

WMC RESOURCES LTD  
Form 6-K  
January 07, 2005  
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# SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

## FORM 6-K

REPORT ON FOREIGN ISSUER

PURSUANT TO RULE 13a-16 OR 15d-16 OF  
THE SECURITIES EXCHANGE ACT OF 1934

Period: January 7 2005

## WMC RESOURCES LTD

ACN 004 184 598

Level 16, IBM Centre

60 City Road

Southbank, Victoria 3006

Australia

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.

Form 20-F  Form 40-F

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Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes  No

If  Yes is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b): 82-

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This report on Form 6-K includes the WMC Resources Ltd Target Statement released on January 4, 2005.

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorised.

WMC RESOURCES LTD

By: /s/ R.E. Mallett

Name: R.E. Mallett

Title: Assistant Company Secretary

Date: January 7, 2005

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**MEDIA RELEASE**

**04 JANUARY 2005**

**WMC lodges Target's Statement to reject Xstrata's \$6.35 offer**

In its Target's Statement released today, the Directors of WMC Resources Ltd (WMC) have unanimously recommended that shareholders reject Xstrata Capital Holdings Pty Limited (Xstrata's) conditional offer of A\$6.35 per share.

Your shares are worth considerably more than \$6.35 per share, WMC Chairman, Tommie Bergman wrote in an accompanying letter to shareholders. This is the view of your Directors and management, and it is supported by the Independent Expert's opinion and the WMC share price.

Your company is well managed and generating strong returns from strategic, world class assets offering real growth, Mr Bergman said. Your Directors believe it is in your best interests to reject Xstrata's offer and for your company to continue to pursue value creating options from our portfolio of world class assets.

**Independent Expert's Report**

WMC's Target's Statement includes the opinion of Independent Expert Grant Samuel & Associates Pty Limited (Grant Samuel). The Independent Expert's Report sets out Grant Samuel's opinion on the current Xstrata offer as well as detailed reasons used to form its view. The Report concludes that WMC should be valued in the range of \$7.17 to \$8.24 per share.

In Grant Samuel's view the Xstrata offer of \$6.35 per WMC share is neither fair nor reasonable, Grant Samuel said in its Independent Expert's Report, concluding that: shareholders would be better off not accepting the current Xstrata offer...

The principal approach used by Grant Samuel to value WMC's major assets was discounted \$US cash flow analysis. Production rates and operating and capital costs used as assumptions in its modelling were reviewed in detail by an independent technical specialist, AMC Consultants Pty Ltd (AMC).

**CEO commentary**

*On release of the Target's Statement, WMC Chief Executive Officer, Andrew Michelmore made the following statements.*

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Xstrata's conditional offer is aimed at one thing - creating value for Xstrata's shareholders. Xstrata is seeking to repeat the experience of the 2003 acquisition of MIM Holdings - WMC shareholders deserve more.

The real value in our exploration success, project developments, capital improvements, the Olympic Dam expansion and our nickel growth strategy is all still ahead of us. When you add the strength of current operations, it's a great time for shareholders to hold this portfolio.

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WMC shareholders own a third of known global economic resources of uranium in a rising market. The likelihood of a sustained strong commodity cycle will create enormous upside.

Xstrata's \$6.35 offer remains 87 cents per share or just over \$1 billion less than the market value of WMC based on last Friday's closing price on the Australian Stock Exchange.

The Grant Samuel report is an important input into our valuation of the company. It's pleasing to see a valuation that reflects the strength of current assets and performance. We believe the strategic value and growth potential of those assets provides plenty of upside.

The impact of Grant Samuel's foreign exchange rate assumptions results in assumed Australian dollar long term real commodity prices lower than average nickel and copper prices over the last decade. In addition, Grant Samuel's uranium price forecasts are at the bottom end of current views of a long term US\$20 to US\$30 per pound uranium price.

Any longer term commodity price improvements would only improve our outlook.

From the very first Xstrata approach, our response has been to focus on the current and prospective value for WMC shareholders and our Target's Statement continues this theme. The Independent Expert also supports the view we have maintained throughout Xstrata's offer is materially inadequate.

## **Lodgement and distribution**

WMC's Target's Statement was lodged with the Australian Securities & Investments Commission, and provided to the Australian Stock Exchange and Xstrata earlier today.

The statement will be mailed to every WMC shareholder by this Thursday, 06 January.

A copy of WMC's Target's Statement, including the Independent's Expert's Report, is also available from today at [www.wmc.com](http://www.wmc.com).

## **For further information, please contact:**

### ***Media***

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### ***Investors***

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**This is an important document  
and requires your immediate attention**

**If you are in doubt as to how to act, you should  
consult your financial or legal adviser immediately**

**Target's Statement  
by WMC Resources Ltd  
ABN 76 004 184 598**

**REJECT**

Xstrata's Offer is materially inadequate



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**Key Dates**

Date of Xstrata's Offer	21 December 2004
Date of this Target's Statement	4 January 2005
Scheduled Close of the Offer Period (unless extended)	28 January 2005

**Important Information**

This Target's Statement is given by WMC Resources Ltd (ABN 76 004 184 598) to Xstrata Capital Holdings Pty Limited (ACN 111 756 337), a wholly-owned subsidiary of Xstrata plc, under Part 6.5 of the Corporations Act in response to the Bidder's Statement dated 16 December 2004 given to WMC by Xstrata Capital.

You should read this Target's Statement in its entirety.

This Target's Statement is dated 4 January 2005. A copy of this Target's Statement was lodged with ASIC on 4 January 2005. Neither ASIC nor any of its officers takes any responsibility for the contents of this Target's Statement.

A number of defined terms are used in this Target's Statement. These terms are explained in section 6 along with certain rules of interpretation which apply to this Target's Statement.

### **No Account of Personal Circumstances**

This Target's Statement does not take into account the investment objectives, financial situation or particular needs of individual WMC Shareholders. WMC encourages you to seek independent financial and taxation advice before making a decision whether or not to accept Xstrata's Offer.

### **Forward Looking Statements**

This Target's Statement contains forward looking statements. All statements other than statements of historical fact are forward looking statements. Such statements are subject to inherent risks and uncertainties in that they may be affected by a variety of known and unknown risks, variables and other factors many of which are beyond the control of WMC. Actual events or results may differ materially from the events or results expressed or implied in any forward looking statement.

None of WMC, its officers or any person named in this Target's Statement with their consent or any person involved in preparation of this Target's Statement makes any representation or warranty (express or implied) as to the accuracy or likelihood of fulfilment of any forward looking statement, or any events or results expressed or implied in any forward looking statement, except to the extent required by law. You are cautioned not to place undue reliance on any such statement. Further information can be found in sections 2.6 and 2.7.

