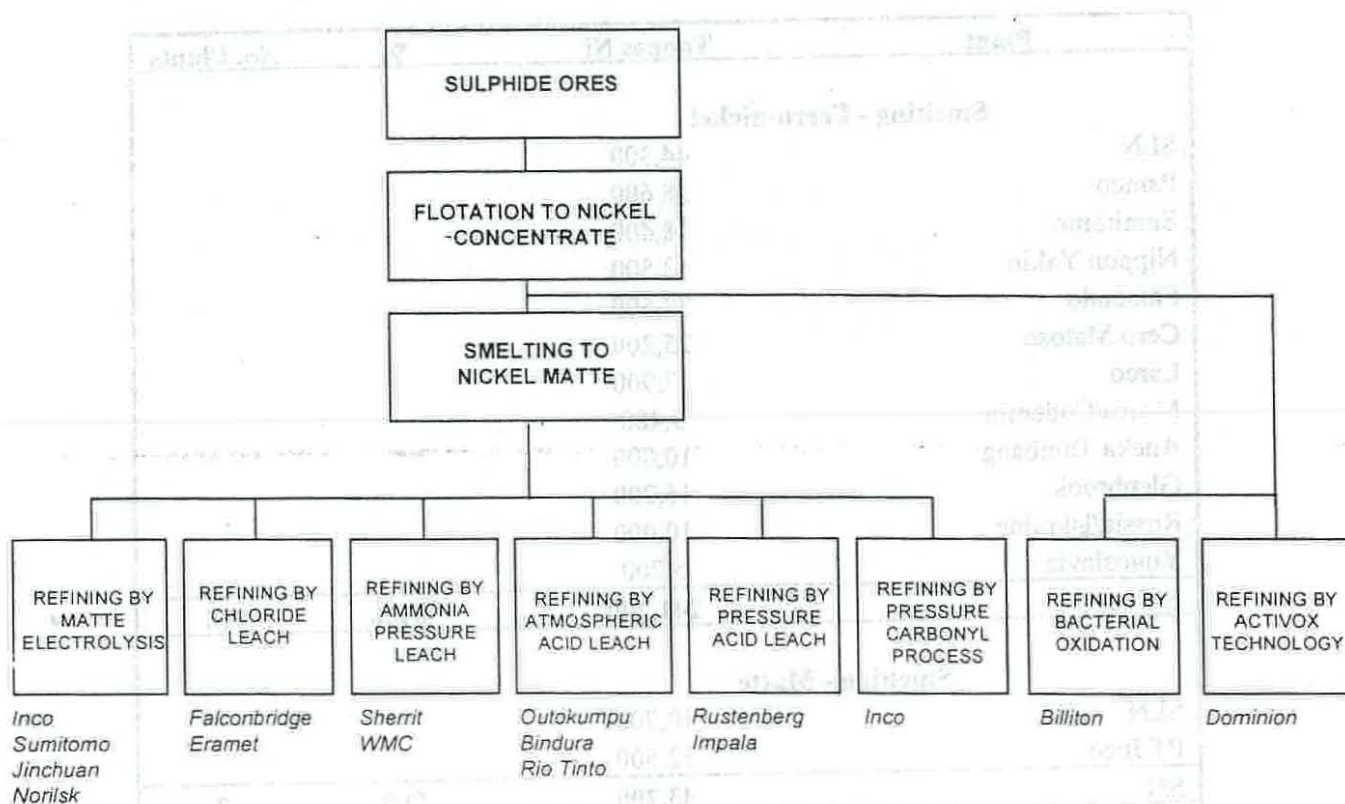


Figure 6

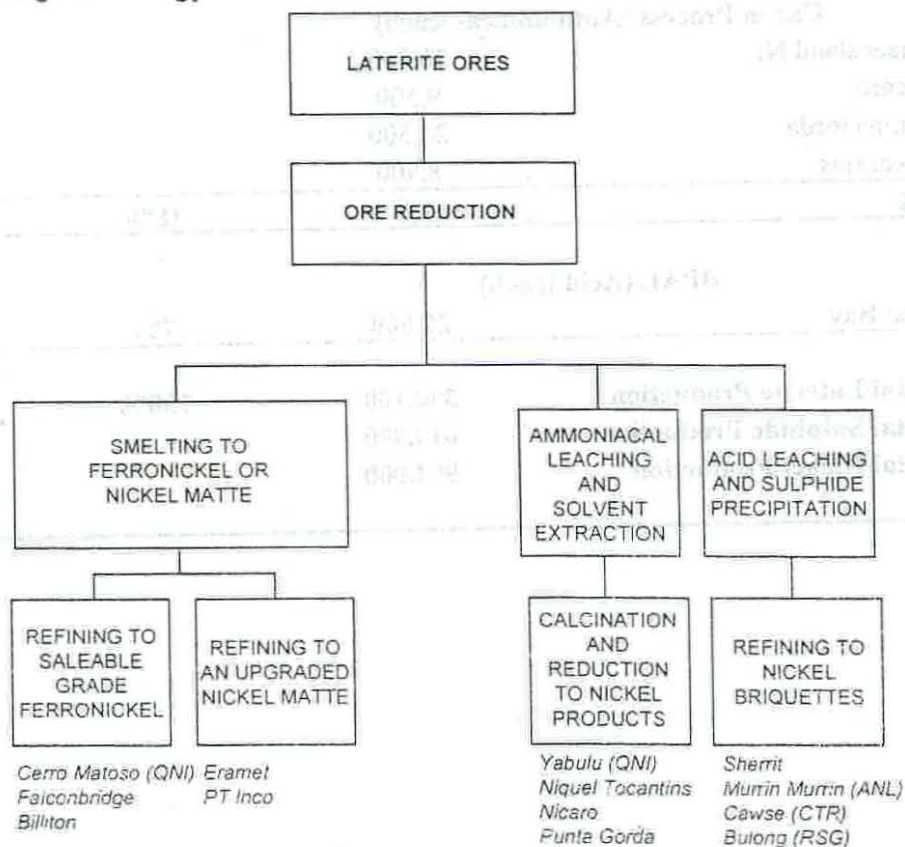
## Processing Methods

The various processing methods for sulphide and laterite (oxide) ores are shown below:

### Sulphide Ore Processing Technology



### Laterite Ore Processing Technology





The following table shows lateritic nickel production for 1997 in terms of process routes.

Plant	Tonnes Ni	%	No. Plants
<b>Smelting - Ferro-nickel</b>			
SLN	44,300		
Pamco	38,600		
Sumitomo	18,400		
Nippon Yakin	13,500		
Falcondo	32,500		
Cero Matoso	25,200		
Larco	17,900		
Morro/Codemine	9,400		
Aneka Tambang	10,000		
Glenbrook	16,200		
Russia/Ukraine	10,000		
Yugoslavia	5,700		
<b>S/T</b>	<b>241,700</b>	<b>64%</b>	<b>16</b>
<b>Smelting - Matte</b>			
SLN	10,700		
PT Inco	32,500		
<b>S/T</b>	<b>43,200</b>	<b>11%</b>	<b>2</b>
<b>Caron Process (Ammoniacal leach)</b>			
Queensland Ni	26,700		
Nicarao	9,500		
Punta Gorda	24,500		
Tocantins	8,900		
<b>S/T</b>	<b>69,600</b>	<b>18%</b>	<b>4</b>
<b>HPAL (Acid leach)</b>			
Moa Bay	25,600	7%	1
<b>Total Laterite Production</b>	<b>380,100</b>	<b>100%</b>	
<b>Total Sulphide Production</b>	<b>614,800</b>		
<b>Total Nickel Production</b>	<b>994,900</b>		

## 2. NICKEL INDUSTRY - LATERITES AND SULPHIDES

The global nickel production for 1997 is summarised in the following table and details are presented on the source of the nickel, whether sulphide or laterite sourced, and the companies involved in producing the nickel, based on final nickel production:

GLOBAL NICKEL PRODUCTION - 1997 (Tonnes contained Ni)			
Laterite Production		Sulphide Production	
SLN	FeNi	CIS	216,000
	Metal	Inco	142,900
QNI	51,900	Falconbridge	62,700
Pamco	38,600	WMC	47,000
Falcondo	32,500	Outokumpu	34,500
PT Inco	32,500	Jinchuan	34,000
Moa Bay	25,600	S Africa by-prod.	32,900
Punta Gorda	24,500	Sumitomo Metal	22,000
Sumitomo FeNi	18,400	Bindura	13,000
Larco	17,900	Rio Tinto Zimbabwe	6,000
Glenbrook	16,200	Treibacher	3,500
Nippon Yakin	13,500	Hartley	300
Aneka Tambang	10,000		
Russia/Ukraine	10,000		
Nicar	9,500		
Morro/Codemin	9,400		
Tocantins	8,900		
Yugoslavia	5,700		
<b>Total</b>	<b>380,100</b>	<b>Total</b>	<b>614,800</b>
<b>Total Nickel</b>		<b>994,900</b>	





# INFLUENCES ON THE GOLD MINING INDUSTRY IN AUSTRALIA

(With particular reference to WMC Limited)

by

Gilbert M Ralph

## Introduction

Gold has been important to the growth and development of Australia. Soon after the discovery of gold in 1850 there was a rapid increase in population with eager prospectors coming from many countries in search of wealth and for the following 50 years the Australian gold rush continued in an anti-clockwise direction around the country from Ballarat to Kalgoorlie in what Geoffrey Blainey describes as *The Rush That Never Ended*. Not only did the population rise quickly, but there was a corresponding growth in nature and extent of supporting enterprises, commerce, transport and government services. The wealth generated from gold contributed to the establishment of cities, towns, roads, railways, telegraphs and all manner of infrastructure.

The Victorian gold rush brought about 400,000 people to Victoria in the decade following the discovery of gold in 1851. Whilst most came on the expectation of making an immediate fortune from gold many were disappointed and found greater rewards in returning to their former trades to become part of the huge workforce required to establish and maintain boom towns on the goldfields. As the mines expanded and went deeper the need for heavy machinery grew and to satisfy this demand local manufacturing industries were established on the goldfields to supply a range of plant, machinery and equipment. Enterprises such as the Phoenix Foundry at Ballarat and Thompsons of Castlemaine were formed to meet the immediate needs of the mines but these and several others continued as successful machinery manufacturers for many years after the mines closed.

The gold industry itself waxed and waned several times as may be seen by viewing the chart of Australia's annual gold production on the following page. The prosperity of the industry fluctuated with the price of gold which in turn was impacted upon, not only by normal supply demand relationships, but by political and economic factors. The international price of gold which was arbitrarily fixed remained unchanged for almost two centuries. The price of gold in Australian currency over more recent years however has fluctuated with the changes in exchange rates.

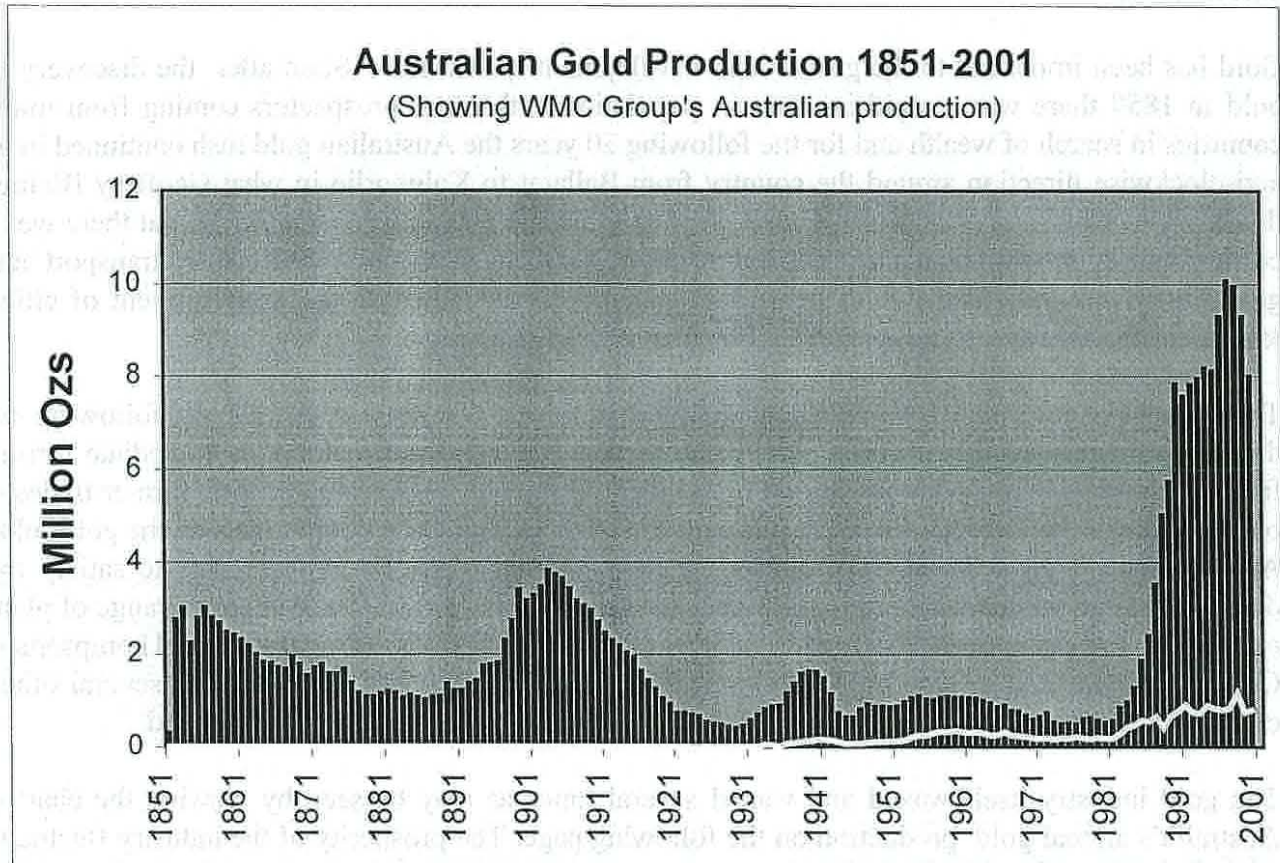
Because of its unique position as an internationally accepted unit of monetary value gold became a strategic metal which was strictly controlled by governments and only limited amounts were traded at controlled prices to meet the needs of the dentistry, jewellery and other industrial applications. For the last forty years gold has been traded much like other precious metals and for a time a premium price over the international fixed price was obtainable by producers. Subsequently, with the demonetisation of gold, international banks sold significant portions of their holdings and its current price depends more on supply and demand than it did when gold was a controlled international monetary reserve asset.

Within Australia the fortunes of the gold mining industry have fluctuated over its 150 year history. Gold production is now treble what it was at the peak of the gold rush in the 1850s when Australia was a major world gold producer. The most significant factors impacting on the industry in Australia over the last few decades are; changes in exchange rates, the rise in the Australian price of gold, the lifting of restrictions on private ownership of gold, changes in taxation regulations and improvements in the mining and processing technology. Low-grade resources which were uneconomic 20 years ago can now be mined profitably.



## Gold Production in Australia

The attached graph, which was created from data supplied by the Australian Gold Council, shows Australia's annual gold production from 1851 to 2001 in ounces. (WMC Group Production is shown as a white line.) The chart clearly illustrates the cyclic changes which have occurred.



Since the 1850s Australia has produced over 310 million ounces of gold – that is nearly 10,000 tonnes. Within three years of the discovery of the Ballarat and Bendigo goldfields Australia's production leapt to over three million ounces annually to become the world's major producer. For the period 1852 to 1862 Australia produced more than 40% of the world's new gold production. Although the NSW and Queensland deposits, and to a lesser extent those in Tasmania, South Australia and Northern Territory, subsequently came into production they never matched the output from Victoria. Whilst there was a steady decline in Victoria's output from a peak of 2,875,647 ounces in 1856 it remained the largest producer until 1898 when it was overtaken by Western Australia following the development of the rich deposits at Coolgardie and Kalgoorlie. The rapid increase in Western Australian production created the second peak in Australia's production which rose to 3,837,979 ounces in 1903. Western Australia has maintained its dominant position since 1898, but it was not until 1985 that its total output exceeded that of Victoria.

There was a steady decline in production from 1903 due to lack of new discoveries, diminishing reserves, falling grades, declining profits and later manpower shortages during the First World War. During the 1920s many of the larger mines resorted to the 'tribute system' in which underground mining was carried out by 'tributors' who were paid for the gold in the ore they mined.



The Great Depression brought about a revival of interest in gold mining, especially prospecting, which enabled unemployed men to work vacant areas in the vicinity of known goldfields to win a few ounces by panning or dry-blowing. Very often they formed parties to work shallow deposits and sent their parcels of ore to Government battery and cyanide plants for treatment. A few lucky prospectors found nuggets - Jim Larcombe found a 1135 ounce nugget at Larkinvile, south of Kalgoorlie in January 1931.

The Australian gold mining industry experienced a most dramatic surge in production during the 1980s when the price rose by a factor of eight to an all time high of US\$850 in January 1980. This caused a resurgence of interest in gold, particularly in Western Australia where there was increased exploration activity in areas of known low grade deposits which suddenly became economically viable. New techniques in exploration, mining and processing of gold ores gave further impetus to the industry and production reached a new peak of 10,089,300 ounces in 1997.

### World Supply and Demand for Gold

To put the Australian production into perspective one needs to look at the world scene over the period under review. The attached tabulations, **World Gold Production by Regions, 1851 to 1991**, (Appendix 1) which has been collated by AME Mineral Economics, and **Gold, World Mine Production 1991 to 2000**, (Appendix 2) extracted from World Metal Statistics, show the annual output by the world's major producing countries. The former tabulation reveals that in the decade from 1852 to 1861 Australia produced 41.8% of the world's newly mined gold. While the current percentage has declined to about 10%, Australia is still a significant producer, having won about 9700 tonnes (or 8.5%) out of a world total of about 113,300 tonnes since gold mining began in Australia.

The supply-demand patterns for gold have varied enormously over the past 150 years and it is outside the scope of this paper to comment on the history of that supply-demand relationship. Suffice to say that over the last decade the amount of gold traded ranges from 3100 tonnes to 4200 tonnes annually. Current world mine production is about 2500 tonnes. This falls short of demand by over 500 tonnes, the difference being made up by gold scrap, sales of official gold holdings and divestments. Demand is mainly from uses in jewellery, dentistry and electronics (3700 tonnes) with about 200 tonnes being hoarded in year 2000.

Further information on world gold supply and demand over the past decade is contained in Gold Fields Mineral Services Ltd annual publication, *Gold Survey*. Attached is a copy of their 2001 tabulation, **World Gold Supply and Demand, 1991 to 2000**, (Appendix 3)

### The Price of Gold

In 1717 Sir Isaac Newton, then Master of the Royal Mint, set the price of gold at £4-4-11½ (\$8.50). It was unchanged for almost two centuries while the world's monetary system adhered to what was called the 'Gold Standard'. Following the First World War the economy grew rapidly and it became evident that the supply of new gold at a fixed price was insufficient to meet monetary demands. Britain abandoned the Gold Standard. The catastrophic collapse of the world economy at the end of the 1920's and the US Government's action in supporting gold caused the price to rise in real terms. In 1934 the US Government, for domestic reasons, arbitrarily set the price at US\$35.00 per ounce, which in real terms almost doubled its 1929 price. This stimulated world gold production, particularly in Australia where a change in the Exchange Rate compared to the Pound Sterling pushed its price up by an additional 25%. In equivalent Australian currency the price rose from



\$8.50 in 1929 to \$14.50 per ounce two years later. W S Robinson, had predicted these changes and he was instrumental in the forming Gold Mines of Australia in 1930 and its sister company Western Mining Corporation in 1933 to take advantage of the new opportunities available.

After the Second World War the price of gold was artificially restrained at US\$35.00 an ounce while inflation eroded the currency and caused the real price to fall, which in turn stimulated demand. To combat this situation the International Monetary Fund (IMF) allowed gold to be commercially traded at a 'premium price' whilst the Official Price remained at US\$35.00 per ounce. Initially the premium was small – within a dollar or two.

Over the next few years industrial demand began to grow and so did the premium until December 1971 the US dollar was revalued and the Official Price, went to US\$38.00 and two years later it was again revalued and the price went to US\$42.22 per ounce. In November 1973 the two tier price system was finally abandoned.

The OPEC oil price rise in 1974 caused rapid inflation and monetary instability around the world and the free market price of gold rose to over US\$195 per ounce as a consequence.

In 1975 the US Government moved to allow private ownership of gold and slowly this trend was followed by several other countries prompting a further increase in demand - although it was not as much as some pundits had forecast. At the same time the US Treasury began to auction increasing quantities of gold on the open market and over a matter of a few years their stocks fell from 21,000 tonnes to 8,200 tonnes. In 1976 The International Monetary Fund announced that it would auction 778 tonnes over a four year period and by August the price had fallen to just over US\$100 per ounce.

This is the period when the Australian gold mining industry found itself in a severely depressed state. The few gold mines which remained were operating unprofitably and many ceased operating. In the WMC Group, Central Norseman Gold Corporation (CNGC) announced it would discontinue production when currently developed reserves were depleted, Gold Mines of Kalgoorlie, which had merged with Lake View and Star in 1973, sought financial assistance to avoid voluntary liquidation and finally resorted to raising money by selling a 48% interest in its Kalgoorlie based operations to Homestake of USA to form Kalgoorlie Mining Associates. In December 1976, on the eve of closure of the Mount Charlotte mine (the last mine operating on the Kalgoorlie field), there was a sudden turn-around in the gold price and KMA, and CNGC, survived. CNGC's Norseman mine went on to become the longest continuously operating gold mine in Australia that is still extant.

With the gradual demonetisation of gold over the next few years and substantial sales by the IMF and the US, and other governments, has resulted in demand steadily grew due partly to increased jewellery and coinage sales and industrial uses. Gold prices rose to a peak of US\$850 per ounce in January 1980 after which there was a steady decline with periods of substantial fluctuation until the present where supply and demand are in relative balance and the price over the past few years has ranged between US\$250 and US\$325 an ounce. In 2001 it averaged US\$279 per ounce. With the abandonment of the Gold Standard and sales by the IMF and various governments it is thought that the quantity of 'official' gold remaining in bank vaults is about 30,000 tonnes.

The gradual fall in price over the past decade has not had as great an impact on the industry in Australia as elsewhere in the world because of the falling exchange rate. The attached graph, **Market Price**, from Bloomberg, (Appendix 3) shows the significant decline in the Aus\$/US\$ exchange rate from about 0.94 in 1984 to 0.51 at present.



## Marketing Gold in Australia

Initially Australian prospectors sold their gold nuggets and washings to gold dealers or direct to one or other of the banks. As the quantities grew, and companies became involved, sales were made directly to various banks on or near the goldfields. Banks sold the gold to the Government Mint or to such other establishments which were authorised by the government to deal in gold bullion.

Most of Australia's gold found its way to Royal Mints at Melbourne, Perth and Sydney where it either went into gold coins or was made into gold bars (bullion). For the most part all gold produced was compulsorily acquired by the Government at a fixed price. This situation continued until 1951 when the Chamber of Mines of Western Australia saw an opportunity to sell gold at a modest premium over the then fixed price of gold in what was known as the 'free market'. Prior to this all newly mined gold had to be sold to the Commonwealth Bank at the official price of A\$31.25 which was equivalent to world price of US\$35.00 set by the International Monetary Fund for transactions between member nations.

In November 1951 the President of the WA Chamber of Mines, Mr R J (Dolf) Agnew, together with representatives of gold producers in the Eastern States, began negotiations with the Federal Government and bullion dealers in London and put together a proposal that Australian producers sell all new gold on the free market. The Commonwealth Government agreed to this proposition on 20 November, providing that newly mined gold was first acquired by the Commonwealth Bank, as before, and then, that which was not required for industrial or artistic purposes in Australia, could be repurchased from the Bank by a selling organisation and sold on the free market. This arrangement would apply from November 1951.

The appropriate Federal Legislation was passed and the Gold Producers' Association Ltd was incorporated in Victoria on 7 December 1951. The first Secretary was George H Gennings, Secretary of the WA Chamber of Mines and the Registered Office was in Collins House, Melbourne. The management and control of the Association were vested in an Executive Board of seven members of which R J Agnew was Chairman. G L (Sir Lindesay) Clark, who had been involved in the negotiations, was also on the Board. J Chester Guest (a WMC Director) was appointed the Executive Member responsible for selling and deliver of gold and distribution of proceeds to producers. Management and accounting services were carried out by an appointed officer of WMC.

Membership was open to all bone fide gold producers in Australia and Papua New Guinea. By the end of the first year there were 579 members, 66% of whom were in WA. The arrangements for producers were simple: bullion was deposited at a local bank where it was weighed and on-forwarded to the Royal Mint at either Perth or Melbourne, where it was assayed then refined. Small producers could send their bullion direct to the Mint by Registered Post. The GPA in effect took responsibility for the gold once it was lodged at the bank or Post Office. The producer's bullion was not pure gold hence individual parcels had to be identified and assayed to enable the gold (and silver) content to be determined prior to it being refined. Refinery losses were also taken into account.

The gold bullion was theoretically sold first to the Commonwealth Treasury and then repurchased by the GPA. Initially the Treasury required that premium sales of gold were to be in the form of strips of not more than 22 carat bullion designed for the jewellery business, but this was varied in July 1952 to allow gold to be traded in the form of bars of approximately 400 ounces of 99.99%



purity. As a matter of interest the Mints became so skilled at gold refining that they were able to produce bars within a few ounces of the nominal 400 ounces. In reality the bullion remained at the Perth Mint until sold by GPA. Sales were made on a regular basis by calling for bids from selected gold dealers around the world for a specified quantity of 400 ounce bars. For many years much of Australia's gold went to markets in Hong Kong and London.

### **Assistance to the Gold Mining Industry in Australia**

The rapid inflationary trends following the Second World War had a detrimental impact on the Australian gold mining industry. The price of gold was fixed at US\$35.00 per ounce whereas the costs of production were steadily rising. In an effort to combat this situation some producers increased ore production in the search for 'economies of scale' while others 'high-graded' their mines to survive. Regrettably some went out of business.

Early in the 1950's the inflation rate rose appreciably due to the Korean War and some industry leaders, including WMCs Chairman, Sir Lindesay Clark, could foresee the demise of the industry unless some form of government assistance was forthcoming. Sir Lindesay and others were able to convince the Menzies Government that a modest subsidy would enable many producers to remain in production. Justification was based on; maintaining direct employment in the industry (which at the time was about 6900 in Western Australia alone), indirect employment in the service industries, and the value of gold exports.

In his Election Speech in 1954 the Prime Minister, Robert Menzies, said;

*'In Australia we produce about one million ounces of gold (per annum) worth about £15/9/10 (\$30.98) an ounce. Some mines are very profitable. Some are near or actually below the margin.*

*Some of these latter have many people, and in some cases whole townships, depending on them. Costs of production vary from under £7 (\$14) per oz. up to nearly £18 (\$36).*

*We believe that some subsidy is needed, not to add to the profits of the strong, but to maintain where practicable the existence, production and employment of the weak.'*

He then went on to describe how the subsidy per ounce would be three-quarters of the cost of production per ounce less \$29.00 per ounce. Thus for a mine producing at a cost of \$33.00 per ounce the amount of subsidy under the formula would be three-quarters of \$33.00 minus \$29.00, ie. \$3.00 per ounce. The maximum subsidy was set at \$3.00 per ounce, but this would be reduced accordingly in the event that the profit exceeded 10% of the capital actually used in mining.

The subsidy would be paid direct to the miners to promote further development, on the basis that they were in the best position to determine which areas of development were most likely to succeed. It was a matter of survival for some companies, together with the people who worked for them and the communities they supported.

As a result of the *Gold-Mining Industry Assistance Act*, which came into effect from 1 July 1954, many mines throughout Australia and PNG were able to remain in production. The maximum subsidy payable under the original Act was in fact \$4.00 per ounce. It was increased in October 1957 to \$5.50 per ounce and again in July 1959 to \$6.50. Following further submissions the subsidy increased to \$8.00 per ounce in July 1965. In December 1971, mainly as a result of a submission to



the Federal Government by the Western Australian Chamber of Mines in February 1971, the maximum subsidy was increased to \$12.00 per ounce, subject to certain conditions. Numerous other minor amendments and concessions such as retention of 25% of premiums on sale of gold were introduced from time to time.

Small producers (less than 500 ounces per annum) received \$6.00 per ounce on all production.

Another form of assistance became available from 1962 under the *Gold Mines Development Assistance Act*. This was designed to encourage mine development by producers not in receipt of a subsidy under the former Act. A development allowance, equal to the amount by which the company's allowable expenditure on development in a year exceeded a defined base amount (the average amount spent by the company during the preceding three years).

Payments under the above schemes had the desired effect of maintaining the industry and the communities that depended on them. Initially the cost to the Government was substantial, but gradually it declined as mines were depleted and premium gold sales increased returns to producers and reduced their eligibility for subsidy. The last payments were made in 1973-74 by which time the total amount paid under these schemes over 20 years was about \$34 million.

Within the WMC Group, Great Western received a subsidy for several years until operations ceased in 1964, Gold Mines of Kalgoorlie received regular subsidies over the whole period (the amount being not too different from the modest profit declared each year) and Central Norseman, being a relatively high grade mine, received a modest subsidy for a few years.

A significant result of the Subsidy Scheme was that although by 1975 only one mine (Mount Charlotte) remained in continuous production on the Kalgoorlie field a number of others were able to continue in production for much longer than they would have been able to do without the Subsidy.

There were other forms of direct assistance to the gold mining industry by State governments. In Western Australia for example there were 20 State Batteries which treated gold ore for small producers at a nominal charge. These were operated at a loss, which in 1974 and 1975 amounted to \$823,000 and \$1,100,000 respectively. For a time some bone fide prospectors were paid a weekly allowance to maintain prospecting in regional areas. In addition the WA Government provided direct financial assistance to certain gold mining companies from time to time. Great Western Consolidated was assisted financially during its lifetime and KLV and Hill 50 received amounts of \$441,000 and \$188,000 respectively during 1975-76.

### **Taxation on Gold in Australia**

The first tax on the goldmining industry in Australia was not on gold itself but on those persons who sought it. In 1851 both the NSW and Victorian Governments introduced a Gold License which was required by all persons engaged in prospecting and mining on a goldfield. The License entitled the licensee to a lease 64 square feet ie, six square metres. It cost thirty shillings (\$3.00) a month which was high considering the wage for a labourer at the time was barely eighty shillings (\$8.00) a month. As Weston Bate explains in his article *Gold: Social Energiser and Definer* in the *Victorian Historical Journal* in September 2001, 'A stiff fee of thirty shillings per month was imposed on diggers, who were issued with licences, subject to inspection on demand. The fee was set artificially high – well above what squatters paid to graze thousands of acres – as a social control to deter men from leaving their normal occupations and thus preserve the existing fabric of society. Resistance to



the fee and strongarm methods of policing it soon led to protest and confrontation'. One petition from diggers at Bendigo to Lieutenant Governor La Trobe in 1853 was said to be 13 metres long. The discontent of the diggers and the obstinacy of the administration finally led to the rebellion at Eureka in December 1854.

Subsequently diggers were excused from this costly licence tax when other forms of revenue raising were devised. Remnants of it remained however with the introduction of the less expensive Miners Right. Another early form of taxation on gold (and other minerals) was a Royalty payable on all mineral production following the Declaration by State Governments that all minerals were the property of the Crown.

In 1944 the Federal Government exempted gold mining companies from paying company tax on profits derived from gold mining operations. In addition dividends paid to shareholders in gold mining companies were exempt from personal income tax as well. These provisions were partly to encourage gold mining in Australia and partly in recognition that all gold mined had to be sold to the Commonwealth Government. Whilst later governments may have wished to discontinue these concessions pressure from the industry, and investors, seem to have had some influence for it was not until 1985 that the situation changed.

In June 1985 the Federal Government issued a White Paper, "Reform of the Australian Tax System" and this was followed in November by an announcement that G O Gutman, a Canberra based economic consultant, was to carry out an inquiry into the future tax status of gold.

The Gold Producers' Association, together with the Association of Mining and Exploration Companies and the Amalgamated Prospectors' and Leaseholders' Association formed the Australian Goldmining Industry Council (AGIC) which under the direction of WMCs Duncan Bell mounted an active campaign in support of retention of the exemption. It was hard to convincingly argue that gold mining companies, and their shareholders, should be treated any differently from other mining enterprises, and indeed other industries. Never the less, a very strong campaign was launched to put the industry case and it was well received in the areas potentially effected, particularly Kalgoorlie and Stawell. There was also a fair amount of lobbying in Canberra by the AGIC and industry leaders.

The Gutman Inquiry recommended the removal of the exemption, but the Federal Government announced in December 1986, just prior to the Federal Election, that the tax free status of the of the industry would remain. The industry continued to prosper with the steadily rising price of gold which prompted the government to reverse its earlier decision and despite a further campaign by AGIC, an Amendment Bill was passed in December 1988 and the exemption was to be withdrawn over a three year period. Hence, from 1 January 1991, the gold mining industry, and its shareholders, were subjected to the normal rates of taxation and exemptions applicable to other mining enterprises.

### **The Impact of Technology on Gold Production in Australia**

Historically the cost of producing gold has been influenced by numerous technological developments many of which were common to the mining industry generally. For example in the history of underground mining in Australia it has moved from hammer and tap drilling to mobile, multi-headed-drill jumbos and from hand bogging to mechanical shovels and front end loaders. In processing, stamp batteries have given way to autogenous grinding mills etc. There are many other examples of similar incremental improvements in all areas of mining and processing technology,



but there are three very significant advances which have greatly improved the economics of gold mining over the last 25 years which deserve a special mention.