The forward looking statements in this Target's Statement reflect views held only as at the date of this Target's Statement.

### **WMC Shareholder Information Line**

WMC has established an official WMC Shareholder Information Line which WMC Shareholders should call if they have any queries in relation to Xstrata's Offer. The telephone numbers for the WMC Shareholder Information Line are 1800 067 505 (toll-free within Australia) or +61 3 9415 4198 (from outside Australia). Please note that, as required by the Corporations Act, calls to these numbers will be recorded.

Further information relating to Xstrata's Offer can be obtained from WMC's website ([www.wmc.com](http://www.wmc.com)).

REJECT Xstrata's Offer

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**Your Directors unanimously  
recommend that you REJECT  
Xstrata's Offer**

**To REJECT Xstrata's Offer, you should do nothing**

**Disregard all documents sent to you by Xstrata**

If you have any questions, please call the official WMC Shareholder Information Line  
on 1800 067 505 (toll-free within Australia) or +61 3 9415 4198 (from outside Australia)

REJECT Xstrata's Offer

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Chairman's Letter

4 January 2005

Dear Shareholder,

Recently, Xstrata announced a highly conditional takeover Offer for your Company at \$6.35 cash per WMC Share.

**Your Directors unanimously recommend that you REJECT Xstrata's Offer.**

Your Company is well managed and is generating strong returns from strategic and world class assets which offer real growth.

Your WMC Shares are worth considerably more than \$6.35 per Share.

This is the view of your Directors and management and is supported by the Independent Expert's opinion and the WMC Share price. This important document contains your Directors' detailed response to Xstrata's opportunistic Offer. It also contains an Independent Expert's report which concludes that Xstrata's Offer is neither fair nor reasonable.

As a fellow WMC Shareholder, you know that longer time horizons are required to deliver exploration success, project development and value realisation from capital intensive operations. While Xstrata's approach has been unwelcome in that it materially undervalues WMC, it has increased the focus on the emerging value of the Olympic Dam expansion, the uranium market and our nickel growth strategy. Your Directors expect that further value will emerge in the next six to 12 months in relation to a number of the Company's activities, including the Olympic Dam expansion and the exploration portfolio. Therefore your Directors believe that it is in your best interests to reject Xstrata's Offer and for your Company to continue to pursue value creating options from our portfolio of world class assets.

The Offer is at a discount to WMC's current share price and does not deliver immediate or certain cash. Indeed, Xstrata has indicated it will reduce the cash amount paid by it under its Offer by the amount of WMC's proposed dividend and capital return if you receive those during the Offer Period.

This Target's Statement sets out your Directors' formal response to Xstrata's Offer, including the detailed reasons why your Directors unanimously recommend that you REJECT the Offer.

**To REJECT Xstrata's Offer you should simply disregard all documents from Xstrata.**

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Don't surrender your share in a company that is generating record returns now and one that is uniquely placed for the future.

Yours sincerely

Tommie Bergman  
Chairman

*If you have any questions, please call the official WMC Shareholder Information Line on 1800 067 505 (toll-free within Australia) or on +61 3 9415 4198 (from outside Australia), Monday to Friday between 9.00 am and 6.00 pm (Melbourne time). Please note that, as required by the Corporations Act, calls to these numbers will be recorded.*

REJECT Xstrata's Offer

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**Why you should REJECT Xstrata's Offer**

Your Directors believe that Xstrata's Offer is materially inadequate

**Don't accept this opportunistic Offer**

The Independent Expert's opinion is that the Offer is neither fair nor reasonable

**Its value of WMC is \$7.17 to \$8.24 per Share**

WMC's assets are world class

**Don't give them up for a second class price**

Your management is delivering record results and returning value to you

**You are in a great position now**

Your Company is commencing a significant growth phase

**Don't sell before this value is fully realised**

A sustained strong commodity cycle will create enormous upside

**Don't miss out on your share**

You own one-third of the world's uranium resources in a rising market

**This is an outstanding energy position**

The market value of WMC is approximately \$900 million<sup>1</sup> above Xstrata's Offer

**The market shows Xstrata's Offer is materially inadequate**

Xstrata wants to create value for **its** shareholders at **your** expense

**Don't let them!**

Xstrata is trying to repeat the MIM experience

**Don't let Xstrata profit at your expense**

Xstrata's Offer is highly conditional

**Beware of the fine print**

Your Company has a great future

**Don't sell out now**

NOTE:

<sup>1</sup> As at 22 December 2004

**Don't give up your WMC Shares at this price**

REJECT Xstrata's Offer

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Your Directors believe that Xstrata's Offer is materially inadequate

**Your Directors believe that Xstrata's Offer is materially inadequate and doesn't reflect a fair value for your Company**

**Xstrata's Offer doesn't adequately reflect the value of your Company's**

World class assets

Strong operational performance

Record financial performance

Growth opportunities both near and long term

Exposure to a stronger for longer commodity cycle

Commanding position in the growing and highly strategic uranium market

**What is Xstrata really offering for your WMC Shares?**

In the fine print of its Offer, Xstrata has indicated that it will reduce the cash amount paid by it under its Offer by the value of any dividends or capital returns paid by WMC to you during the Offer Period. WMC has announced that it intends to pay a dividend and a capital return totalling 50 cents per Share in relation to the operation of your business during 2004. You have already earned these entitlements, predominantly before Xstrata's Offer was announced. This means that Xstrata's Offer for the future of your Company will be effectively \$5.85 per Share - this is below \$5.98 which was the highest closing price at which WMC Shares traded in the 12 months prior to the announcement of Xstrata's original proposal.

**Your Directors' view is supported by both the Independent Expert and the recent WMC Share price. Your Directors believe that you should reject Xstrata's materially inadequate Offer and, in the absence of a realistically valued offer, continue to benefit from the growth in WMC.**

**REJECT Xstrata's opportunistic and materially inadequate Offer**



NOTE:

- <sup>1</sup> The anticipated 2004 final dividend is subject to the approval of the WMC Board following the completion of WMC's 2004 accounts. The anticipated 2005 capital return is subject to approval by WMC Shareholders

REJECT Xstrata's Offer

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The Independent Expert's opinion is that the Offer is neither fair nor reasonable

**Grant Samuel, the Independent Expert, has valued WMC at between \$7.17 and \$8.24 per Share**

*WMC has world class copper, uranium and nickel assets. Olympic Dam is the world's fourth largest copper resource, the largest uranium resource and the fourth largest gold resource. The significant recent strengthening of the uranium market underpins the potential for a major expansion of Olympic Dam .*

*WMC's Nickel Business Unit is the world's third largest nickel producer, with low production costs and an expected life of over twenty years .*

*WMC is a uniquely attractive acquisition target in the international resources sector .*

*Accordingly, Grant Samuel has concluded that shareholders would be better off not accepting the current Xstrata Offer, and that the Offer is neither fair nor reasonable .*

*Grant Samuel, the Independent Expert*

A complete copy of the Independent Expert's Report is contained in Annexure A.