The first is in opencut mining. Techniques have been developed which have enabled more selective mining of clearly marked ore bodies using track mounted back-hoes. In addition improved sampling and analysis techniques can better define minable blocks in opencut mines. These factors have been important in Western Australia where most of the current mining activities are opencut mines.

The second important change has been the introduction of Carbon-in-Pulp (CIP) and Carbon-in-Leach (CIL) processing of gold ore. Not only is it simpler and more efficient but gold recovery has been much improved, allowing lower grade ores to be treated economically. Such plants began to be built in the 1980s and because of their relative simplicity in processing ore containing free gold they were cheap and economical to operate. They could also be built in a wide range of sizes, some small enough to be easily transportable between small operations with obvious cost benefits.

The third area of advancement has been in mineral exploration. Whilst this also applies to other minerals new methods in exploration drilling and sampling, and mineral analysis using Atomic Absorption Spectrometers (AAS), have aided in discovering and proving vast low grade gold deposits, particularly near-surface deposits in Western Australia. The AAS devices have enabled gold to be detected and measured at values below one part per million, well below that achievable by even the keenest prospectors eye. Sampling in the environs of previously worked areas invariably found haloes of economically viable ore.

### Summary

In summary there are many factors – economic, international, governmental, social and industrial – which have had an influence on the gold mining industry in Australia since the first major discoveries in the 1850s. Many of them, such as the world gold price, have been beyond the ability of the industry to change. Others such as the application of new mining technology have been the sole responsibility of the industry. State and Federal governments have played an important part – sometimes encouraging the industry and other times imposing what seem to the industry to be unreasonable impediments.

The gold industry can be proud of what it has achieved over the past 150 years. Initially it had a major impact on population growth, the development of many regional towns and infrastructure facilities. It was the reason for the establishment of many support industries which have continued to provide goods and services to the nation. It has been a regular employer in mostly outback towns and has been the catalyst which led to other mineral discoveries of economic significance. The value of production, and particularly of exports in recent years, has been a major contributor to the nation's prosperity.

### Appendices

1. **World Gold Production by Region, 1851 to 1991**, from AME Mineral Economics, Sydney.
2. **Gold, World Mine Production, 1991 to 2000**, from World Metal Statistics Yearbook 2001.
3. **World Gold Supply and Demand**, from Gold Fields Mineral Services Ltd. London
4. **Exchange Rate US\$/Aus\$, 1984 to 2002**, from Bloomberg

Gilbert M Ralph, Melbourne, 5 March 2002

# WORLD GOLD PRODUCTION BY REGION, 1851 to 1991 APPENDIX 1

## GOLD, WORLD MINE PRODUCTION, 1991 to 2000 APPENDIX 2

## WORLD GOLD SUPPLY AND DEMAND, 1991 to 2000 APPENDIX 3

## EXCHANGE RATE US\$/ AU\$ 1984 to 2002 APPENDIX 4



TABLE 1.5

WORLD GOLD PRODUCTION BY REGION, 1851 TO 1991  
(tonnes)

Year	US	Aust	South Africa	USSR (1)	Latin America	Canada	Asia	Other Africa	Other (2)	World
1850										
1851	82.7	9.7							14.8	107.2
1852	90.1	86.3							21.9	198.3
1853	97.7	93.3							43.0	234.0
1854	90.1	70.5							31.2	191.8
1855	82.7	87.2		27.0					6.4	203.3
1856	82.7	94.4							44.9	222.0
1857	82.7	87.7							30.2	200.6
1858	75.1	84.0							28.5	187.6
1859	75.1	77.9							34.9	187.9
1860	69.1	75.9		24.4					19.5	188.9
1861	64.6	72.8							33.8	171.2
1862	58.9	68.7							34.6	162.2
1863	60.1	62.8							38.1	161.0
1864	69.3	57.6							43.1	170.0
1865	79.9	56.8		25.8					18.4	180.9
1866	80.4	54.0							47.8	182.2
1867	77.7	53.0							25.8	156.5
1868	72.1	60.9							32.1	165.1
1869	74.4	56.1							29.3	159.8
1870	75.1	48.6		35.4					1.7	160.8
1871	65.4	53.9		39.1	2.0				0.6	161.0
1872	54.1	56.0		37.9	1.5				0.3	149.8
1873	54.1	49.8		33.2	2.1				5.3	144.5
1874	50.3	49.7		33.2	1.6				1.3	136.1
1875	50.2	52.9		32.7	1.7				9.2	146.7
1876	60.0	43.6		33.6	1.5				27.3	166.0
1877	70.5	36.9		41.0	1.2				21.9	171.5
1878	76.9	34.5		42.1	1.4				24.3	179.2
1879	58.5	34.4		42.6	1.5				26.7	163.7
1880	54.1	36.5		41.4	1.6				26.6	160.2
1881	52.2	38.0		38.5	1.5		0.3		24.5	155.0
1882	48.8	36.9		32.7	1.5		0.3		28.7	148.9
1883	45.1	33.5		35.8	1.7		0.3		25.3	141.7
1884	46.3	35.3		32.9	1.5		0.3		27.1	143.4
1885	47.5	33.8		38.1	1.7		0.3		33.5	154.9
1886	52.4	32.4		30.9	1.8	2.0	0.5		29.3	149.3
1887	49.8	33.9	0.8	30.2	2.1	2.0	0.5		39.8	159.1
1888	49.9	34.6	4.7	32.1	2.5	2.0	0.6		39.4	165.8
1889	49.5	42.8	8.0	34.9	2.1	2.0	3.3		39.6	182.2
1890	49.4	38.5	13.1	38.3	2.5	2.0	4.1		33.3	181.2
1891	49.9	38.6	24.6	36.3	2.7	1.4	12.3		22.7	188.5
1892	49.6	43.0	33.2	35.4	3.3	1.4	18.1		20.8	204.8
1893	54.0	45.2	43.6	41.8	7.6	1.7	7.1		34.7	235.7
1894	59.4	54.9	60.6	36.3	21.0	1.4	20.0		18.2	271.8
1895	70.0	55.9	66.0	43.5	18.9	2.9	15.3		32.9	305.4
1896	79.8	57.2	65.8	46.7	18.6	4.2	21.3		9.1	302.7
1897	86.2	72.3	86.7	32.4	17.9	9.2	23.4		29.3	357.4
1898	96.8	85.4	119.2	37.2	20.6	20.8	24.4	0.6	26.7	431.7
1899	106.8	106.3	107.4	36.1	22.1	32.1	14.4	1.7	34.6	461.5
1900	119.0	99.3	9.2	33.4	23.5	41.9	16.0	3.5	37.2	383.0
1901	118.2	102.5	8.0	36.0	26.3	36.3	25.3	5.4	34.7	392.7
1902	120.2	108.3	52.5	36.8	26.7	32.1	16.3	5.6	47.0	445.5



TABLE 1.5 (continued)

Year	US	Aust	South Africa	USSR (1)	Latin America	Canada	Asia	Other Africa	Other (2)	World
1903	110.6	119.2	92.5	37.6	25.4	28.3	20.2	8.0	48.0	489.8
1904	121.5	116.5	117.3	37.7	27.9	24.7	22.0	10.1	45.0	522.7
1905	132.5	113.9	152.7	33.4	33.3	21.9	22.9	16.2	41.4	568.2
1906	146.5	107.0	179.9	33.8	37.4	18.1	23.0	21.4	35.7	602.8
1907	131.3	98.8	200.6	39.9	38.6	12.6	19.8	2.3	54.5	598.4
1908	137.8	95.5	219.4	46.6	43.2	14.8	21.1	28.2	60.0	666.6
1909	149.0	92.2	226.9	48.0	45.4	14.1	21.0	26.9	59.7	683.2
1910	142.4	84.5	234.1	55.0	47.4	15.3	39.4	27.0	39.9	685.0
1911	145.5	77.2	256.6	34.6	50.4	14.7	36.5	29.3	50.2	695.0
1912	138.7	72.2	283.3	43.6	48.3	19.0	39.5	33.4	23.4	701.4
1913	133.9	68.6	273.7	39.8	46.8	24.9	38.4	35.0	30.9	692.0
1914	137.2	63.8	261.1	43.0	38.7	34.0	39.3	40.9	12.7	670.7
1915	147.7	60.5	282.9	39.6	27.5	28.5	41.7	43.7	33.1	705.2
1916	137.2	51.7	289.2	33.8	31.7	28.9	40.1	44.3	26.5	683.4
1917	121.1	45.2	280.5	27.0	31.6	23.0	38.1	40.4	24.2	631.1
1918	99.8	39.5	261.8	25.8	42.4	21.8	36.2	30.1	15.8	512.2
1919	85.5	33.2	259.1	12.0	41.7	23.9	32.8	31.1	31.1	550.4
1920	74.0	29.3	253.7	1.8	41.1	23.8	32.3	26.8	24.3	507.1
1921	72.8	23.5	252.3	1.4	40.5	28.7	29.6	26.7	20.9	496.4
1922	71.2	23.4	218.3	4.6	43.4	38.3	33.6	29.2	18.0	480.0
1923	74.7	22.1	284.1	6.8	44.9	38.0	31.7	29.1	21.6	553.0
1924	75.9	21.0	297.8	17.8	39.1	47.4	33.4	29.6	24.0	586.0
1925	71.7	17.4	298.5	22.8	37.9	54.0	37.1	27.5	25.1	592.0
1926	69.4	16.2	309.6	24.9	37.0	54.6	38.6	28.8	20.9	600.0
1927	65.4	15.8	314.8	22.5	36.1	57.6	36.9	27.6	27.3	604.0
1928	66.7	14.2	332.1	34.2	37.6	58.8	34.3	27.1	17.0	622.0
1929	64.0	13.3	323.9	34.2	35.6	60.1	38.6	28.8	10.8	609.3
1930	66.5	14.5	333.3		37.5	65.5	41.5	30.6	14.6	604.0
1931	69.2	18.5	338.3		36.8	84.0	45.7	31.8	20.7	645.0
1932	70.6	22.2	359.5		38.4	95.2	48.4	35.3	27.4	697.0
1933	71.3	25.8	342.6		45.8	92.2	50.8	39.3	39.2	707.0
1934	86.4	27.6	326.0		52.3	92.6	54.7	43.4	41.0	724.0
1935	100.7	28.3	335.1		52.0	102.4	65.7	47.2	43.6	775.0
1936	117.7	36.7	352.6		58.4	116.9	79.1	52.8	46.8	861.0
1937	128.0	43.1	365.0		67.6	127.9	90.7	58.2	51.5	910.0
1938	132.7	49.5	378.3		74.2	147.5	92.9	62.3	68.6	1006.0
1939	145.3	51.2	398.8		77.3	159.0	111.0	69.0	59.4	1071.0
1940	151.5	51.1	436.9		85.2	165.7	110.1	75.2	28.8	1104.5
1941	147.5	46.5	448.1		81.5	166.8	106.4	74.2	50.7	1121.7
1942	107.5	35.9	439.4		77.9	151.0	67.4	67.1	39.8	986.0
1943	42.4	23.4	398.3		67.0	114.0	37.8	54.4	36.7	774.0
1944	31.0	20.4	381.9		62.4	91.4	22.0	47.7	30.2	687.0
1945	29.7	20.4	380.2		58.8	84.2	10.8	46.8	26.1	657.0
1946	49.0	25.6	371.0		54.2	88.5	12.1	46.9	22.7	670.0
1947	65.6	29.2	348.4		49.4	95.2	23.6	44.6	31.4	687.4
1948	62.6	27.5	360.3		45.7	110.1	16.8	48.0	30.0	701.0
1949	62.0	27.6	364.1		49.5	128.3	20.1	50.0	29.4	731.0
1950	74.5	27.0	362.8		50.5	138.2	24.0	50.0	24.0	751.0
1951	61.6	27.9	358.2		48.4	136.6	38.4	49.8	14.1	735.0
1952	59.0	30.5	367.6		50.1	139.1	31.2	50.6	28.9	757.0
1953	60.9	33.4	371.4		51.2	126.5	31.1	52.1	28.4	755.0
1954	57.1	34.8	411.7		46.5	135.8	32.1	54.9	24.1	797.0
1955	56.0	32.6	454.2		46.7	141.3	31.0	51.5	26.7	840.0



TABLE 1.5 (continued)

Year	US	Aust	South Africa	USSR (1)	Latin America	Canada	Asia	Other Africa	Other (2)	World
1956	56.8	32.0	494.4		46.9	136.4	30.9	50.3	23.3	871.0
1957	55.8	33.7	529.7		43.3	137.5	29.5	54.9	20.6	905.0
1958	54.1	34.3	549.2		41.4	142.2	31.1	57.0	24.7	934.0
1959	49.9	34.7	624.1		42.5	139.5	30.4	59.9	22.0	1003.0
1960	51.8	33.8	665.1		43.2	143.9	31.0	58.5	19.7	1047.0
1961	48.1	33.5	713.6		39.8	139.1	33.2	57.2	15.5	1080.0
1962	48.0	33.2	792.9		39.2	130.0	35.5	54.9	21.3	1155.0
1963	45.2	31.8	853.7		36.6	123.5	33.4	56.6	24.2	1205.0
1964	45.3	30.0	905.5		36.8	118.2	35.2	54.9	29.1	1255.0
1965	53.0	27.3	950.3		36.7	112.2	37.0	47.2	18.3	1282.0
1966	56.1	28.5	960.5		35.0	101.8	37.1	46.2	18.8	1284.0
1967	49.3	25.0	943.4		30.7	92.1	41.8	46.0	14.7	1243.0
1968	46.0	24.3	966.9		30.4	83.6	41.2	44.5	20.1	1257.0
1969	53.9	21.8	969.8		29.8	79.2	43.9	43.3	18.3	1260.0
1970	54.2	19.5	1000.4		35.4	74.9	32.9	44.4	11.7	1273.4
1971	46.4	20.9	976.3		34.1	68.7	33.7	44.6	11.1	1235.8
1972	45.1	23.5	909.6		34.8	64.7	32.7	42.3	29.1	1181.8
1973	36.1	17.2	855.2		35.2	60.0	30.3	44.8	37.4	1116.2
1974	35.1	16.2	758.6		36.9	52.2	27.7	43.6	34.3	1004.6
1975	32.4	16.3	713.4		41.8	51.4	26.5	40.0	31.1	952.9
1976	32.2	15.4	713.4		55.0	52.4	27.1	39.2	43.2	977.9
1977	32.0	19.2	699.9		55.9	54.0	30.1	41.4	34.2	966.7
1978	30.2	20.1	706.4		62.7	54.0	30.7	34.2	37.0	975.3
1979	30.2	18.3	705.4		66.6	51.1	29.0	28.3	30.7	959.6
1980	30.5	17.0	675.1		91.5	51.6	35.8	33.2	27.1	961.8
1981	44.0	18.4	657.6	262.0	104.0	53.0	37.9	39.8	33.3	1250.0
1982	45.3	27.0	664.3	266.0	109.8	66.5	41.6	45.6	36.9	1303.0
1983	62.6	30.6	679.7	267.0	144.5	73.0	43.9	46.9	29.7	1377.9
1984	66.0	39.1	683.3	269.0	154.1	86.0	48.7	51.1	41.2	1438.5
1985	79.5	58.5	671.7	271.0	178.3	90.0	53.5	51.7	55.6	1509.8
1986	118.3	75.1	640.0	275.0	180.8	105.7	66.0	52.6	60.5	1574.0
1987	154.9	110.7	607.0	277.0	205.4	116.5	68.4	63.4	59.8	1663.1
1988	201.0	157.0	621.0	280.0	234.5	134.8	69.9	66.9	66.4	1831.5
1989	265.5	203.6	607.3	285.0	236.9	159.5	68.4	67.1	72.7	1966.0
1990	294.2	243.1	605.1	270.0	219.5	167.0	70.8	67.1	75.9	2012.7
1991	300.0	234.2	601.1	242.0	210.5	176.7	70.7	68.5	104.5	2008.2
Totals	11414.7	7206.7	43915.0	2087.9	5820.9	7664.0	3865.4	3888.1	4372.7	93199.4

Notes: 1. Data on USSR not published after 1929.  
2. Other includes Europe and Papua New Guinea.