**Xstrata's Offer is well below the Independent Expert's valuation**

REJECT Xstrata's Offer

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WMC's assets are world class

**You own a portfolio of world class assets which are unique and valuable - don't sell to Xstrata at this materially inadequate price**

**Olympic Dam - the world's largest uranium resource and the fourth largest copper and gold resource**

**Copper - one of the world's great ore bodies with an extremely long life and plants to more than double production**

*Olympic Dam is a world class ore body, with an extremely long life, low production costs and substantial expansion potential*

*The recent strengthening of the uranium price, and expectations of strong long term demand for uranium, have significantly enhanced the economics of the operation*

REJECT Xstrata's Offer

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*Grant Samuel, the Independent Expert*

REJECT Xstrata's Offer

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**Nickel a leading global producer with a 20+ year life, plans to expand production and further exploration upside such as at Collurabbie**

**Corridor Sands project - the world's largest ilmenite resource**

**WMC's assets are world class**

**REJECT Xstrata's Offer and you can participate in returns for years to come**

REJECT Xstrata's Offer

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Your management is delivering record results and returning value to you

**We are delivering strong operational results**

**WMC's key copper, uranium, nickel and fertilizer operations are producing strong and improving results.**

NOTES:

- <sup>1</sup> See section 2.4 for more information about these operational results
- <sup>2</sup> The figures quoted for 2002 represent the production from the operations now comprising WMC

REJECT Xstrata's Offer

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**We are delivering record financial results....**

**EBIT (normalised)<sup>1</sup>**

**Cash flow from operations (pre-capex)  
(normalised)<sup>1</sup>**

**.. and returning value to you through dividends, a capital return and a share buy-back**

NOTES:

1. Normalised to exclude significant items as detailed in section 2.6(e), tables 5 and 7
2. The proforma figures quoted for 2002 represent the EBIT (normalised) and the cash flow from operations (normalised) now comprising WMC
3. Subject to necessary approvals. The interim and final 2005 dividends are indicative and assume a payout ratio of 50% of forecast net profit after tax

REJECT Xstrata's Offer

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Your Company is commencing a significant growth phase

**Don't let Xstrata deprive you of participating in the growth from current and future initiatives**

**Growth opportunities**

Olympic Dam is growing

Resources recently increased by approximately 30% and we are continuing with our drilling program

A study is underway for expansion to an approximate annual production rate of 500,000 tonnes of copper, 15,000 tonnes of uranium and 500,000 ounces of gold

At the nickel operations, production is planned to increase to over 140,000 tonnes per annum

In the fertilizers business, a new strategic partnership was recently announced

Development of Corridor Sands, which is the world's largest ilmenite resource

**Estimated production upon successful expansion**

**Copper production**

**Uranium production**

**Olympic Dam gold production**

**Your Directors believe that Xstrata's opportunistic Offer has been timed to deprive you of these exciting growth opportunities**

NOTES:

<sup>1</sup> See section 2.5 for more information about these growth opportunities



2. Forecast
3. Estimated annual average production for the five years indicated, assuming expansion consistent with current plans

REJECT Xstrata's Offer

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A sustained strong commodity cycle will create enormous upside

**WMC's world class assets are positioned to capture value from the anticipated stronger for longer commodity cycle, which will create enormous upside**

Throughout history there have been extended periods of increasing real commodity prices associated with the urbanisation and industrialisation of large economies

Demand from both China and India is at an early stage of development

Market expectations are for continued strong growth in China and India

This growth, in such large economies, is expected to continue to underpin commodity prices

Market expectations are for a stronger for longer commodity cycle

As GDP in these more populous countries grows to the level of developed countries, use of metals and energy will rise

**China's growing demand for copper and nickel is expected to have a significant impact**

**Cosumption of copper**

**Consumption of nickel**

*If China increased its consumption of copper per capita to level of the United States, this would require a 45% increase in current global production*

*If China increased its consumption of nickel per capita to level of the United States, this would require a 31% increase in current global production*

**WMC's world class assets and its relationships provide real leverage to China and to a sustained strong commodity cycle**

REJECT Xstrata's Offer

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You own one-third of the world's uranium resources in a rising market

**WMC owns the world's largest uranium resource. Demand for this valuable energy source is rising and so is its price**

REJECT Xstrata's Offer

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**Uranium prices are rising strongly**

Given rising demand and a production shortfall, the uranium price is forecast by industry experts to increase significantly

**The market is responding - uranium companies have outperformed**

Major listed uranium producers have all experienced strong share price performance

**As owners of the world's largest uranium resource, you will benefit significantly from rises in the uranium price but only if you REJECT Xstrata's Offer**

REJECT Xstrata's Offer

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The market value of WMC is approximately \$900 million<sup>1</sup> above Xstrata's Offer

**Every day since Xstrata's original proposal was announced, WMC Shares have traded well above \$6.35**

**Xstrata's Bidder's Statement doesn't mention this. You can see why**

**Don't fall for Xstrata's scare tactics**

Xstrata has focused on the WMC Share price before its original proposal was announced and on any short term impact of a withdrawal of the Offer BUT there are a number of recent events which are likely to have positively impacted the WMC Share price:

Improved earnings guidance foreshadowed at the half yearly results

A very significant upgrade to the resources at Olympic Dam based on drilling that commenced in January 2004

Analyst briefings and site tours (planned well before Xstrata's proposal was announced) to raise awareness of the strong performance of WMC's operations and the significant growth prospects at Olympic Dam and in the nickel business

The stock market has increased since the announcement of Xstrata's original proposal (for example the S&P/ASX 200 index has risen 6.8% between the announcement and 22 December 2004);

**The Independent Expert also agrees**

arguably WMC's share price would have increased over recent months in any event, at least to some extent, on news of the Olympic Dam resource upgrade and progress with the Olympic Dam expansion study

*Grant Samuel, the Independent Expert.*

**The market shows Xstrata's Offer is materially inadequate**

NOTE:

<sup>1</sup>. As at 22 December 2004

REJECT Xstrata's Offer

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Xstrata wants to create value for **its** shareholders at **your** expense

**An acquisition of WMC's highly strategic assets would significantly enhance Xstrata, creating value for its shareholders NOT YOU**

**In addition, Xstrata may be able to deliver marketing rights to Glencore**

Glencore benefits from its marketing agreements with [Xstrata], which generally provide for exclusive marketing rights in favour of Glencore with respect to the commodities which [Xstrata] produces<sup>3</sup>

**XSTRATA'S SHAREHOLDERS WILL CAPTURE THIS STRATEGIC VALUE IF YOU ACCEPT XSTRATA'S OFFER**

SOURCES:

1. Xstrata shareholder circular Proposed acquisition of WMC Resources Limited and Notice of Extraordinary General Meeting - 17 December, 2004
2. Xstrata ASX news release Xstrata Cash Takeover Offer for WMC Resources at AUD6.35 per share - 22 November, 2004
3. Xstrata offering circular Convertible Bonds due 2010 - 11 August, 2003

REJECT Xstrata's Offer

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Xstrata is trying to repeat the MIM experience

**Xstrata has benefited greatly from its acquisition of MIM Don't let Xstrata profit at your expense**

**In 2003 MIM shareholders sold out to Xstrata for a mere two cents above the bottom end of the independent expert's valuation range history has shown that was a mistake**

Xstrata acquired MIM in the first half of 2003. MIM then contributed more than 50% of Xstrata's total EBIT in the first half of 2004.

Since the acquisition, Xstrata's share price has outperformed potential evidence of a value transfer from MIM shareholders to Xstrata?

**Xstrata's shareholders have benefited greatly from MIM's business**

This has been at the expense of the MIM shareholders who sold to Xstrata. For example, less than five months after acquiring MIM, Xstrata made a 54% gain on the sale of stakes in MIM's coal business.

**In 2004, Xstrata announced at least five growth projects - four of these are ex-MIM assets**

Don't let your WMC growth assets become Xstrata's growth assets for only \$6.35 per Share.

**Don't let Xstrata repeat the MIM experience - this time at your expense**

REJECT Xstrata's Offer



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Xstrata's Offer is highly conditional

**Xstrata's Offer is subject to at least 15 detailed conditions**

**Xstrata's Offer is highly conditional**

Even if you accept Xstrata's Offer, you will not be paid until all those conditions are satisfied or waived. Those conditions include 90% minimum acceptance, which Xstrata cannot waive without its lenders' consent. Xstrata's Offer is even conditional on approval from its own shareholders, but the scope of the approval being sought is unclear. It is uncertain when (if ever) the satisfaction or waiver of all the conditions will occur.

**Xstrata already has the ability to walk away**

A number of the conditions to Xstrata's Offer have been triggered through your Directors and management continuing to operate your business and acting in the best interests of WMC Shareholders.

**Xstrata is borrowing all of the money it needs to fund its Offer**

Xstrata's complex financing arrangements are also subject to numerous conditions. If these are not satisfied or waived, Xstrata may not have the funds to pay any WMC Shareholder who accepts its Offer.

**Be wary of Xstrata's withdrawal rights - Don't give it a free option on your Shares**

Xstrata has structured its Offer to include withdrawal rights for WMC Shareholders but if you accept Xstrata's Offer you will lose the right to withdraw your acceptance in certain circumstances.

**Xstrata has already had to withdraw some misleading statements**

Xstrata originally claimed that:

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Its Offer represented a significant premium to the underlying value of WMC assets using any reasonable assumptions of production levels, commodity prices and exchange rates

It was passing onto WMC Shareholders unique benefits that only it could achieve if it acquired WMC

Its Offer provided immediate and certain value

**in its replacement Bidder's Statement, Xstrata has removed all of these material claims**

**Beware of the fine print of Xstrata's Offer**

REJECT Xstrata's Offer

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Your Company has a great future

**Exciting growth program**

WMC is investing in internal and external growth opportunities to create value for you:

Delivering higher production from established businesses - Olympic Dam and nickel

Pursuing development potential from new projects - Corridor Sands

Continued success in minerals exploration - Collurabie

Market and cost advantages through technological innovation

**Including the huge potential of the Olympic Dam expansion**

WMC has the operational expertise and financial capacity to capitalise on the Olympic Dam opportunity:

\$48 million development study underway and will be completed by early 2006

Decision on mining method and scale for the Olympic Dam expansion due by March 2005

Partnership options currently being investigated

**WMC is committed to continue to return cash to you as we deliver on our plans**

We intend to return significant cash to you through active capital management initiatives such as:

Pro-rata capital return of \$0.30 per Share - totalling \$350 million

Increase in the on-market buy-back program to \$250 million

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Anticipated ordinary final 2004 dividend of 20 cents per Share - totalling \$230 million

Indicated ordinary interim 2005 dividend of 15 cents per Share - totalling \$175 million

**You will not benefit from this exciting potential if Xstrata's Offer is successful**

NOTE:

1. The 2004 and 2005 dividends, the capital return and the buy-back are subject to necessary approvals

REJECT Xstrata's Offer

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Your Directors' response to Xstrata's claims

**Xstrata made a number of claims in its Bidder's Statement in support of its Offer. Your Directors' response to the key claims is summarised in the table below. Further detail on these responses is included in this Target's Statement**

<u>Xstrata's claim</u>	<u>WMC's response</u>
<i>The Offer represents an attractive premium to WMC's historical share price</i>	<p>The Offer represents only a 25.5% premium to the three month volume weighted average share price of WMC Shares prior to the announcement of Xstrata's original conditional proposal on 28 October 2004. In addition, WMC has recently announced a number of positive developments.</p> <p>This is well below the median premium of 52% for previous acquisitions of large listed Australian resources companies. It is also well below the premium Xstrata paid for MIM in 2003. If Xstrata offered you a premium equal to the median for previous acquisitions of large listed Australian resources companies<sup>1</sup>, it would need to offer \$7.69 per WMC Share.</p>
<i>The Offer is made during a period of high commodity prices</i>	<p>Current commodity prices and strong operational performance by your management team are delivering excellent returns to WMC Shareholders.</p> <p>WMC Shareholders shouldn't give up those returns for an inadequate Offer of \$6.35 per Share.</p> <p>WMC anticipates that strong commodity prices will be sustained, which would continue to provide healthy returns for WMC Shareholders into the future.</p>
<i>The Offer is at a substantial premium to the underlying value of WMC</i>	<p>Your Directors believe that the Offer is inadequate.</p> <p>The Independent Expert also believes that the Offer is inadequate, stating that it is neither fair nor reasonable, and has valued WMC Shares at between \$7.17 and \$8.24 per Share which is significantly above Xstrata's Offer of \$6.35 per Share.</p>
<i>The Offer is at a significantly higher price than WMC's operations and earnings prospects alone could justify</i>	<p>The market also believes that the Offer is inadequate as WMC Shares have traded well above the \$6.35 Offer Price since Xstrata's original proposal was announced on 28 October 2004</p> <p>Your Company is commencing a significant growth phase. Don't give up your share.</p>
<i>Through the Offer, Xstrata passes on to you the substantial benefits available to it</i>	<p>An acquisition of WMC's highly strategic assets significantly enhances Xstrata at \$6.35 cash per Share, WMC Shareholders will not share in the benefits of this.</p>

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*The Offer value will be paid to you in cash. The Offer provides you certain value in the form of cash*

Even if you accept the Offer, you will not be paid until the many conditions of Xstrata's Offer are satisfied or waived. It is uncertain when (if ever) that will occur.