## GOLD

## World Mine Production

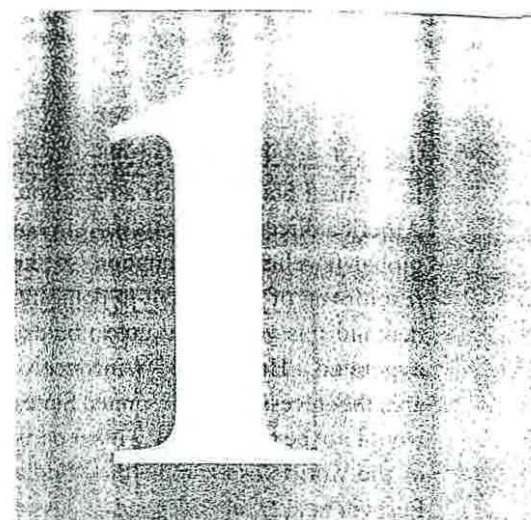
TONNES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<b>EUROPE</b>										
Armenia		2.0	2.0	2.0	0.5	2.0	2.0	2.0	2.0	2.0
Finland	2.2	1.6	1.4	1.4	2.1	3.1	4.8	5.0	5.9	5.0
France	4.8	3.1	3.0	5.1	4.6	5.7	5.0	4.9	4.9	4.9
Georgia		1.0	1.0	1.0	1.2	1.2	1.2	1.2	1.2	1.2
Hungary	0.6	0.6	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.5
Italy	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	0.9	0.8
Portugal	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Romania	5.0	5.0	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5
Russia		134.5	144.2	136.8	127.8	119.9	123.9	113.1	125.9	143.9
Spain	7.2	6.3	6.3	5.9	4.1	2.8	1.8	3.3	3.3	3.3
Sweden	6.2	6.2	6.5	6.4	6.5	6.1	6.8	5.9	4.4	3.6
Ukraine		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Yugoslavia	6.0	3.0	3.0	4.0	4.0	4.0	3.0	3.6	3.6	3.6
Former U.S.S.R.	220.0									
<b>Total</b>	<b>252.4</b>	<b>164.2</b>	<b>169.3</b>	<b>164.2</b>	<b>152.4</b>	<b>146.2</b>	<b>150.3</b>	<b>141.7</b>	<b>153.6</b>	<b>169.7</b>
<b>AFRICA</b>										
Democratic Republic Congo	6.0	2.5	1.5	0.8	0.6	0.7	0.2	0.0	0.0	0.0
Ghana	26.3	31.0	39.2	44.5	53.1	49.3	54.7	63.1	63.2	63.6
Mauritania					1.2	0.2	0.0	0.0	0.0	0.0
Sierra Leone	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	601.0	608.5	619.5	583.9	522.4	494.6	492.5	473.8	447.2	428.3
Zambia	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.0
Zimbabwe	17.8	18.3	18.8	20.5	24.0	24.7	24.3	25.2	27.4	28.8
<b>Total</b>	<b>651.3</b>	<b>660.6</b>	<b>679.5</b>	<b>650.0</b>	<b>601.3</b>	<b>569.7</b>	<b>571.8</b>	<b>562.3</b>	<b>538.1</b>	<b>520.7</b>
<b>ASIA</b>										
China	104.2	113.1	121.0	124.1	136.4	120.6	149.6	158.2	170.0	172.8
India	2.0	1.7	2.0	2.2	1.8	1.7	2.7	2.4	2.5	5.6
Indonesia	17.0	38.0	41.6	42.5	63.3	83.6	90.0	124.0	129.0	126.4
Japan	8.3	8.9	9.4	9.6	9.2	8.6	8.4	8.6	9.4	8.4
Kazakhstan		12.0	13.7	14.1	10.9	10.2	9.7	18.0	22.5	22.4
Kyrgyzstan		2.0	2.0	4.0	4.0	4.1	15.6	20.1	18.1	18.1
Malaysia	2.8	3.5	4.5	4.2	3.2	2.8	4.5	3.4	3.5	4.3
Mongolia	0.9	1.1	1.1	1.8	4.5	4.9	8.5	7.3	11.0	11.0
North Korea	5.0	5.0	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0
Philippines	24.9	24.8	15.8	15.3	12.8	8.1	11.2	8.7	7.0	8.1
South Korea	1.1	1.4	0.6	1.4	1.3	1.1	0.6	0.0	0.0	0.0
Tajikistan		1.0	0.4	0.4	0.5	1.5	2.5	2.5	2.5	2.5
Uzbekistan		70.0	66.6	64.4	63.6	71.0	82.0	82.0	82.0	82.0
<b>Total</b>	<b>166.2</b>	<b>282.5</b>	<b>279.2</b>	<b>284.5</b>	<b>311.9</b>	<b>318.7</b>	<b>385.7</b>	<b>435.7</b>	<b>457.5</b>	<b>461.7</b>
<b>AMERICA</b>										
Argentina	1.7	1.1	0.9	0.9	0.8	0.7	2.3	20.4	38.5	26.0
Bolivia	3.5	4.7	10.4	12.8	14.4	12.6	13.3	14.4	11.8	11.4
Brazil	89.1	88.8	77.0	72.4	64.4	60.0	58.5	65.0	65.0	65.0
Canada	176.6	161.4	153.3	146.9	150.9	166.4	171.4	165.6	157.8	156.1
Chile	28.7	30.0	33.5	36.9	44.2	51.8	47.8	43.8	45.6	49.6
Colombia	34.7	32.1	27.4	21.0	22.1	22.1	18.8	18.8	34.6	41.0
Dominican Republic	3.2	2.2	0.4	1.4	3.3	3.7	2.3	1.4	0.7	0.0
Ecuador	12.2	1.3	1.0	1.2	7.4	7.2	6.6	0.0	0.0	0.0
Guyana	1.8	2.5	9.6	8.7	9.0	12.0	13.6	14.6	12.9	13.8
Mexico	10.1	9.9	11.4	14.6	19.9	23.1	26.4	25.4	23.8	26.6
Nicaragua	1.2	1.3	1.2	1.0	1.5	2.0	2.6	3.8	3.8	3.8
Peru	2.8	2.3	8.0	54.7	56.5	65.1	74.3	93.8	128.5	132.6
U.S.A.	294.0	330.0	331.0	326.6	316.9	326.2	362.3	366.0	341.0	337.7
Venezuela	6.7	8.5	8.9	9.9	10.0	11.7	22.3	6.8	5.5	5.5
<b>Total</b>	<b>666.3</b>	<b>676.1</b>	<b>674.0</b>	<b>709.0</b>	<b>721.4</b>	<b>764.7</b>	<b>822.6</b>	<b>839.9</b>	<b>869.5</b>	<b>869.0</b>
<b>OCEANIA</b>										
Australia	236.1	243.4	248.1	255.2	253.5	289.5	311.0	309.3	300.4	296.4
Fiji	2.8	3.1	3.7	4.1	3.5	4.6	4.7	3.7	5.1	3.8
New Zealand	6.8	10.5	11.2	10.1	12.1	11.5	11.4	7.7	8.6	8.6
Papua New Guinea	60.0	69.5	62.0	58.7	51.7	51.6	48.5	60.3	65.8	74.3
<b>Total</b>	<b>305.7</b>	<b>326.5</b>	<b>325.0</b>	<b>328.1</b>	<b>320.8</b>	<b>357.1</b>	<b>375.5</b>	<b>381.1</b>	<b>380.0</b>	<b>383.1</b>
<b>WORLD TOTAL</b>	<b>2 041.9</b>	<b>2 109.9</b>	<b>2 127.0</b>	<b>2 135.8</b>	<b>2 107.9</b>	<b>2 156.4</b>	<b>2 305.9</b>	<b>2 360.5</b>	<b>2 398.6</b>	<b>2 404.2</b>
Western World	1 706.8	1 762.7	1 773.5	1 785.7	1 756.9	1 819.6	1 909.4	1 954.6	1 962.4	1 947.2
Former Sino-Soviet	335.1	347.2	353.5	350.1	351.0	336.8	396.5	405.9	436.3	457.1
European Union	20.8	17.6	17.6	19.2	17.3	17.7	18.7	20.2	19.4	17.5
N.A.F.T.A.	480.7	501.3	495.7	488.1	487.7	515.7	560.1	557.0	522.5	520.3

This table shows the recoverable gold content of ores and concentrates produced.

Mine production in Brazil is known to be significantly greater than the official production figures show.





2000 was hardly an exciting year for the gold price. At \$279.11 the annual average was basically unchanged. What is remarkable, at first glance, is how this could have occurred despite some significant movements in the supply/demand balance reviewed below. The two main ones that stand out concern producer hedging and investment.

In the former case, there was a swing to accelerated demand of 10 tonnes from net supply of 506 tonnes in 1999. Taken in isolation this might have been expected to give a boost to dollar gold prices. The fact that it did not owes much to the almost equally large swing from implied net investment of 170

tonnes in 1999 to net disinvestment of 291 tonnes last year. One question this raises is the following: why did miners and investors behave so differently in 2000?

Although it is difficult to generalise, perhaps the simplest explanation is that the two groups had very different price expectations. Whereas a large section of the mining industry - or at least its shareholder base - fully expected further upside to the price following the European Central Banks' Agreement in September 1999, most investors adopted the contrary view. Thus the latter took advantage of spikes in the dollar and local prices to reduce gold holdings while producers, generally

speaking, sat on the sidelines.

In 2001, by contrast, our "base case" is for producer and investor behaviour to converge. Gold mining companies are expected to increase moderately their hedge books while the scale of private disinvestment should diminish. Attention could shift to the behaviour of other supply/demand variables, chiefly fabrication demand, where the risk has grown of a US recession-induced fall in gold offtake this year. Yet, the irony is that an economic downturn represents both a threat and an opportunity for gold.

The threat lies in the aforementioned danger of sharply lower fabrication

Table 1

## World Gold Supply and Demand

tonnes

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<b>Supply</b>										
Mine production	2,162	2,237	2,291	2,282	2,276	2,361	2,479	2,538	2,568	2,573
Official sector sales	100	622	468	130	167	279	326	374	464	471
Old gold scrap	482	488	576	617	624	640	628	1,097	616	611
Net producer hedging	66	135	142	105	475	142	504	97	506	-
Implied net disinvestment	319	6	-	171	57	95	297	-	-	291
<b>Total Supply</b>	<b>3,129</b>	<b>3,488</b>	<b>3,477</b>	<b>3,305</b>	<b>3,600</b>	<b>3,518</b>	<b>4,234</b>	<b>4,106</b>	<b>4,154</b>	<b>3,946</b>
<b>Demand</b>										
Fabrication										
Jewellery	2,359	2,762	2,554	2,619	2,792	2,851	3,349	3,156	3,149	3,175
Other	517	445	487	456	502	484	560	569	595	563
<b>Total Fabrication</b>	<b>2,876</b>	<b>3,207</b>	<b>3,042</b>	<b>3,074</b>	<b>3,293</b>	<b>3,336</b>	<b>3,909</b>	<b>3,724</b>	<b>3,744</b>	<b>3,739</b>
Bar hoarding	252	282	162	231	306	182	325	173	240	198
Net producer hedging	-	-	-	-	-	-	-	-	-	10
Implied net investment	-	-	273	-	-	-	-	208	170	-
<b>Total Demand</b>	<b>3,129</b>	<b>3,488</b>	<b>3,477</b>	<b>3,305</b>	<b>3,600</b>	<b>3,518</b>	<b>4,234</b>	<b>4,106</b>	<b>4,154</b>	<b>3,946</b>
Gold Price (London PM, US\$/oz)	362.26	343.95	359.82	384.15	384.05	387.87	331.29	294.09	278.57	279.11

Totals may not add due to independent rounding. Net producer hedging figures are exclusive of any delta hedging of central bank options.

G F M S







AHP/184

1st July, 1971.

Mr. M. W. Howell,  
Executive Director,  
Broken Hill South Limited,  
360 Collins Street,  
MELBOURNE. VICTORIA. 3000.

Dear Murray,

In view of your recent telephone conversations and discussions with Arvi Parbo and I myself I thought it desirable to set out the circumstances regarding our negotiations for entry into the Hail Creek Coal Project in Queensland and the offer which we are able to make to your company.

In my letter to you of 10th September, 1970, I described an understanding which had been reached between our two companies regarding entry into the coal business in Queensland. It was agreed, I believe, that Broken Hill South would generally act on behalf of both companies in endeavouring to obtain exploration areas for coal whereas W.M.C. would act on behalf of both companies regarding any possible purchase of interest in leases held by other companies. The following is a relevant extract from my letter describing the understanding under which W.M.C. was to proceed:

"It was rather difficult to be categorical about what arrangements should be made but each party would inform the other about any negotiations in which it became involved with other companies and would if and so far as practicable and appropriate carry on such negotiations on behalf of itself and the other party".

W.M.C. approached Australian Associated Oilfields N.L. some time early this year indicating a general interest in participating with

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A.A.O. in coal developments in Queensland. Mr. Avery visited our office on 16th February, 1971, and the attached minutes of that meeting described the discussions. You will note that Mr. Avery was informed at this first discussion that W.M.C. had an arrangement with Broken Hill South and it was, in fact, arranged for a geologist of Broken Hill South Limited to accompany our staff on a visit to the Nail Creek area. The visit took place between 23rd and 26th February, 1971. A report regarding the project was compiled following the visit and copies were sent to you on 5th March, 1971.

At that time the discussions were about a possible 10% interest in the venture to W.M.C.

A further meeting took place on 24th March, 1971, at which W.M.C. stated that it wished to obtain a minimum of 25% interest in the venture. A copy of the minutes of this meeting is attached.

There was no further contact with A.A.O. until 13th May, 1971, when Mr. Avery advised us that they were now ready to take the discussions further. Some of our staff again visited Brisbane on 18th May, 1971, to bring themselves up to date with progress on the project. These discussions did not significantly change the previous conclusions that had been drawn by W.M.C. and a detailed report was not written.

On 27th May a meeting was held with you in our office to inform you of negotiations to that date. On Friday, 30th May, Brian Hurley and Don Morley visited your office and explained the project development in more detail.

A meeting was held with the Associated representatives on Monday, 31st May. From this time on negotiations proceeded almost continuously with A.A.O. and discussions began on the details of the proposed agreement. Mr. Avery stated that while he had recognised the arrangement between W.M.C. and B.H.S., he did not want to introduce another independent party to the joint venture. B.H.S. could have an assigned interest from W.M.C., provided W.M.C. continued to speak for both parties.

Further discussions were held during that week and on Wednesday, 2nd June, some changes were made in the basic terms of entry of which I informed you. The detailed terms of entry were agreed on 21st June, 1971, after protracted negotiations with the proposed Japanese partners.

On 22nd June at your request, Alan Foulis was briefed in detail by Don Morley and Brian Hurley.

On 23rd June a further meeting was held between yourself and representatives of Western Mining, during which the attached summary notes were tabled. You expressed your company's objection to having an assigned interest and stated that for various reasons, particularly taxation considerations, B.H.S. wished to be a separate party to the joint venture.



Following a meeting of the B.H.S. Board on 24th June, 1971, you informed Arvi Parbo that the Board had decided to participate in the joint venture provided that B.H.S. would be admitted as a principal. You asked that W.M.C. use its influence with A.A.O. to get them to agree to this.

Your requirements were advised to A.A.O., who replied in a letter from Mr. Sanderson to Mr. Tyler, dated 28th June, 1971.

At a meeting between yourself, Mr. Tyler and Arvi Parbo in your office on 29th June, 1971, you stated that B.H.S. has now accepted not having a direct voice in the joint venture. However, B.H.S. requested certain assurances which were advised to us by a note from Mr. Tyler (attached).

These requirements were passed by us to Mr. Sanderson, who replied in a letter to Mr. Tyler dated 30th June, 1971.

Mr. Tyler subsequently advised Arvi Parbo by telephone that as A.A.O. was unable to guarantee B.H.S. being named as a party to the formal joint venture agreement B.H.S. wished to defer their decision until the joint venture agreement had been prepared.

It is now proposed that an announcement be made on Sunday, 4th July, regarding W.M.C.'s participation in the joint venture and it is necessary that W.M.C. should know the intentions of B.H.S. by mid-day, Friday, 2nd July, 1971. This announcement cannot be delayed further because W.M.C.'s participation in the Nail Creek Project is already known in Japan.

If B.H.S. decides to participate then W.M.C. will endeavour to secure the agreement of the other parties to arrangements which will adequately safeguard the tax position of B.H.S.

At this stage W.M.C. considers it has carried out the intentions expressed in the exchange of letters in September, 1970, and January, 1971, and that in the interests of its own shareholders it could not agree to allow B.H.S. what is in effect a free option for an indefinite period over an interest in the joint venture.

A copy of the final draft of the proposed agreement between A.A.O., Interstate Oil, and W.M.C. is enclosed for your information.

Yours sincerely,

W. M. Morgan

ATTACHMENTS

0000212

1. Exchange of letters between M. W. Howell and W. H. Morgan - September, 1970 - January, 1971.
2. Minutes of Meeting with A.A.O. 16/2/1971.
3. Report on A.A.O. Coal Property 5/3/1971.
4. Minutes of Meeting with A.A.O. 24/3/1971.
5. Minutes of Meeting with A.A.O. 31/5/1971.
6. Memorandum to W.H.C. Directors 4/6/1971.
7. Notes for discussion with B.H.S. 23/6/1971.
8. Exchange of letters between A.A.O. and B.H.S. June, 1971.