In any event, the fact that Xstrata is offering cash means that you will not benefit from any increase in value that is generated from a combination of Xstrata and WMC.

### NOTE:

1. Based on previous completed mining transactions (excluding gold and silver transactions) announced since 1998 of Australian targets each with a transaction equity value greater than \$200m

REJECT Xstrata's Offer

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Your Directors' response to Xstrata's claims (Cont'd)

**Xstrata's claim**

**WMC's response**

*The Offer removes significant risks currently borne by you*

As a WMC Shareholder (like any shareholder in a resources company) you are subject to some risks. However, you also enjoy the rewards that come from being a Shareholder.

If you accept Xstrata's inadequate Offer, you will have given away (for an inadequate price) the opportunity of significant financial returns from WMC's world class assets.

*WMC has a track record of questionable operational performance and cost overruns which have eroded returns to Shareholders*

Operational challenges are part of any mining operation, given the complex processes and unique operating environments of mines.

Such challenges are faced by all mining companies (including Xstrata) – not just WMC.

WMC has implemented a comprehensive operational reliability program and risk management processes to address these challenges.

WMC's operations are currently performing very well and delivering strong results for WMC Shareholders.

*WMC's share price is likely to fall in the absence of Xstrata's Offer*

While there is a possibility that WMC's Share price may fall from the current levels if Xstrata's Offer is unsuccessful, you should note:

This is no reason to accept the Offer which undervalues your Company;

The stock market has increased since the announcement of Xstrata's original proposal (for example the S&P/ASX 200 index has risen 6.8% between the announcement and 22 December 2004);

Since the announcement of Xstrata's original proposal on 28 October 2004, WMC has:

issued a significant upgrade to the resources at Olympic Dam which, in the absence of the Offer, would likely have been reflected in the WMC Share price;

issued earnings guidance which, in the absence of the Offer, would likely have been reflected in the WMC Share price;

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conducted analyst briefings and site tours to raise awareness of the strong performance of WMC's operations and the significant growth prospects at Olympic Dam and in the nickel business. These activities were planned long before Xstrata's original proposal was announced.

Your Directors have proposed to pay a 20 cents per Share final 2004 dividend and a 30 cent per Share capital return to WMC Shareholders in 2005, subject to necessary approvals; and

If the Offer is unsuccessful, your Directors will continue to implement growth initiatives to generate additional value for WMC Shareholders.

*Xstrata's Offer fulfils the strategic objective behind the creation of WMC*

The demerger which created WMC as a separate company was not designed to allow Xstrata to buy WMC cheaply. It created a vibrant, standalone company that you own.

Your Company is commencing a significant new growth phase. Don't give up your share.

REJECT Xstrata's Offer



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Frequently asked questions

**This section answers some frequently asked questions about Xstrata's Offer. It is not intended to address all relevant issues for WMC Shareholders. This section should be read together with all other parts of this Target's Statement**

<u>Question</u>	<u>Answer</u>
<i>What is the Bidder's Statement?</i>	The Bidder's Statement is the document setting out the terms of Xstrata's Offer. Xstrata lodged its original bidder's statement with ASIC on 30 November 2004 and a replacement Bidder's Statement with ASIC on 16 December 2004 and sent the replacement Bidder's Statement to WMC Shareholders on 21 and 22 December 2004.
<i>What is this Target's Statement?</i>	This Target's Statement has been prepared by WMC and provides WMC's response to Xstrata's Offer, including the recommendations of your Directors.
<i>What is the Offer for my WMC Shares?</i>	Xstrata has made a highly conditional Offer of \$6.35 cash for each of your WMC Shares.
<i>What choices do I have as a WMC Shareholder?</i>	As a WMC Shareholder you can: <ul style="list-style-type: none"> <li style="margin-left: 40px;">Reject Xstrata's inadequate Offer by doing nothing. Your Directors recommend that you REJECT Xstrata's Offer;</li> <li style="margin-left: 40px;">Sell your WMC Shares on market (unless you have previously accepted Xstrata's Offer and have not validly withdrawn your acceptance); or</li> <li style="margin-left: 40px;">Accept Xstrata's Offer for all the WMC Shares you hold.</li> </ul> See section 1 for more details.
<i>What are the Directors of WMC recommending?</i>	Your Directors unanimously recommend that you REJECT Xstrata's inadequate Offer.  If there is any change to this recommendation or any material development in relation to Xstrata's Offer, WMC will inform you.
<i>How do I reject Xstrata's inadequate Offer?</i>	To REJECT Xstrata's inadequate Offer, you should do nothing.  Disregard all documents sent to you by Xstrata.
<i>What do the Directors of WMC intend to do with their WMC Shares?</i>	Each Director of WMC intends to REJECT Xstrata's inadequate Offer in relation to those WMC Shares held by them or in which they have a relevant interest.



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**Question**

**Answer**

***Why are the Directors recommending that I reject the Offer***

Your Directors are recommending that you REJECT Xstrata's Offer because:

Your Directors consider that Xstrata's Offer is materially inadequate;

The Independent Expert believes that Xstrata's Offer is neither fair nor reasonable and has valued WMC Shares at between \$7.17 and \$8.24 per Share;

WMC's assets are world class;

Your management is delivering record results and returning value to you;

Your company is commencing a significant growth phase;

A sustained strong commodity cycle will create enormous upside;

You own one-third of the world's uranium resources in a rising market;

The market value of WMC is approximately \$900 million above Xstrata's Offer;

Xstrata wants to create value for its shareholders at your expense;

Xstrata is trying to repeat the MIM experience at your expense;

Xstrata's Offer is highly conditional; and

Your Company has a great future.

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***What does the Independent Expert say?***

The Independent Expert believes that Xstrata's Offer is neither fair nor reasonable and has valued WMC Shares at between \$7.17 and \$8.24 per Share which is materially above Xstrata's Offer of \$6.35 per Share.

***What should I do?***

To follow your Directors' unanimous recommendation to REJECT Xstrata's inadequate Offer, you should do nothing.

Disregard all documents sent to you by Xstrata.

***What happens if the Offer Price is increased?***

If Xstrata increases its Offer Price, your Directors will carefully consider the revised offer and advise you accordingly.

REJECT Xstrata's Offer

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**Question**

**Answer**

***What are the consequences of accepting the Offer now?***

If you accept Xstrata's Offer now, you may be unable to accept a superior offer from another bidder if such an offer is made, unless any withdrawal rights apply at the applicable time and you withdraw your acceptance of Xstrata's Offer.

If you accept Xstrata's Offer and Xstrata subsequently raises its Offer Price, you will receive the higher price.

If you accept the Offer now, then unless withdrawal rights are available at the applicable time and you exercise these rights, you will not be able to sell your WMC Shares on market or to any other bidder that may make a takeover offer, or deal with them in any other manner.

If Xstrata acquires between 50% and 90% of WMC Shares and waives the 90% acceptance condition of its Offer, you may be exposed to the risks associated with being a minority shareholder in WMC. Some of these risks are described in section 4.11.

See section 4.8 for more details.

NOTE:

1. As at 22 December 2004

**Question**

**Answer**

***If I accept the Offer now, can I withdraw my acceptance?***

There are a number of different circumstances in which you may have the right to withdraw your acceptance of Xstrata's Offer. However, each is limited, and may not apply at the time that you wish to withdraw your acceptance.

You may withdraw your acceptance at any time until the FIRB condition of Xstrata's Offer has been satisfied. However, you will not get any notice from Xstrata before that condition is satisfied.

Once the FIRB condition of Xstrata's Offer is satisfied, you may withdraw your acceptance:

if Xstrata varies its Offer in a way that postpones the time when Xstrata is required to satisfy its obligations by more than one month; or

by use of a specific regime that applies under the terms of Xstrata's Offer, at any time before:

Xstrata announces the satisfaction of the 90% minimum acceptance condition of its Offer;

the expiry of 14 days after Xstrata lodges a supplementary bidder's statement notifying termination of the withdrawal rights; or

the end of the Offer Period,

whichever occurs first.

Further details on your ability to withdraw your acceptance are set out in sections 4.8 and 4.9.

***Will I get any warning when the 90% minimum acceptance condition is about to be satisfied?***

No. You will need to monitor the acceptance levels yourself by checking the substantial holder notices lodged by Xstrata with ASX during the Offer Period.

REJECT Xstrata's Offer

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<u>Question</u>	<u>Answer</u>
<i>Does satisfaction of the 90% minimum acceptance condition mean that I will definitely get paid if I accept?</i>	<p>No. All the conditions of Xstrata's Offer must be satisfied or waived for Xstrata's Offer to become unconditional.</p> <p>Even if the 90% minimum acceptance condition is satisfied, other conditions (such as FIRB approval) may still be unsatisfied when the withdrawal rights are terminated, and satisfaction (or waiver) of those other conditions may take some time or may not occur at all.</p>
<i>Can I still withdraw my acceptance if the 90% minimum acceptance condition is waived, rather than satisfied?</i>	<p>Yes, provided that Xstrata has not terminated the withdrawal rights under its Offer terms by other means. The withdrawal rights do not automatically terminate if the 90% minimum acceptance condition is waived.</p>
<i>If Xstrata terminates the withdrawal rights under its Offer by lodging a supplementary bidder's statement, can I still withdraw my acceptance?</i>	<p>This depends on the circumstances. Generally speaking, you will have 14 days from the lodgement of the applicable supplementary bidder's statement to withdraw your acceptance.</p> <p>However, if the 90% minimum acceptance condition is satisfied, or the Offer Period expires, during that 14 day period, your withdrawal rights will terminate automatically at that earlier time.</p> <p>It is possible that you will have other withdrawal rights at that time (namely, your right to withdraw if:</p> <p style="padding-left: 40px;">the FIRB approval condition of Xstrata's Offer remains unsatisfied; or</p> <p style="padding-left: 40px;">Xstrata varies the Offer in a way that postpones the time when Xstrata is required to satisfy its obligations by more than one month),</p> <p>although that may not be the case.</p>
<i>Can I be forced to sell my WMC Shares?</i>	<p>You cannot be forced to sell your WMC Shares unless Xstrata acquires a relevant interest in at least 90% of all WMC Shares by the end of the Offer Period, and proceeds to compulsory acquisition of your WMC Shares. If that happens, you will be paid the last price offered by Xstrata for WMC Shares before compulsory acquisition commences.</p>
<i>Does the Offer include my WMC Options?</i>	<p>No. However, the Offer extends to WMC Shares issued during the Offer Period as a result of the exercise of WMC Options.</p>
<i>When does the Offer close?</i>	<p>Xstrata's Offer is presently scheduled to close at 7.00pm (Sydney time) on 28 January 2005, but the Offer Period can be extended in certain circumstances. See section 4.7 for details of the circumstances in which the Offer Period can be extended.</p>

REJECT Xstrata's Offer

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**Question**

**Answer**

***When do I have to decide?***

If you wish to follow the Directors' unanimous recommendation and REJECT Xstrata's Offer, you do not need to do anything. Simply disregard all documents sent to you by Xstrata.

If you wish to accept Xstrata's Offer, you need to do so before its scheduled closing date. Xstrata has indicated that its Offer is scheduled to close at 7.00pm (Sydney time) on 28 January 2005, however, Xstrata can choose to extend the Offer Period in accordance with the Corporations Act. In addition, the Offer Period may be extended automatically in certain circumstances. See section 4.7 for details of the circumstances in which the Offer Period can be extended.

***What are the conditions to the Offer?***

Xstrata's Offer is highly conditional. Offer conditions include:

Xstrata having a relevant interest in more than 90% of WMC Shares;

Xstrata's shareholders approving the Offer;

Xstrata being able to access the debt funds required to pay those WMC Shareholders who accept the Offer;

Xstrata receiving all regulatory approvals required in relation to its Offer;

No decline occurring in the S&P/ASX 200 index to below 3,500;

No material adverse change occurring in WMC's business;

No material acquisitions, disposals or new commitments occurring or being announced by WMC;

Each third party who would have specified rights as a result of a change of control of WMC not exercising those rights (and not announcing an intention to exercise those rights); and

Xstrata being granted access to due diligence materials which WMC provides to any third party within 2 business days of such information being provided.