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July  
8th.  
1971

Mr. M. W. Howell,  
Executive Director,  
Broken Hill South Limited,  
360 Collins Street,  
MELBOURNE 3000

Dear Murray,

Hall Creek Coal Project

Thank you for your letter of 2nd. July, 1971.

I am sorry that you feel, contrary to our own view, that we have not fulfilled our obligations under the early correspondence. There may well have been a mutual misunderstanding between us as to what was in fact intended because the arrangement, at least in regard to the acquisition of interests from outsiders, was deliberately (and necessarily) left in quite general terms.

Western Mining Corporation Limited now has no alternative but to regard its offer to Broken Hill South Limited as not having been accepted, and it is now formally withdrawn. The Associated Australian Oilfields Group has been notified.

Yours sincerely,

W. M. Morgan  
Managing Director

NOTES FOR DISCUSSION WITH MR. M. W. NOWELL ON  
15TH JULY, 1971

re

RAIL CREEK PROJECT

The discussion with Mr. Nowell was personal and not an official approach by the Company. These notes were prepared beforehand for reference by me during the discussion.

1. Western Mining Corporation is anxious to maintain the friendly relationship that has existed between W.M.C. and B.N.S. for many years.
2. These notes explain W.M.C.'s position in recent events regarding the Rail Creek Coal Project.
3. It is hoped that both companies can look at the situation dispassionately and determine a future course of action.
4. In September, 1970, W.M.C. and B.N.S. discussed ways in which both companies could co-operate in obtaining coal interests in Queensland. The general understanding reached was that B.N.S. would concentrate on obtaining exploration areas and W.M.C. would concentrate on negotiating entry to existing ventures.
5. The understanding reached was recorded in an exchange of letters. The relevant extracts referring to W.M.C.'s obligations are:

"It was rather difficult to be categorical about what arrangements should be made but each party would inform the other of any negotiations in which it became involved with other companies and would, if and so far as practicable and appropriate, carry on such negotiations on behalf of itself and the other party."

"The only purpose of this letter is to set out the matters discussed at the meeting and to form a base for initial action. It will no doubt be necessary for something more formal to be prepared once a decision has been made to go ahead one way or another .....".

6. It is the unanimous recollection of W.M.C. staff present at the initial discussion that no limitations were placed on the manner in which negotiations were to be conducted, nor on the end result that had to be obtained. W.M.C. was simply to negotiate in the light of the circumstances in every particular case, and "..... if and so far as practicable and appropriate ..... on behalf of itself and ..... (B.N.S.)".
7. B.N.S. view, expressed in Mr. Nowell's letters of 1st and 2nd July to myself and Mr. Morgan respectively, is that W.M.C. had accepted an obligation to obtain a direct participating interest in joint ventures for B.N.S.
8. W.M.C. does not agree with the B.N.S. view. Such an obligation is not recorded in the correspondence, nor is it the understanding of the W.M.C. staff present at the discussion on 9th September, 1970.
9. On reflection, it is not possible that W.M.C. could have accepted such an obligation as it would have meant that W.M.C. could only negotiate with vendors who:
  - (a) Agreed to B.N.S. participating as a direct venturer.
  - (b) Wished to arrange the project in the form of a joint venture.

If these had been the only conditions under which W.M.C. could negotiate, the understanding with B.N.S. would have prevented W.M.C. from negotiating with any vendors who would not agree to these conditions.

..../



10. The understanding between W.M.C. and B.N.S. was meant to be an advantage to both parties, not a disadvantage.
11. W.M.C. could not agree to restrict its freedom of action as described under (9) above, as it would then be at a distinct disadvantage, without any compensating benefits.
12. It is now clear that the "understanding" of 9th September was in effect a misunderstanding. As both parties understood the arrangement differently and as there was no detailed agreement, an understanding did not exist.
13. W.M.C. acquainted A.A.O. with its supposed understanding with B.N.S. at the very first meeting with Mr. Avery on 16th February, 1971. Mr. Avery acknowledged the W.M.C.-B.N.S. arrangement, but did not comment specifically until early June, 1971, when detailed discussions commenced.
14. Mr. Avery expressed the following requirements during discussions in June, 1971:
  - (a) W.M.C. could assign one-half of its interest to B.N.S.
  - (b) A.A.O., however, looked to W.M.C. as its "mining partner" - i.e. the partner taking responsibility for operations.
  - (c) A.A.O. for that reason and also because "it did not want to deal with another Board and another set of lawyers at the joint venture table", required that W.M.C. should speak for both W.M.C. and B.N.S. at the joint venture table.
15. Because these were the clearly expressed requirements of the vendor, W.M.C. felt that it was negotiating "so far as practicable and appropriate" on behalf of B.N.S.

16. Discussions by A.A.O. with their original Japanese partner (Marubeni) regarding W.M.C. and Sumitomo entry to the venture were based on W.M.C. entering under these conditions.
17. It was expressly required by Marubeni that no further participants would be admitted to the venture without the approval of all joint venturers. Marubeni, however, agreed to the assignment of a part of W.M.C.'s interest to B.N.S. on the basis that this would not be direct participation.
18. When the negotiations had progressed to the stage where a reasonable draft of the agreement existed, B.N.S. were briefed in detail.
19. B.N.S. then - for various reasons - expressed their strong opposition to the proposed arrangement regarding themselves, and insisted that W.M.C. had an obligation to negotiate for B.N.S. entry on terms approved by B.N.S.
20. W.M.C. expressed its conviction that such an obligation did not exist, but nevertheless did all it could - directly and indirectly - to meet B.N.S. wishes.
21. When A.A.O. stated that it could not guarantee B.N.S. admittance to the joint venture as a direct participant, B.N.S. wished to defer their decision until the situation had been clarified, i.e. until the joint venture agreement had been completed.
22. W.M.C. was now in a situation where:
  - (a) It found that no understanding in fact had existed between W.M.C. and B.N.S. - instead there had been a misunderstanding.
  - (b) It had done its best to satisfy B.N.S. requirements although it did not believe itself under any obligation to do so.



- (c) B.N.S. were not satisfied and asked for an option to take up one-half of W.M.C.'s interest when it was known whether or not B.N.S. could be admitted as a direct participant.
  - (d) An announcement to the Stock Exchanges and shareholders would not be delayed any longer.
  - (e) A decision on the parties in the project had to be made without delay so that the Japanese partners could make their explanations to the Steel Mills and banks concerned at the time of the announcement in accordance with Japanese custom.
23. W.M.C. decided that:
- (a) It had done as much as it could to satisfy B.N.S.
  - (b) In the interests of its own shareholders it could not allow B.N.S. what was in effect a free option for an indefinite period over an interest in the joint venture.
24. W.M.C. therefore withdrew the offer.
25. As the difficulties of the past have arisen from a loose arrangement which has been interpreted differently by each party, the important action now would seem to be to discuss in detail the conditions under which the two companies would be prepared to co-operate in acquiring coal interests in the future.
26. W.M.C. is prepared to do so at B.N.S. convenience.

A. H. PARDO

NIP/704  
15/7/1971

- (c) B.H.S. were not satisfied and asked for an option to take up one-half of W.M.C.'s interest when it was known whether or not B.H.S. could be admitted as a direct participant.
  - (d) An announcement to the Stock Exchanges and shareholders could not be delayed any longer.
  - (e) A decision on the parties in the project had to be made without delay so that the Japanese partners could make their explanations to the Steel Mills and banks concerned at the time of the announcement in accordance with Japanese custom.
23. W.M.C. decided that:
- (a) It had done as much as it could to satisfy B.H.S.
  - (b) In the interests of its own shareholders it could not allow B.H.S. what was in effect a free option for an indefinite period over an interest in the joint venture.
- 24/ W.M.C. therefore withdrew the offer.
25. W.M.C. believes that legally and morally it has satisfied all its obligations to B.H.S.
26. Now that the announcement has been made without any reference to B.H.S. - at B.H.S. express request - W.M.C. cannot go back to the situation that existed before the announcement.
27. W.M.C. and B.H.S. should now consider the fundamental situation which is as follows:
- (a) In fact there was no understanding between W.M.C. and B.H.S.
  - (b) W.M.C. could not agree to the arrangement understood by B.H.S.

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to have been reached in September, 1970, as applying to any future negotiations.

- (c) Because there was no understanding, the only possible disadvantage B.N.S. may have suffered would be that it may have carried out exploration investigations on behalf of W.M.C. and B.N.S. without having benefited from W.M.C. negotiations with A.A.O.
- (d) B.N.S. could be restored to a situation where it had not suffered any disadvantage by W.M.C. agreeing to forego any claim to exploration information it may have under the so-called understanding. W.M.C. is prepared to do so.
- (e) In effect, both companies would revert to the pre-September, 1970, situation.

A. N. PARRO

NTP/MEI

15th July, 1971.



0000267

January 26th, 1971.

Mr. M. W. Howell,  
Executive Director,  
Broken Hill South Limited,  
360 Collins Street,  
MELBOURNE. 3000.

Dear Murray,

Thank you for your letter dated 22nd January. This will confirm that we agree to the last paragraph in your letter in which you suggest that South should have the right to refuse its proportion of any coal property negotiated by W.M.C. if, in its opinion, the interest available was too low.

Kind regards,

Yours sincerely,

W. M. Morgan  
Managing Director

W.M.C. understanding of the arrangement is based on this correspondence, which in the recollection of W.M.C. staff present at the discussion on 9th September, 1970, correctly records that discussion. It is relevant to note that Mr. Howell's reply did not query or seek to amend the basic understanding recorded, but merely sought to lift the limitation on negotiated interests.

W.M.C. attitude may be summarised as follows:

- (a) The understanding as expressly stated in Mr. Morgan's letter of 10th September, 1970, was very general. It had to be general as we were facing completely unknown circumstances.
- (b) Both companies wished to pool their resources in the loose manner mentioned, in the belief that both companies would benefit from such an arrangement.
- (c) If it was practicable in the light of circumstances in each particular case to negotiate on behalf of the other party, then this was to be done. However, there was no obligation on either party to negotiate in a certain manner or to achieve a particular result. The obligation was simply to do the best that could be done.
- (d) There was no obligation on either party to cease negotiations if it proved impracticable to negotiate on behalf of both parties, or to obtain exactly equal rights for both parties.

- (e) There was further no exclusive limitation of B.H.S. to exploration and W.M.C. to negotiating entry into existing ventures. The companies would concentrate (take the lead) in these respective areas, but if circumstances dictated either could take action in the other's area of responsibility.

(b) B.H.S. Understanding -

As explained by Mr. Howell, B.H.S. attitude is quite different. They understood the arrangement to be as follows:

- (a) The understanding was equivalent to a formal joint venture, with the State of Queensland the stipulated joint venture area.
- (b) Neither company was entitled to act except on behalf of both joint venturers and was bound to negotiate to obtain equal rights for both joint venturers.
- (c) If either company could not negotiate in this manner then it was duty bound to discontinue negotiations.
- (d) Each company was exclusively limited to its own field, i.e. W.M.C. could not acquire exploration areas and B.H.S. could not negotiate entry into joint ventures.

I indicated to Mr. Howell that W.M.C. would most likely not be prepared to enter into an arrangement on the basis outlined by him as B.H.S. understanding. Mr. Howell suggested that if this was so, the arrangement should be discontinued.

I undertook to refer the matter to W.M.C. Board.

Hail Creek Project:

As regards the Hail Creek Project, it is clear that the differences of opinion have arisen from the different interpretations of the basic arrangement between W.M.C. and B.H.S. W.M.C. negotiated in the belief that it had to do the best it could; B.H.S. believed that W.M.C. was obligated to obtain for them exactly the same rights as W.M.C. was able to get for itself.

W.M.C. acquainted A.A.O. with the arrangement between W.M.C. and B.H.S. at the first meeting with A.A.O. Mr. Avery acknowledged the arrangement, but did not comment further until detailed discussions began in June, 1971. At that time Mr. Avery stated that:

- (a) A.A.O. agreed that W.M.C. could assign one-half of its interest to B.H.S.



- (b) However, A.A.O. looked to W.M.C. as its "mining partner", i.e. it regarded W.M.C. entry as contributing the necessary technical and operating skills to the project.
- (c) A.A.O. also did not wish to deal "with another Board and another set of lawyers at the joint venture table".
- (d) For reasons (b) and (c) A.A.O. required that W.M.C. should speak for both itself and B.H.S. at the joint venture table.

W.M.C. accepted these conditions as being reasonable requirements by the vendor of the tenements, and as being within W.M.C. terms of reference to negotiate "if and so far as practicable" on behalf of B.H.S.

Difficult negotiations with Marubeni regarding the entry of W.M.C. and Sumitomo into the project, which followed the above discussions between A.A.O. and W.M.C., were carried out on the basis that B.H.S. would have an assigned interest from W.M.C. but would not be a direct participant. Marubeni specifically required that any further direct partners to the joint venture would be admitted only with the approval of all existing participants and this was agreed.

B.H.S. expressed strong objections to the terms of entry negotiated by W.M.C. on their behalf and stated that:

- (a) They would not wish to join the project except as a principal.
- (b) In any case they considered that W.M.C. had an obligation to obtain for B.H.S. the terms B.H.S. required.

W.M.C. did not accept that it had such an obligation, but nevertheless did all it could to improve B.H.S. terms of entry by making representations to A.A.O.

After various discussions and exchanges of letters between B.H.S. and A.A.O., the situation was reached on 1st July, 1971, where:

- (a) B.H.S. required written confirmation from A.A.O. that they would be admitted to the joint venture as a direct participant.
- (b) Although not stated in the correspondence, W.M.C. had a verbal assurance from B.H.S. that this did not mean participation in management or W.M.C. not being able to speak on behalf of B.H.S.
- (c) A.A.O. had replied to B.H.S. that although it would do all it could to meet B.H.S. requirements, it could not guarantee anything as changes in joint venture arrangements had to be approved by all parties and the legal and taxation implications had to be looked at.
- (d) An announcement regarding the joint venture had to be made immediately the agreement between W.M.C., A.A.O. and Interstate Oil was signed.

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- (a) The Japanese partners, according to Japanese custom, wanted to visit all prospective customers in Japan and explain the new joint venture arrangements to them.

B.H.S. were therefore asked to decide by mid-day, 2nd July, 1971, whether they wished to participate or not, so that they could be included in the announcement and in the Japanese explanations if appropriate.

W.M.C. also explained that in the interests of W.M.C.'s shareholders, the offer could not be left open to B.H.S. after the deadline mentioned as required by B.H.S., as that would amount to granting B.H.S. a free option for an indefinite period.

B.H.S. replied that they did not wish to accept the offer unless admitted as a direct participant in the joint venture.

W.M.C. consequently regarded its offer as having been declined by B.H.S. and replied on 5th July, 1971, withdrawing the offer.

From my discussion with Mr. Howell on 15th July, 1971, the B.H.S. requirements have not changed, i.e. B.H.S. still require to know whether they can be admitted as a direct participant before deciding whether to join the venture. Mr. Howell suggested that discussions with Mr. Avery should commence immediately to clarify the matter.

I said that in my opinion the first decision to be made was for the W.M.C. Board to decide whether and under what conditions it would be willing to re-open the Hail Creek discussions with B.H.S. as the offer had been formally withdrawn.

I agreed to refer the matter to members of the Board.

Mr. Howell suggested that if the discussions were to be re-opened, this should be done before a draft of the joint venture agreement, which I had indicated would be available in about two weeks, is submitted to the Japanese partners.

A. H. Parbo



0000266

22nd January, 1971.

Mr. W. M. Morgan, CMG,  
Managing Director,  
Western Mining Corporation Ltd.,  
360 Collins Street,  
Melbourne. Victoria. 3000.

Dear Bill,

Following on our short discussion of 21st January, I have re-read the letter which you sent me on 10th September, 1970. It seems possible to put on this letter a construction which was not intended at that time, and I am sure you will agree with my slightly different proposal.

Three possibilities of entering the coal business in Queensland were set out and it was agreed that South would take the initiative in relation to proposals (a) and (b) in your letter. Western Mining would concentrate on proposal (c) covering the possible purchase of an interest in leases held by other companies.

As your letter reads, South would make available its information for discussion by both companies, who would then decide whether to proceed alone or together. At that stage South would have made available to Western Mining Corporation all of its information for W.M.C. to use as it wished. On the other hand, unless W.M.C. were able to negotiate an interest of more than 30% in any likely area, it was proposed that one company only (presumably W.M.C. who have carried out the negotiations) would take the available interest. It seems unlikely with the lack of suitable available ground that a company holding a potential area would be prepared at this stage willingly to surrender much more than 30% of its interest.

Perhaps the situation could be covered by saying that if W.M.C. can negotiate a joint interest in a potential area already held, South has the right to refuse its proportion if the interest available is too low. I would be glad to have your reaction to this suggestion which, if it is acceptable to W.M.C. would make your proposal, so amended, a basis on which South would be prepared to work.

Kind regards,

Yours sincerely,

M. W. Howell  
Executive Director

0000264

WESTERN MINING CORPORATION LIMITED

CONFIDENTIAL

360 Collins Street,  
Melbourne, Victoria, 3001.

NIP/MM

16th July, 1971.