This is only a summary of some of the conditions of Xstrata's Offer. See sections 4.2 to 4.6 for further details.

***What happens if the conditions of the Offer are not satisfied or waived?***

If the conditions are not satisfied or waived before the Offer closes, the Offer will lapse, and you will not get paid the Offer Price (even if you had accepted the Offer). However, you would then be free to deal with your WMC Shares.

***When will I be paid if I accept the Offer?***

If you accept the Offer, you will have to wait until after the later of Xstrata's receipt of your acceptance and the date on which Xstrata's Offer becomes unconditional, as well as a further period of up to 5 business days, before you will be paid. It is uncertain when (if ever) Xstrata's Offer will become unconditional. See section 4.5 for further details.

REJECT Xstrata's Offer

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**Question**

**Answer**

*What are the tax implications of accepting the Offer?*

A general outline of the tax implications for certain Australian resident WMC Shareholders of accepting the Offer is set out in section 7 of the Xstrata Bidder's Statement.

You should not rely on that outline as advice on your own affairs. It does not deal with the position of certain WMC Shareholders. You should therefore seek your own personal, independent financial and taxation advice before making a decision as to whether or not to accept Xstrata's Offer for your WMC Shares. You may for example be liable for capital gains tax.

See section 5.7 for further information.

*Is there a phone number that I can call if I have further queries in relation to the Offer?*

If you have any further queries in relation to the Offer, please call the official WMC Shareholder Information Line on 1800 067 505 (toll-free within Australia) or +61 3 9415 4198 (from outside Australia) from 9.00am until 6.00pm (Melbourne time) Monday to Friday.

For legal reasons, calls will be recorded.

In addition, announcements made to ASX and other important information will be posted to WMC's website at [www.wmc.com](http://www.wmc.com).

REJECT Xstrata's Offer

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**WMC Resources Ltd - Target's Statement**

**ADDITIONAL  
INFORMATION**

(i)

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### **WMC Resources Ltd - Target s Statement**

The past decade has been one of tremendous development and change at WMC, but there have been two constants that have shaped our success and helped secure our future. Our technical innovation has stretched the boundaries of our mines and processes, and made good assets perform even better. The passion and commitment of our people in every operation and across every business have made a great Australian company world class.

### **Seamus French - Executive General Manager, Copper-Uranium**

After 30 years of international project development experience, including 18 with Fluor Inc, I joined WMC in 2003 to take up the challenge of delivering project development in a disciplined manner. This means displaying repeatable and solid safety, budget and scheduling performance with success judged by improving the bottom line in the short, medium and long term.

We are achieving this at WMC with improvements like the Olympic Dam Projects that allow us to produce more copper and uranium, and in nickel where our integrated approach has extracted greater value.

### **Howard Barnes - General Manager, Projects**

I was recruited in 2003 from US chemical manufacturer Rohm and Haas to lead WMC s operational reliability improvement program. The initial results are very encouraging. Acceptance of the review process has been excellent. People have taken it as an attempt to improve, not impose. Their can do attitude and co-operation are as good as it gets.

### **Dick Pettigrew - Project Manager, Reliability Improvement**

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**WMC Resources Ltd - Target's Statement**

### **ADDITIONAL INFORMATION**

#### **1. Your Choices as a WMC Shareholder**

As a WMC Shareholder you currently have three choices available to you.

##### **1.1 Take No Action**

If you do not wish to sell your WMC Shares on market and do not wish to accept Xstrata's Offer, you should take no action. Simply disregard the documents sent to you by Xstrata. **This is the approach recommended by your Directors.**

You should note that:

if you choose not to accept Xstrata's Offer, you will not receive any money from Xstrata unless Xstrata holds 90% of the WMC Shares at the end of the Offer Period. In this event, it will become entitled to compulsorily acquire those WMC Shares that it does not already own (see section 4.10 for further information regarding compulsory acquisition); and

if Xstrata acquires more than 50% but less than 90% of the WMC Shares and all of the defeating conditions of Xstrata's Offer are satisfied or waived, and you continue to hold WMC Shares, you will be exposed to the risks associated with being a minority shareholder of WMC. Some of these risks are explained in section 4.11.

##### **1.2 Sell Your WMC Shares On Market**

During the Offer Period, you may sell your WMC Shares through ASX for cash, provided you have not accepted Xstrata's Offer for those shares (or, if you have accepted Xstrata's Offer, provided you have withdrawn that acceptance).

WMC Shares have been trading at prices significantly higher than the A\$6.35 per Share offered under Xstrata's Offer.

If you sell your WMC Shares on market, you will receive the consideration for your shares sooner than if you accept Xstrata's Offer while it is subject to conditions.

If you sell your WMC Shares on market, you:

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will lose the ability to accept Xstrata's Offer and receive A\$6.35 per Share (and any subsequent increase in the Offer Price) in relation to those shares;

may be liable for capital gains tax or income tax on the sale of those shares;

may incur a brokerage charge; and

will lose the opportunity to receive future returns from WMC.

You should contact your broker for information on how to sell your WMC Shares on ASX and your tax adviser to determine your tax implications from such a sale.

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**WMC Resources Ltd - Target's Statement**

**1.3 Accept Xstrata's Offer**

You may choose to accept Xstrata's Offer. Details of the payment that you will receive if you accept Xstrata's Offer are set out in section 4.1(a) as well as in the Xstrata Bidder's Statement. You will only receive that payment if the numerous conditions of Xstrata's Offer are all either satisfied or waived.

The consequences of accepting Xstrata's Offer are discussed in section 4.8. If you accept Xstrata's Offer, you will not be able to sell your WMC Shares on market unless, at the time you decide that you no longer wish to accept Xstrata's Offer, you have the right to withdraw your acceptance and you exercise that right. The circumstances in which acceptances of Xstrata's Offer may be withdrawn are set out in sections 4.8 and 4.9.

If you accept Xstrata's Offer, you may be liable for capital gains tax or income tax as a result of your acceptance. An overview of the taxation consequences for certain Australian resident WMC Shareholders of selling WMC Shares is provided in section 7 of the Xstrata Bidder's Statement. See also section 5.7 of this Target's Statement.

See section 1 of the Xstrata Bidder's Statement and the acceptance form provided to you by Xstrata for instructions on how to accept Xstrata's Offer.

**WMC encourages you to consider your personal risk profile, investment strategy, tax position and financial circumstances before making any decision in relation to your WMC Shares.**

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WMC Resources Ltd - Target's Statement

## 2. WMC Business Performance and Growth

### 2.1 Overview

During 2004 WMC delivered improving shareholder returns, improving operational performance and reliability, and is now looking to the future by commencing a new and exciting growth phase.