MEMORANDUM :

NOTES ON DISCUSSION WITH MR. M. W. HOWELL

ON 15TH JULY, 1971

I saw Mr. Howell on 15th July, 1971, and discussed with him various aspects of the W.M.C./B.H.S. understanding regarding joint coal activities in Queensland. Mr. Tyler was present during most of the discussion.

We discussed two main matters: the general understanding thought to have been reached in September, 1970, and the Hail Creek Project.

General Understanding:

It is now clear that W.M.C. and B.H.S. each have a different understanding of the arrangement reached in September, 1970.

(a) W.M.C. Understanding -

W.M.C. understanding was based on the letters exchanged between the two companies recording the arrangements. The letters in question are quoted in full below:

September 10th, 1970.

Mr. M. W. Howell,  
Executive Director,  
Broken Hill South Ltd.,  
360 Collins Street,  
MELBOURNE. 3000.

Dear Murray,

This will confirm our conversation yesterday concerning proposed joint activities of Broken Hill South Ltd. and Western Mining Corporation in coal, specifically in Queensland, but to extend to other States as required. Three methods of getting into the coal business were discussed:-



- (a) Exploration on virgin ground likely to contain coal.
- (b) Application to the Minister of Mines in Queensland for permission to explore on areas at present under ministerial reserve.
- (c) Purchase of an interest in leases held by other companies.

In relation to (a) and (b) above it was agreed that the first step should be to conduct some research into the available literature before making any decision to take any more definite action. Broken Hill South are to take the initiative in this and all relevant information obtained would be made available to both parties; Broken Hill South and Western Mining Corporation will each meet 50% of the costs.

On completion of this preliminary investigation, it would be mutually decided whether Western Mining Corporation and Broken Hill South would thereafter proceed independently if it was fair and practicable to do so or whether they would conduct all their subsequent operations on a joint venture basis.

Failing agreement, the information obtained up to that time would still be regarded as held jointly on behalf of both parties pending the making of some other mutually acceptable arrangement.

In regard to (c) it was agreed that if a relatively small percentage (such as 30%) only could be obtained in existing leases the resultant 15% each for Western Mining Corporation and Broken Hill South would probably be rather small and perhaps the full interest ought to be left in one company's hands. This would be a matter for negotiation at the time. There seems little doubt that if it was 50% or more there would be room for two parties to participate.

It was rather difficult to be categorical about what arrangements should be made but each party would inform the other of any negotiations in which it became involved with other companies and would, if and so far as practicable and appropriate, carry on such negotiating on behalf of itself and the other party.

The only purpose of this letter is to set out the matters discussed at the meeting and to form a base for initial action. It will no doubt be necessary for something more formal to be prepared once a decision has been made to go ahead one way or another, and it would be the intention of both parties to arrive at a more detailed arrangement as soon as possible. Until this is done, I suggest that either party should be permitted to retire from the joint activities by giving one month's notice to the other party.

Kind regards,

Yours sincerely,

W.M. Morgan  
Managing Director

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WESTERN MINING CORPORATION LIMITED

CONFIDENTIAL

360 Collins Street,  
Melbourne, Victoria, 3001.

AMP/MM

19th July, 1971.

MEMORANDUM FOR : Mr. W. H. Morgan.

FROM : A. H. Parbo.

WMC/BHS RELATIONSHIPS RE COAL IN QUEENSLAND

I have recorded in a separate memorandum my discussion with Mr. Howell on 15th July, 1971. This discussion resulted in a clearer understanding of the differences between ourselves and B.H.S., and we now have all the information necessary to make a final decision in this matter.

It is desirable that a clearcut and final decision be made at an early date. As the W.M.C. officer most closely involved in negotiations with A.A.O. and the Japanese and in discussions with B.H.S., I feel that I should record my views on what the decision should be. This memorandum contains my recommendations and explains the reasoning leading up to these recommendations.

I believe that W.M.C. considerations should start with the original understanding between W.M.C. and B.H.S. What was the purpose and intent of the discussions on 9th September, 1970?

Both companies wanted to acquire interests in coal, particularly in Queensland. Both felt that it would be mutually advantageous to co-operate instead of competing. It was decided to pool the resources by:

- (a) B.H.S. concentrating on acquiring exploration areas and W.M.C. concentrating on negotiating entry into existing projects.
- (b) Each offering the other a half interest in what could be obtained.

It is worth repeating the correspondence between W.M.C. and B.H.S. recording this understanding as it is essential to assessing the sincerity of W.M.C. attitude and subsequent actions. I have underlined passages which are important in this regard.



September 10th, 1970.

Mr. M. W. Howell,  
Executive Director,  
Broken Hill South Ltd.,  
360 Collins Street,  
Melbourne. 3000.

Dear Murray,

This will confirm our conversation yesterday concerning proposed joint activities of Broken Hill South Ltd. and Western Mining Corporation in coal, specifically in Queensland, but to extend to other States as required. Three methods of getting into the coal business were discussed:-

- (a) Exploration on virgin ground likely to contain coal.
- (b) Application to the Minister of Mines in Queensland for permission to explore on areas at present under ministerial reserve.
- (c) Purchase of an interest in leases held by other companies.

In relation to (a) and (b) above it was agreed that the first step should be to conduct some research into the available literature before making any decision to take any more definite action. Broken Hill South are to take the initiative in this and all relevant information obtained would be made available to both parties. Broken Hill South and Western Mining Corporation will each meet 50% of the costs.

On completion of this preliminary investigation, it would be mutually decided whether Western Mining Corporation and Broken Hill South would thereafter proceed independently if it was fair and practicable to do so or whether they would conduct all their subsequent operations on a joint venture basis.

Failing agreement, the information obtained up to that time would still be regarded as held jointly on behalf of both parties pending the making of some other mutually acceptable arrangement.

In regard to (c) it was agreed that if a relatively small percentage (such as 30%) only could be obtained in existing leases the resultant 15% each for Western Mining Corporation and Broken Hill South would probably be rather small and perhaps the full interest ought to be left in one company's hands. This would be a matter for negotiation at the time. There seems little doubt that if it was 50% or more there would be room for two parties to participate.



It was rather difficult to be categorical about what arrangements should be made but each party would inform the other of any negotiations in which it became involved with other companies and would, if and so far as practicable and appropriate, carry on such negotiations on behalf of itself and the other party.

The only purpose of this letter is to set out the matters discussed at the meeting and to form a base for initial action.. It will no doubt be necessary for something more formal to be prepared once a decision has been made to go ahead one way or another, and it would be the intention of both parties to arrive at a more detailed arrangement as soon as possible. Until this is done, I suggest that either party should be permitted to retire from the joint activities by giving one month's notice to the other party.

Kind regards,

Yours sincerely,

W. M. Morgan  
Managing Director

22nd January, 1971.

Mr. W. M. Morgan, CM,  
Managing Director,  
Western Mining Corporation Ltd.,  
360 Collins Street,  
Melbourne. Vic. 3000.

Dear Bill,

Following on our short discussion of 21st January, I have re-read the letter which you sent me on 10th September, 1970. It seems possible to put on this letter a construction which was not intended at that time, and I am sure you will agree with my slightly different proposal.

Three possibilities of entering the coal business in Queensland were set out and it was agreed that South would take the initiative in relation to proposals (a) and (b) in your letter. Western Mining would concentrate on proposal (c) covering the possible purchase of an interest in leases held by other companies.

As your letter reads, South would make available its information for discussion by both companies, who would then decide whether to proceed alone or together. At that stage South would have made available to Western Mining Corporation all of its information for W.M.C. to use as it wished. On the other hand, unless W.M.C. were able to negotiate an interest of more than 30% in any likely area,

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it was proposed that one company only (presumably W.M.C. who have carried out the negotiations) would take the available interest. It seems unlikely with the lack of suitable available ground that a company holding a potential area would be prepared at this stage willingly to surrender much more than 30% of its interest.

Perhaps the situation could be covered by saying that if W.M.C. can negotiate a joint interest in a potential area already held, South has the right to refuse its proportion if the interest available is too low. I would be glad to have your reaction to this suggestion which, if it is acceptable to W.M.C. would make your proposal, so amended, a basis on which South would be prepared to work.

Kind regards,

Yours sincerely,

M. W. Howell,  
Executive Director

26th January, 1971.

Mr. M. W. Howell,  
Executive Director,  
Broken Hill South Limited,  
360 Collins Street,  
Melbourne. 3000.

Dear Murray,

Thank you for your letter dated 22nd January. This will confirm that we agree to the last paragraph in your letter in which you suggest that South should have the right to refuse its proportion of any coal property negotiated by W.M.C. if, in its opinion, the interest available was too low.

Kind regards,

Yours sincerely,

W. M. Morgan  
Managing Director

W.M.C. understanding of the arrangement is based on this correspondence, which in the recollection of W.M.C. staff present at the discussion on 9th September, 1970, (yourself, Doug Stewart and myself) correctly records that discussion. It is relevant to note that Mr. Howell's letter to you (some



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four months later) did not query or seek to amend the basic understanding recorded in your letter, but merely sought to lift the limitation on negotiated interests.

W.M.C. attitude based on the correspondence and the discussion on 9th September, 1970, may be summarised as follows:

- (a) The understanding as expressly stated in your letter, was very general. It had to be general as we were facing completely unknown circumstances.
- (b) Both companies wished to pool their resources in the loose manner mentioned, in the belief that both companies would benefit from such an arrangement.
- (c) If it was possible in the light of circumstances in each particular case to negotiate on behalf of the other party, then this was to be done. However, there was no obligation on either party to negotiate in a certain manner or to achieve a particular result other than to secure a "joint interest". The obligation was simply to do the best that could be done in all the circumstances, and no attempt was made in either the correspondence or in the discussion to define a "joint interest".
- (d) There was no obligation on either party to cease negotiations if it proved impractical to negotiate on behalf of both parties, or to obtain exactly equal rights for both parties.
- (e) There was, further, no exclusive limitation of B.H.S. to exploration and W.M.C. to negotiating entry into existing ventures. The companies would concentrate (take the lead) in these respective areas, but if circumstances dictated, either could take action in the other's area of responsibility. (See the second last paragraph of your letter of 10th September, 1970).

B.H.S. attitude is quite different. In spite of what is recorded in the correspondence, they say that they understood the arrangement to be as follows:

- (a) The understanding was equivalent to a formal joint venture, with the State of Queensland the stipulated joint venture area.
- (b) Neither company was entitled to act except on behalf of both joint venturers and was bound to negotiate to obtain equal rights for both joint venturers.
- (c) If either company could not negotiate in this manner then it was duty bound to discontinue negotiations.
- (d) Each company was exclusively limited to its own field, i.e. W.M.C.



could not acquire exploration areas and B.H.S. could not negotiate entry into joint ventures.

In my opinion the facts of the situation are quite clear and are as follows:

- (a) W.H.C. understanding accords with the letters written for the express purpose of recording what was discussed.
- (b) B.H.S. have chosen to interpret the understanding as a formal joint venture agreement. This clearly did not exist.

I believe that W.H.C. should not, either now or at any future time, enter into a formal joint venture agreement over an area as large as the State of Queensland. Our past experience with general joint venture agreements over very large areas is that these are not satisfactory. Also, I cannot see sufficient advantages in such a formal joint venture with B.H.S. to offset the disadvantages, such as limiting our freedom to take individual action and to negotiate under conditions under which B.H.S. could not or would not negotiate. The situations of the two companies are sufficiently different to make it possible for one to do what the other may not want to do.

As regards the general understanding between W.H.C. and B.H.S., one must therefore conclude that:

- (a) There was no "understanding" in the strict sense of the word; each company understood something different.
- (b) W.H.C. interpretation conforms to the written record of the discussion, while there is nothing on record to justify B.H.S. interpretation.
- (c) In any case W.H.C. would not wish to proceed either now or in the future on the basis of B.H.S. interpretation of the understanding.

The first decision which I believe W.H.C. must take is to discontinue the arrangement with B.H.S., although it may be argued that this is not necessary as there never was a mutually satisfactory and understood agreement between the two companies. Whatever the position, steps should now be taken to record that there is no arrangement.

As regards the Nail Creek project, it is clear that the differences of opinion have arisen from the different interpretations of the basic arrangement between W.H.C. and B.H.S. W.H.C. negotiated in the belief that it had to do the best it could in the circumstances; B.H.S. believed that W.H.C. was obligated to obtain for them exactly the same rights as W.H.C. was able to get for itself.



W.M.C. acquainted A.A.O. with the arrangement between W.M.C. and B.H.S. at the first meeting with A.A.O. Mr. Avery acknowledged the arrangement, but did not comment further until detailed discussions began in June, 1971. At that time Mr. Avery stated that:

- (a) A.A.O. agreed that W.M.C. could assign one-half of its interest to B.H.S.
- (b) However, A.A.O. looked to W.M.C. as its "mining partner", i.e. it regarded W.M.C. entry as contributing the necessary technical and operating skills to the project.
- (c) A.A.O. also did not wish to deal "with another Board and another set of lawyers at the joint venture table".
- (d) For reasons (b) and (c) A.A.O. required that W.M.C. should speak for both itself and B.H.S. at the joint venture table.

W.M.C. accepted these conditions as being reasonable requirements by the vendor of the tenements, and as being within W.M.C. terms of reference to negotiate "if and so far as practicable" on behalf of B.H.S.

Difficult negotiations with Marubeni regarding the entry of W.M.C. and Sumitomo into the project, which followed the above discussions between A.A.O. and W.M.C., were carried out on the basis that B.H.S. would have an assigned interest from W.M.C. but would not be a direct participant. Marubeni specifically required that any further direct partners to the joint venture would be admitted only with the approval of all existing participants and this was agreed.

B.H.S. expressed strong objections to the terms of entry negotiated by W.M.C. on their behalf and stated that:

- (a) They would not wish to join the project except as a principal.
- (b) In any case they considered that W.M.C. had an obligation to obtain for B.H.S. the terms B.H.S. required.

W.M.C. did not accept that it had such an obligation, but nevertheless did all it could to improve B.H.S. terms of entry by making representations to A.A.O.

After various discussions and exchange of letters between B.H.S. and A.A.O., the situation was reached on 1st July, 1971, where:

- (a) B.H.S. required written confirmation from A.A.O., Interstate, Marubeni and Sumitomo, that B.H.S. would be admitted to the joint venture as a direct participant.



- (b) Although not stated in the correspondence, W.M.C. had a verbal assurance from B.H.S. that this did not mean participating in management or W.M.C. not being able to speak on behalf of B.H.S.
- (c) A.A.O. had replied to B.H.S. that although it would do all it could to meet B.H.S. requirements, it could not guarantee anything as changes in joint venture arrangements had to be approved by all parties and legal and taxation implications required consideration.
- (d) For Stock Exchange and other reasons, an announcement regarding the joint venture had to be made immediately the agreement between W.M.C., A.A.O. and Interstate Oil was signed.
- (e) The Japanese partners, according to Japanese custom, wanted to visit all prospective customers in Japan within the next few days and explain the new joint venture arrangements to them.

B.H.S. were therefore asked to decide by mid-day, 2nd July, 1971, whether they wished to participate or not, so that they could be included in the announcement and in the Japanese explanations if appropriate.

W.M.C. also explained that in the interests of its own shareholders, the offer could not be left open to B.H.S. after the deadline mentioned, on the terms required by B.H.S., as that would amount to granting B.H.S. a free option for an indefinite period.

B.H.S. replied that it did not wish to accept the offer unless all the other parties would agree to its admission as a direct participant in the joint venture.

W.M.C. consequently regarded its offer as having been declined by B.H.S. and replied on 4th July, 1971, withdrawing the offer.

From my discussion with Mr. Howell on 15th July, 1971, the B.H.S. requirements have not changed, i.e. B.H.S. still require to know whether they can be admitted as a direct participant before deciding whether to join the venture.

W.M.C. is now in the following situation:

- (a) It believes that it has carried out any obligations, legal and moral, that it had to B.H.S. following the September, 1970, discussions.
- (b) The differences with B.H.S. which led to B.H.S. deciding not to accept the W.M.C. offer of 1st July, 1971, arose largely out of B.H.S. interpretation of the arrangement between W.M.C. and B.H.S. I believe that the B.H.S. interpretation was and is demonstrably incorrect.



- (c) W.M.C. announcement to shareholders was made, at B.H.S. request, without any mention of B.H.S.
- (d) The offer to B.H.S. has been formally withdrawn.
- (e) A.A.O. has been informed accordingly.
- (f) Whilst the Japanese partners were aware of the possible assignment of half of W.M.C.'s interest in the project to B.H.S., they now understand that B.H.S. will not be participating and the project has been explained to the Japanese Steel Mills on the basis of W.M.C. having a 25% interest.

W.M.C. must decide whether there is any reason why the withdrawn offer to B.H.S. should be re-opened and, if so, under what conditions.

The advice of our legal advisers is that W.M.C. has no legal obligation to re-open the offer.

I believe that we also have no moral obligation to do so. I believe that our interpretation of the original understanding is correct, and we cannot take any responsibility for B.H.S. having interpreted the understanding incorrectly. Furthermore, had the B.H.S. understanding been explained to us at an earlier date we would not have agreed to proceed on such a basis, nor are we prepared to do so in the future.

The only possible reason for reopening the matter would be that although the B.H.S. interpretation is incorrect, they nevertheless appear to believe that this should have been the arrangement, i.e. they are not prepared to admit (at least not to W.M.C.) that they were wrong. It is consequently possible that relations between W.M.C. and B.H.S. may become strained if W.M.C. does not re-open the offer.

W.M.C. must weigh the value of continued friendly relations with B.H.S. against the value of maintaining its present stand.

I am unable to judge whether or not relations with B.H.S. will in fact become strained if we do not re-open the offer. It is possible that the B.H.S. attitude is a negotiating stance to obtain the best deal they can for their company and that they privately admit to having no case, in which case friendly relations between W.M.C. and B.H.S. are not involved.

On the other hand there could be amongst the B.H.S. people concerned the feeling that W.M.C. have used their negotiating position to get a good bargain for themselves without worrying too much about B.H.S. Such a feeling would be unwarranted, but could nevertheless exist and could result in some residual resentment if W.M.C. take a firm stand.

W.M.C. has announced to its shareholders that it has negotiated a



25% interest in the Nail Creek venture. It has no legal or moral obligations to assign one-half of this interest to B.H.S. now that the offer has been withdrawn. Should the offer be re-opened, W.M.C. will have to justify doing so by receiving adequate compensation from B.H.S. and it is doubtful whether the suggestion of a suitable premium or other compensation would be received as reasonable by B.H.S. The objective of ensuring friendly relations may not be achieved in this way.

Another relevant aspect to consider is the future of joint coal activities between W.M.C. and B.H.S.

I reached the conclusion earlier that W.M.C. could not agree to operate under the conditions sought to be imposed by B.H.S., and that the arrangement must be terminated if one had, in fact, been mutually arrived at. B.H.S. are likely to develop in the future other coal interests independently from W.M.C. and conflicts of interests could conceivably arise. In any case, during the September, 1970, discussion W.M.C. visualised an arrangement where one of the partners would take the lead in managing the joint interest and the other is a "passive" participant, such as is the case with various exploration joint venture arrangements between W.M.C., B.H.S., and other companies. It is now quite clear that this will not be the case with B.H.S. in the Nail Creek venture. Although B.H.S. might agree that W.M.C. can represent it at the joint venture table, there seems no doubt that B.H.S. will take a keen interest in the venture and that W.M.C. will finish up the meat in the sandwich - negotiating as it were between B.H.S. and the other joint venturers.

With the total interest to be shared being relatively small - 25% - W.M.C. must consider whether this likely demand on the time of its senior executives is justified under the circumstances.

If it is decided to re-open the matter, one of the first matters to be negotiated in detail would have to be an agreement between W.M.C. and B.H.S. regarding the management and control of their joint interest by W.M.C.

A further consideration in the decision is the position of our joint venture partners and the possible effect on the joint venture of re-opening the B.H.S. offer.

A.A.O. have been advised that B.H.S. have elected not to take up their assigned interest. This statement will have to be withdrawn, although there should not be much difficulty in doing so. The situation of our Japanese co-venturers is more difficult.

W.M.C. has now been admitted and introduced to the main customers - the Steel Mills - as the mining partner with a 25% interest in the joint venture. A later unexpected reduction in this interest to 12% could



well be interpreted by the Steel Mills as indicating a weakness in the venture, in two ways:

- (a) The venture cannot be very good if W.M.C. is willing to give away half of its interest.
- (b) The interest of the mining partner being only 12½%, the venture may not be given the attention it deserves by W.M.C. and the reliability of the operation may be in doubt.

The seriousness of these possible repercussions cannot be gauged until Japanese opinion can be tested, but the possibility that the joint venture may be weakened as a result must be taken into account in our decision. If any decision to re-open the matter was contemplated, prior discussions with A.A.O. would be necessary to obtain their views on possible Japanese re-action.

It is true that the problems mentioned would have existed if B.H.S. had accepted W.M.C. offer prior to the announcement, and W.M.C. (and A.A.O.) were willing to accept the consequences. The difference between the pre-announcement situation and now is that previously W.M.C. had no choice: it felt obligated to make the offer to B.H.S. We no longer have such an obligation and therefore the factors mentioned must be taken into account.

What should W.M.C. decide?

Summarising the discussion so far:

- (a) The original arrangement with B.H.S. was mutually misunderstood and must be discontinued as the two understandings are incompatible.
- (b) W.M.C. and B.H.S. are therefore unlikely to continue as partners in coal ventures.
- (c) W.M.C. has a clear conscience regarding its handling of the Hail Creek negotiations.
- (d) The main object of re-opening the withdrawn offer to B.H.S. would be to ensure continuance of friendly relations with B.H.S.
- (e) Such a new offer would have to be on some basis which gives satisfactory compensation to W.M.C. shareholders, and is unlikely to be well received by B.H.S.
- (f) Re-opening the offer to B.H.S. may not, as a result, achieve the objective of re-establishing friendly relations.
- (g) If W.M.C. and B.H.S. go their separate ways in future coal projects, there could be conflicts of interests and W.M.C. representation of B.H.S. at the joint venture table could be a difficult and time-consuming process.

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- (h) Re-opening the possibility of B.H.S. entry could have repercussions in Japan and could weaken the joint venture. This weakening would be aggravated if B.H.S. were to wait on the sidelines while the joint venture agreement was being completed, particularly if it then decided not to participate.

My recommendation, after weighing the above factors as impartially as I can, is as follows:

- (a) B.H.S. should be advised that W.M.C. cannot continue in the joint arrangement with B.H.S. under the conditions required by B.H.S.
- (b) Because the joint activities will terminate, because a further opportunity for B.H.S. to participate in the Nail Creek Project would have to be under conditions which B.H.S. is unlikely to find acceptable, and because of the possible repercussions in Japan of endeavouring to secure B.H.S. admittance on terms required by B.H.S., W.M.C. does not wish to re-open the offer.
- (c) W.M.C. recognises that, as B.H.S. has not been able to secure an interest in the venture negotiated by W.M.C., W.M.C. is morally not entitled to any advantages that may have accrued to it through B.H.S. activities in securing coal exploration rights. To date, W.M.C. has not benefited from such activities by B.H.S. and it will forego any advantages and rights it may have.
- (d) Both companies will revert to the situation existing before 9th September, 1970.

A. H. PARBO

c.c. Mr. W. M. Morgan  
Sir James Forrest  
Mr. A. H. Parbo  
Mr. D. P. McIntyre



## WESTERN MINING CORPORATION LIMITED

AIP/MH

26th July, 1971.

CONFIDENTIAL

Mr. M. W. Nowell,  
 Executive Director,  
 Broken Hill South Limited,  
 360 Collins Street,  
 MELBOURNE. VICTORIA. 3000.

Dear Murray,

Thank you for your letter and attached notes of 21st July, 1971.

Following our telephone conversation discussing the notes, I would like to put on record some of the comments which I made.

I do not agree with your interpretation of our discussion on Westminer's obligation to negotiate for each company on an equal basis (page 2, paragraph 2 of your notes).

My views on this are as follows:

1. The arrangement between W.M.C. and B.H.S. was meant to be of benefit to the companies, not a disadvantage to either of them.
2. The arrangement as regards applications for exploration areas and as regards negotiations with outsiders were, as shown in Mr. Morgan's letter of 10th September, 1970, regarded necessarily as two quite different situations.
3. So far as outsiders were concerned "it was rather difficult to be categorical but either party would if and so far as practicable and appropriate" negotiate on behalf of both

companies. This obviously envisages circumstances under which it would not be practicable or appropriate to so negotiate.

4. Such circumstances would exist if the Vendor wished to negotiate with one only of the companies, or if he decided that the conditions of entry for one company were different from those for the other.
5. If this was the clearly stated requirement of the vendor and if the Company which could continue negotiations then had to retire because this was the case, that company would be obviously at a disadvantage.
6. The other company would not be at any disadvantage as the vendor would either not wish to negotiate with it at all or would wish to do so only on terms stated.
7. My view, as I put it to you, was that under these circumstances the company able to proceed should be entitled to proceed as otherwise it would suffer a disadvantage.
8. While we discussed this in terms of Westminer, I particularly made the point that the same circumstances could apply in reverse, such as in the case of B.M.S. endeavouring to negotiate farm-ins on exploration areas, and that we accepted that.

You will note that this reasoning is different from your record which says "that the domestic interest of Westminer would prevail and in consequence that of Broken Hill South would have to suffer". I most strongly disagree with the view that this is what has happened in connection with the Hail Creek Venture. Broken Hill South has not suffered but the terms offered to South by the vendor were different from the terms offered to Westminer.

I also differ with the implications of your third paragraph where you recall some loose discussion about the management of any possible operations in Queensland. We did discuss this, but only in a very general way and certainly not on the basis that W.M.C. was obligated to negotiate in a way in which Broken Hill South would have the management of any operations that resulted. We did feel that other things being equal, Broken Hill South should perhaps be the manager, such as if it was able to obtain exploration areas and if operations resulted from such exploration work or if the circumstances made it sensible in the case of a negotiated interest. In the case of Hail Creek, this has clearly not been so as the vendor's requirement has been that W.M.C. should be its mining partner. In the case of negotiated interests, of course, no definite arrangement in this regard could have been made as there could be no guarantee that the managership would even be available.



Had we agreed that it was Westminter's obligation to negotiate N.H.S. into the management situation in all cases as you seem to imply at the top of page 3, we would have certainly felt this to be of sufficient importance to record it in the correspondence following the discussion. Our understanding that the discussion regarding management was very loose is confirmed by the fact that neither we, nor you, mentioned any such arrangement in the correspondence.

I would like you to amend paragraph 3 of page 3 where you state that I said the joint venture agreement would be ready for signing in a couple of weeks. What I said was that the first draft would be ready for circulating in a couple of weeks. The time by which the agreement will be ready for signing depends very largely on the Japanese participants and how long it takes to refer things to and from Tokyo. I personally expect it to take at least three months and possibly six months.

One matter which we did not discuss on the telephone but which has occurred to me since reading your notes again, is that all our discussion in recent weeks has been about Westminter and its obligations to Broken Hill South. The arrangement we thought existed was, of course, two-sided, that is, Broken Hill South was to concentrate on obtaining exploration prospects.

Would you please let me have a brief summary of progress made by you to date for our general information.

I have not written this note to prolong the argument but merely to put on record my interpretation of some of the matters we discussed. Please accept my comments in this spirit.

Kind regards.

Yours sincerely,

A. H. Parbo  
Deputy Managing Director

*C.C. L. Jones, Recd.*

WESTERN MINING CORPORATION LIMITED

0000307

ND/MH

28th July, 1971.

The Secretary,  
Associated Australian Oilfields N.L.,  
411 Collins Street,  
MELBOURNE, VICTORIA, 3000.

Dear Sir,

According to our letter agreement of 4th July, 1971, regarding the Nail Creek Project, W.M.C. has the right subject inter alia to Clause 18(c) of that agreement to assign one-half of its interest to Broken Hill South Limited. You may recall that prior to the signing of the agreement we informed you that Broken Hill South Limited had been offered such participation but had not accepted it.

For various reasons, we would now like to re-open the matter of Broken Hill South's entry into the venture. Before further discussions can take place between W.M.C. and B.H.S. regarding the arrangements under which the two companies could work together in this venture, I request that you state in detail the terms under which A.A.O. and Interstate Oil as the principal vendors of the property would agree to B.H.S. participating in the venture. We appreciate that now that the joint venture has been formed the two Japanese partners would have to agree to these conditions. However, knowing your views in the first instance will enable us to carry out further discussions with Broken Hill South Limited.

Broken Hill South Limited would like to arrange an early discussion at which officers representing their company, A.A.O. and W.M.C. could discuss a draft of the joint venture agreement. Will you please indicate whether and when you would be prepared to participate in such a meeting.

I have sent a copy of this letter to Mr. H. W. Howell, Executive Director, Broken Hill South Limited, for his information. Please send Mr. Howell a copy of your reply.

Yours sincerely,

c.c. Mr. H. W. Howell  
Mr. W. M. Morgan  
Sir James Forrest  
Mr. H. O. Clark  
Mr. D. P. McIntyre

A. H. Parto  
Deputy Managing Director



AJP/WH

28th July, 1971.

CONFIDENTIAL

Mr. M. W. Howell,  
Executive Director,  
Broken Hill South Limited,  
360 Collins Street,  
MELBOURNE, VICTORIA. 3000.

Dear Murray,

Following our discussion on 15th July, 1971, and our subsequent correspondence, I have now consulted the independent members of the W.M.C. Board regarding their views on how the situation regarding the Hail Creek Coal Project could be resolved. Our position is summarised as follows:

1. We believe that there are no legal or other obligations on W.M.C. to re-open the matter after the exchange of letters in early July, 1971.
2. We do, however, wish to maintain the amicable relationship which has existed between W.M.C. and B.H.S. I have been asked to do all I can to ensure the continuation of this relationship.
3. We are therefore willing to review the Hail Creek case, in the hope that the situation can be resolved to the satisfaction of all parties.
4. A.A.O. had previously stated the conditions under which B.H.S. could join the venture. Before proceeding further, it appears essential to establish whether these conditions still apply and, if so, to clarify them. I have therefore written to A.A.O. as per copy of letter enclosed.



5. When A.A.O.'s answer is received we can then consider whether we can arrive at an arrangement acceptable to both B.H.S. and W.M.C. which will enable B.H.S. to participate in the Nail Creek Project within the conditions set by A.A.O.
6. If B.H.S. and W.M.C. can come to a mutually satisfactory arrangement within the terms set by A.A.O., it will then be necessary to consult Interstate Oil Ltd. and the two Japanese venturers in the Nail Creek Project as any such arrangement must also be approved by all of them.

I note your request in your letter of 26th July, 1971, for an early conference between yourself, Mr. Tyler, and officers of A.A.O. and W.M.C. to discuss a draft of the joint venture agreement. You will note that we have passed this request on to A.A.O. in our letter to them.

I agree that the matter of B.H.S. entry to the venture must be resolved expeditiously because, as we have said before, we cannot allow B.H.S. what is in effect an indefinite free option. It is also necessary to proceed with various joint venture matters without delay.

I will contact you again after A.A.O.'s reply has been received.

Although we are willing to review the Nail Creek case, we do not wish to continue any general understanding regarding coal ventures between the two companies on the basis of your interpretation of the understanding. Consequently, to the extent that there was any understanding, we hereby give one month's notice, as provided for in Mr. Morgan's letter to you on 10th September, 1970, that we wish to retire from further joint activities in coal with B.H.S. Limited.

Kind regards,

Yours sincerely,

A. H. Parbo  
Deputy Managing Director

c.c. Mr. W. M. Morgan  
Sir James Forrest  
Mr. H. O. Clark  
Mr. D. P. McIntyre



**WESTERN MINING CORPORATION LIMITED**

**STRICTLY CONFIDENTIAL**

00003

The Secretary,  
Associated Australian Oilfields N.L.,  
447 Collins Street,  
MELBOURNE, Victoria. 3000

August 6, 1971.

Dear Sir :

## MAIL CREEK COAL VENTURE.

I refer to my letter to you dated July 28th, and previous correspondence and discussions. On the same date, I wrote to Mr. M. W. Howell of Broken Hill South Limited, enclosing a copy of my letter to you and advising him that we were willing to review the question of B.H.S.'s possible entry into the Hall Creek Project. I am enclosing a copy of my letter to Mr. Howell for your information. Mr. Howell has replied, stating that he considers that the procedure which was proposed in my letter prejudices B.H.S.'s position.

B.H.S. has maintained that W.M.C. ought to have negotiated for B.H.S. equal conditions to those negotiated for itself. W.M.C. has maintained that it was obliged to negotiate within the limits set by the vendors of the property. We have understood A.A.O.'s position to be that it is willing to accept B.H.S.'s entry to the venture by assignment of a one-half interest from W.M.C., but was not willing to accept B.H.S. as a full and direct participant in its own right. However, it now seems that for B.H.S. to participate, the only situation acceptable to both W.M.C. and B.H.S. is for B.H.S. to be a full and direct participant in its own right, accepting one-half of all of the benefits and obligations, including management, negotiated by W.M.C. in the Agreement dated July 4th with A.A.O. and I.O.L.



0000326

2.

Accordingly we request A.A.O.'s agreement to such full and direct participation by B.H.S. We appreciate that the approval of the Japanese venturers to this proposal would have to be obtained in due course, but in the meantime would be grateful if you would inform us of A.A.O.'s attitude. We suggest that you also advise B.H.S. direct.

Yours sincerely,

*AH Parbo*

A. H. PARBO,  
Deputy Managing Director.

Enc. 1.

## MARKETING IN WMC - WITH PARTICULAR REFERENCE TO OLYMPIC DAM

By

Ian J Duncan

The marketing of Olympic Dam (OD) copper, uranium, gold and silver required selling techniques new to WMC. These included the international sales of uranium oxide to nuclear power companies and LME 'A' Grade copper cathodes to rod and wire manufacturers. The gold and silver produced was in the form of highly refined, 'bankable' ingots (bullion) and not impure doré as produced in other parts of the company. This opened the possibility of selling precious metals to buyers, other than refineries such as The Perth Mint (now part of the Gold Corporation) and Johnson Matthey (Aust) Ltd. A new joint company Olympic Dam Marketing Pty Ltd (ODM) was established to market OD product. To understand the marketing ethic of ODM it might be beneficial to reflect on the history of sales and marketing in WMC since its formation in 1933. I make a distinction between *sales* and *marketing* although in both cases the product is converted into cash revenue.

*Selling* is the taking of a price related to the market but discounted because of the variability and impurity of the product, as in the sale of gold doré to a refinery. *Marketing* determines what the broader market requires and consistently producing a specified product to meet that requirement, a true commodity. Marketing should optimise the potential revenue from the broadest possible market. The Olympic Dam mineralogy led us to produce products of the highest grade to insure that all radioactive elements were removed from the copper, gold and silver. It was also necessary to minimise any deleterious elements in the calcined uranium oxide product ( $U_3O_8$ , inaccurately referred to as yellowcake). For both copper and uranium, ODM entered into long-term contracts typically of 10 years, with options for extension. These contracts provided comfort to the providers of capital for the project and allowed ODM to remain a very small, economical operation.

Traditionally, WMC was not strong on marketing its products as its origin was in gold mining. Typically the gold was produced as impure doré and when ready, shipped to The Perth Mint. After Mint assay the company was paid for the gold content at the published average world gold price for that period, less a small fee. The typical assay for gold doré was approximately 85-90% gold and, depending upon the mineralogy of the particular resource, could contain other metals such as tellurium, silver, copper and nickel and other deleterious elements. This form of sale is best described as price taking for a product within a wide range of purity and no delivery requirement schedule. The sale however had certainty and there was little risk of non-payment to the company. There was no merit in considering further refinement of precious metals within WMC as the costs would have exceeded any potential increase in net revenue.

In 1960, WMC acquired a 50% interest in a high-grade talc deposit at Three Springs in WA. The WMC manager appointed to the project was Paul McInerney (followed by Patterson, Johnston) who through their skills and personality, beneficially ran the project and marketed the product. This was perhaps the first time in WMC's corporate life where it produced a mineral product to meet specifications as to impurities. As there was no formal world pricing for talc as for gold, price had to be negotiated. This relatively small project established sales agreements in Europe and Japan and proved to be one of the most profitable operations in WMC.

WMC's second non-gold operation was the Geraldton Operations Joint Venture, the first iron mining and exporting operation in Western Australia. This joint venture between WMC (50%) and the American partners, Hanna and Homestake, required the marketing of its product to the



expanding Japanese steel industry. Bill Morgan undertook the marketing role in Japan as part of the development of the resource. As a product specification, delivery rate and price needed to be agreed between the buyer and seller, a long-term arrangement was entered into, sufficient to underwrite the financing of the project. It is to be remembered that the analysis for iron ore need not be specific but it must comply with buyer requirements for iron content, sizing and deleterious elements. Again this was marketing of a specified product that went well beyond the methods used for the sale of gold doré.

In the late 1950's and early 1960's WMC quantified the bauxite resources of the Darling Ranges in Western Australia. It also developed the concept for an alumina refinery at Kwinana (Western Australia) and an aluminium smelter at Pt Henry (Victoria). The preliminary marketing of alumina commenced principally in Japan on a scale sufficient to underwrite the establishment of a commercial refinery. In 1961, Alcoa of Australia Pty Ltd was formed with the Australian companies retaining 48.6% of the equity. From this point, Alcoa undertook all marketing of alumina and aluminium and while the procedures and outcomes of their efforts were known to the Australian directors, there was no exchange of marketing techniques between Alcoa and any part of WMC.

In 1966, WMC discovered nickel at Kambalda and initially sold nickel concentrates to smelters and refineries in Canada and Japan. Subsequently WMC built a refinery at Kwinana (KNR) and entered into the marketing of nickel briquettes, a product that was not included in LME standards at the time. The price was determined by a small discount from the official LME price for nickel cathode. Buyers were established in UK/Europe, USA and Australia. Many of the elements used for the marketing of Olympic Dam's copper were evident in the marketing of the briquettes. Steel and chemical industry buyers were of some substance, were likely to perform within the long-term evergreen contracts and all had pleasant working relationships with WMC personnel.

As the briquette production expanded, two experienced nickel marketing executives (Bob Allard, Tom Moorman) were recruited and with David Green, offices were established in London and Pittsburgh. WMC subsequently established a world scale nickel smelter (KNS) near Kalgoorlie which produced nickel matte (about 65% Nickel) as a feed to other companies' smelter/refineries, particularly in Japan. The marketing of the unrefined matte was based upon an agreed specification range, compensation for some contained precious metals; world related pricing and an annually negotiated deduction aligned with the buyer's smelting/refining costs. These contracts were regarded as evergreen as the buyers were well chosen for their ability to perform over a long term.

In the early 1980s WMC promoted the development of its Yeelirrie uranium project in Western Australia. The development required environmental and governmental approvals, government oversight of all marketing of uranium and a need to finance the project 'off balance sheet'. This was due to internal competition for capital within WMC and some nervousness as it took its first steps into the production and supply of uranium. A triangular arrangement involving development capital and a guaranteed market for the product was near completion when the Australian Government announced the 'Three Mine Policy' which excluded the development of Yeelirrie. As a legacy of this situation a small number of WMC personnel (Ian Duncan, Jim Munro) had gathered some knowledge of the uranium market, safeguards and the world nuclear fuel cycle, knowledge that would ultimately assist in the marketing of Olympic Dam uranium.

The Olympic Dam mineral resource was discovered by WMC in 1975 and was of such potential that a partner of substance was required; BP Minerals Limited being chosen in 1979. The WMC/BP joint venture concentrated on the further evaluation of the resource such that it would then be able



to guarantee ore for a commercial operation, develop and pilot metallurgical processes, complete the environmental approvals and established a presence on the site. The companies planned to finance the project from their combined resources. It became clear by 1984 that the project would be developed and so the preliminary marketing of the four commercial products, copper, uranium, gold and silver commenced.

Based on the earlier work on Yeelirrie, Duncan and Munro (who also had experience from CRA's Mary Kathleen uranium operation in the Northern Territory) undertook the preliminary marketing of uranium. Later Alan Marks, ex ANSTO, joined the team. As distinct from uranium there was some corporate understanding of the marketing for refined copper as a commodity, consistent with experiences in nickel briquette marketing.

BP Minerals had several people previously involved in the marketing of metals (particularly Jim Squire, Miles Rotherham) but had no experience in the marketing of uranium. The joint marketing company Olympic Dam Marketing Pty Ltd (ODM) was formed and this was managed by WMC based in Melbourne (Duncan as Managing Director and General Manager, Squire representing BP and London based). From the outset it was decided that the marketing team should be kept to as few people as possible and to use corporate legal and financial services as required.

The criteria for buyers of Olympic Dam products included that they each take a significant ratio of our production (say at least 10%) and that each would be companies of substance that we could work with easily. ODM held a special relationship with these so-called 'grandfather' companies. As with all new minerals projects, there can be delays or variations to initial product quality and quantity and therefore, ideally, the buyer needs to accept some flexibility.

After discussion within the joint venture (WMC/BP), Duncan developed a 'back of diary' list of potential buyers for all likely products. The small team then systematically worked to achieve binding long-term contracts, sufficient to cover the initial production capacity. Of the copper companies on the list, 80% were contracted. Of the nuclear utility list, about 60% were contracted but sufficient to take all of the production. How this approach would differ these days where companies would require marketing assessments running to hundreds of pages and possibly involving one or more external consultants.

The marketing of uranium needs to take into account that the product from the mine/mill is an impure mixture of uranium oxides, generally referred to as  $U_3O_8$ . The product can therefore vary marginally as to the quantity of uranium contained in any shipment of concentrate. The product is often referred to as 'yellow cake', although in the OD case it has been further calcined to drive off moisture and ammonia and is in the form of dry, dense, grey granules. It must be technically acceptable for the next step in the uranium fuel cycle, that of chemical conversion to a pure uranium hexafluoride.

The value of the product is based on the  $U_3O_8$  content of the concentrate (about 99%) and not on the weight of the concentrate. It is packed into 400 litre drums and labelled to show its source, radioactivity and ownership. The product leaving the project is securely packed into standard shipping containers of approximately 20 tonnes gross weight and is delivered to a uranium conversion facility nominated by the buyer, at which point title is transferred to the buyer and payment is made.

The marketing of OD uranium was strictly to civil nuclear electricity generating companies and was monitored by national and international authorities. Sales could only be made to companies in



countries having Bilateral Safeguards Agreements with Australia and additionally, having full scope safeguards under agreement with the International Atomic Energy Agency (IAEA), a United Nations (UN) associate organisation situated in Vienna. For European utilities there is also the necessity for European Commission (EC, Brussels) oversight.

The Australian Government granted export approval only if such safeguards were in place and the project continued to meet environmental requirements. During the early life of OD, the Australian Government had a policy for the export of minerals that included a minimum floor price. This caused some concern to potential buyers but did give a price reference for ODM, without which lower revenues would probably have been obtained. History shows that uranium prices declined from the early 1980's to 2000 due to inventory liquidation, over supply, lower demand than earlier estimated and ultimately a return of military related material to the civil market. There has been some recovery to the spot price over the last two years and the gap between long-term and spot has narrowed.

The grandfather contracts were an essential element to the financial underwriting of the development of OD and its continued expansion. Because the original uranium pricing was higher than the spot market price, OD shipments have maintained a price premium since the beginning of production. As there is no formal long-term world market for uranium, the price obtained in each contract is a matter of negotiation with perhaps an annual variation to be agreed. More recently the spot market price can be one of the inputs into the price determination formula.

As the project matured and with a re-arrangement of the general management, James Eggins and Chris Lewis joined ODM, bringing with them experience in the marketing of metals, uranium and other energy commodities. Duncan became General Manager Olympic Dam Pty Ltd in April 1988 at which time Eggins headed up the marketing effort, reporting to Duncan. Project and marketing management was consolidated in Adelaide, South Australia. Eggins continues to manage the marketing of all of OD production.

Most of the grandfather contracts remain effective, 14 years after start up. The original buyers of OD uranium were utilities in Sweden, United Kingdom, Belgium, Japan and South Korea. As the project expanded, ODM added utilities in Finland, United States, Canada and France. Marketing efforts to utilities in Germany and Switzerland were unsuccessful due to those utilities being over-supplied from existing contracts and a contraction of their needs.

An element of the successful marketing of both uranium and copper was that we sought buyers that had similar requirements to ourselves. They invariably were large organisations that required a contract with one of the world's larger resources, as part of their policy of diversified supply. They also wished to be associated with a project that was likely to expand in the future, that had income from more than one product and was therefore buffered against a downturn as can happen with one-product companies.

The initial pilot plant work in 1982-84 was based on the expectation that the copper product would be an impure blister copper (about 97% copper) that would be sold to significant copper refineries as a feed for their smelters. We therefore formed contracts with smelter/refiners in the UK (2), Germany (2) and Belgium (1). This emphasis on European buyers reflected the state of the market at the time.

Continued metallurgical work demonstrated that due to the presence of uranium and its daughter products in the ore it would be wise to take our copper production to a highly refined 'A' grade



copper cathode (99.996% copper) by adding electrolytic and electro-winning refineries on site OD. This required ODM to resubmit proposals to all of the contracted copper buyers, an embarrassing step for a marketing team but fully backed by technical necessity. We found that four of the original five copper buyers agreed to remain contracted to us and to accept the change in product type. The other refinery declined, as OD product would then be too pure for their purposes. As the copper capacity expanded, ODM added buyers in Australia, Italy, France, Malaysia and India.

As early as possible after the commencement of production in 1988, ODM worked to have the OD copper product accredited by the London Metals Exchange, allowing both buyer and seller to trade the cathodes on that exchange if necessary. ODM chose buyers that would most likely use the cathodes for their own production of refined products. The LME registered brand for OD 'A' Grade cathode copper is 'OLYDA'. The base price for each contract is the daily posted LME A grade copper cathode price effective at the time of deliver. As OD quality usually exceeds the minimum LME specification, a further small premium is negotiated between seller and buyer on an annual basis.

The gold and silver produced at OD is electrolytically refined to at least mint quality (Gold 99.99%, Silver 99.95%) as distinct from the doré produced by other gold operations. These products can be sold directly into the market as bullion but at present are sold to The Perth Mint at the daily world price.

In 1993, BP Minerals' interest in Olympic Dam was purchased by WMC, converting the project and marketing company to wholly WMC ownership. There was little or no exchange between the marketing efforts of ODM and the marketing of other WMC products.

As OD expanded its production, the number of contracted buyers increased. The initial copper production of 35,000t increased to 80,000t per annum and this provided the opportunity to change the geographic distribution by adding buyers in Taiwan, SE Asia and Australia. Uranium production increased from 900t to 2200t per annum  $U_3O_8$  allowing additional contracts to be established with utilities in Finland, France, Canada and the USA.

The further significant expansion in 1998 to 200,000t per annum copper and 4,300t  $U_3O_8$  allowed for expansion to existing copper and uranium contracts and further diversification of contracted buyers. At this level of production, by-products have risen to 80,000 ounces of gold and 850,000 ounces of silver.

ODM observed that the gold content of jewellery, such as 18crt chain, had retail prices of up to 300% of the daily price for refined gold. As the cost to make chain was only a fraction of the margin between the daily and retail prices, there seemed to be an opportunity to produce and sell jewellery and thereby obtain a greater profit margin on the gold than to sell it as refined bars. A scheme was approved whereby ODM would produce a limited range of 18crt jewellery, advertise it to shareholders, produce items against firm prepaid orders for prices approximating 250% of the average daily price. The scheme was run three times and on each occasion ODM increased its profitability on the gold processed. The shareholder/buyers received gold from a project in which they had an interest. It was in a form that had use and appeal, and at prices below the equivalent 'high street' prices.

For the sale of uranium ODM established representatives in Japan, Europe and the United States. Further, in Japan an agent was also appointed for the sales of uranium. For copper sales in Europe and Japan, the same representatives were also used. The marketing team under the management of



James Eggins remains small with just three ODM people and three overseas representatives handling copper and uranium sales, backed up by an office of nine people covering safeguards, transport, warehousing and accounting. From the commencement of production in 1988, ODM has made sales of copper, uranium, gold and silver to the total value of A\$6,200,000,000 (A\$6.2bn) without incurring any bad debt or loss.

ODM appointed agents and representatives as follows:

- Initially ODM appointed Kanematsu Goshu in Japan as its uranium sales agent. (Goshu had represented Japanese iron ore buyers in dealings with the GOJV) In 1995 the Kanematsu agency was terminated, as it became clear that their senior management would not be suitable for the future expanded Japanese off-take. Mitsui and Company Limited replaced them.
- ODM (as with WMC) is also represented in Japan by AMRAS (Weatherstone, Virili, Rowe). This small organisation gives each of the WMC divisions an insight into Japanese commerce, language and political reality. Without this advice, ODM would be solely in the hands of the agent.
- Initially BP Minerals (Squire, Rotherham), being London based, acted more intimately with the European market for copper and uranium until their withdrawal in 1993. On their departure, ODM appointed Miles Rotherham as its London based representative for copper and uranium sales in Europe.
- Bob Rich, based in Massachusetts USA, was appointed as ODM's representative for uranium in North America.
- Alex Suvoltos was appointed ODM's representative in Korea.
- Agents for copper sales were also appointed in South East Asia and Taiwan.

As the marketing effort reached its peak of activity in the two years prior to the commencement of production in November 1988, there was some internal criticism concerning the need to contract for Cu sales when ultimately the product would meet LME standards and could be sold on any market. However the contracts for copper were pursued, as it was necessary to have long term relationships with the companies that would facilitate ODM's application for LME A Grade certification.

This policy was necessary to obviate the sale of small fragmented quantities with possibly increased commercial risk and an expanded sales team. It assured the uranium buyers that the project was underwritten for the sale of all of its products. Also as the marketing team was entrenched in completing complex drawn-out agreements with U buyers in a declining market it needed completion of the copper contracts to bolster its morale. This policy was successful as the nameplate capacities for copper, uranium, gold and silver were covered by long-term contracts by the commencement of production in September 1988.

Ian J Duncan DPhil, FTSE, FAusIMM, FIEAust

Perth, February, 2003