Your management team is committed to delivering sustained and consistent performance from WMC's suite of strategic, long-life, low-cost, world class assets.

During 2004, your Company delivered:

**Forecast record profit (after tax) performance** of approximately A\$1.3 billion and strong cash flow, supported by low debt and a healthy balance sheet.

**Strong production levels** in its nickel, copper and uranium oxide businesses.

**Improved operational performance**, supported by new processes to deliver greater reliability and streamlined risk management.

**An exciting program of growth** in Australia and offshore, based on delivering higher production from our established businesses, pursuing new projects, achieving success in minerals exploration, and gaining market and cost advantage through technological innovation.

### 2.2 Forecast Record Profit Performance

WMC has announced an upgrade of its 2004 forecast profit after tax to approximately A\$1.3 billion. This reflects strong overall performance and additional one-off items.

For further details on WMC's financial performance, including forecast performance for 2005, refer to section 2.6.

### 2.3 Strong Production Levels

During 2004, it is expected that WMC:



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delivered record annual copper production of about 224,000 tonnes, surpassing the previous best of 200,523 tonnes in 2001;

achieved record uranium recovery of 77%; and

delivered record mill throughput, metallurgical recovery and underground mine performance at Leinster.

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**Table of Contents****WMC Resources Ltd - Targets Statement**

Production of the key commodities from WMC's operations is summarised in the table below:

Production (tonnes)	2002*	Actual 2003	Forecast 2004	Forecast 2005
Nickel-in-Concentrate	106,423	117,722	114,900	117,800
Nickel-in-Matte	91,574	99,152	97,700	107,500
Nickel Metal	65,055	61,418	62,300	67,500
Copper	178,120	160,080	224,000	226,000
Uranium	2,890	3,203	4,400	4,700
Fertilizer	821,000	921,977	890,000	980,000
Gold (ounces)	64,293	86,118	87,600	115,300

\* The figures quoted for 2002 represent the production from the operations now comprising WMC.

Your Directors and management team expect the 2004 production levels to continue into 2005 and are implementing initiatives to further strengthen WMC's operating performance.

**2.4 Improved Operational Performance****(a) Safe and Sustained Operations**

WMC's management team is delivering safe, consistent and sustained operational performance.

During 2004, WMC:

operated without a fatality;

significantly reduced the impact of workplace injuries;

continued to improve environmental performance;

progressed new operational reliability programs; and

strengthened its ability to understand and manage operational risks.

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These important improvements have resulted from the implementation of new company-wide programs targeting safety systems and behaviours, operations reliability and risk management.

WMC expects that further significant benefits arising from these initiatives will be delivered during 2005 and beyond.

WMC has operated fatality-free through 2004. WMC's last fatality occurred in October 2003.

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### WMC Resources Ltd - Target's Statement

All of WMC's facilities are operated in accordance with the Company's nineteen Major Hazard Standards, which target industry best-practice in the management of the significant hazards associated with the minerals industry.

While WMC's total injury rate increased slightly in 2004 over the record low result in 2003, WMC achieved a 24% reduction in the overall impact of injuries to its people.

WMC has benchmarked widely and has incorporated elements from the petroleum, petrochemical and aerospace industries into its new safety, reliability and risk management programs.

During 2004, operational reliability reviews were completed at the mine, process, and smelter operations at Olympic Dam as well as at the Kalgoorlie nickel smelter, the Kwinana nickel refinery and the Mount Isa acid plant. The remaining reviews (at Mount Keith, Leinster, the Kambalda concentrator and Phosphate Hill) are scheduled to be concluded in March 2005.

These reliability reviews have been undertaken by internal specialists and external consultants, resulting in comprehensive reliability improvement plans being developed and incorporated into the business plan for each applicable site. Detailed results of each review and regular reports on each site's progress against their improvement plans are provided to your Directors.

Significant results have been delivered by focusing on:

stable, disciplined, consistent operations;

integrating production and maintenance planning;

placing a strong emphasis on process control;

standardising work processes;

formalising defect/failure investigation and reporting processes; and

utilising risk assessment methods to identify and prioritise critical equipment and plant processes.

WMC's Integrated Operational Risk Management program (*IORM program*), which was developed and piloted by WMC in 2002, has now been applied at all of WMC's sites and operations during the past two years. Based on petroleum industry risk management methodologies, the IORM

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program yields a comprehensive risk register that ranks all operational risks at a particular site according to their potential business and environmental impacts and their potential to cause serious injury.

The IORM program includes a risk register that identifies and highlights the critical controls for substantive risks and provides management with assurance that risks are being effectively controlled. Annual site business plans include capital projects and programs aimed at eliminating or reducing the site's major risks.

The IORM program also allows comparative ranking of risks across all WMC sites. This provides management with the ability to ensure that resources are being

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### **WMC Resources Ltd - Targets Statement**

applied appropriately and proportionately across the WMC Group to best manage operational risks from a group perspective.

The reliability improvement program and IORM program are linked through the respective site risk register.

WMC believes that its approach to equipment reliability improvement and risk management is now equal to, or better than, any comparable programs in the minerals industry. At Olympic Dam, the first site to commence the reliability improvement process, smelter utilisation has increased from 69% in 2003 (non-shutdown months) to 86% in 2004 following the review, demonstrating the excellent early results being achieved from the program.

### **(b) Environmental Commitment**

WMC enjoys a strong reputation for its environmental commitment and performance.

In September 2004, the Company was included as a leader in sustainable development in the Dow Jones Sustainability Index world industry group on mining for the fifth consecutive year.

Founded on a commitment to open and transparent reporting, a company-wide environmental management system and a demonstrated commitment to rehabilitate environmental impacts, WMC's environmental performance provides the basis for its ongoing licence to operate.

WMC has been at the forefront of reporting environmental non-compliances, doing so publicly since the 1994-95 financial year.

Nineteen environmental non-compliances were recorded during 2004. WMC has now achieved four consecutive years of improved performance in this area of environmental management. Of these nineteen non-compliances, fifteen were technical non-compliances and resulted in no environmental impacts. The remaining four had only limited, local impacts which were subsequently fully remediated.

The company-sponsored, community-based Arid Lands Recovery Project at Olympic Dam continues to be one of the minerals industry's flagship programs for biodiversity management.

Site closure and rehabilitation costs are updated annually and undergo validation every three years. Site closure costs are progressively reserved so that WMC's accounts reflect the ultimate cost of closure and rehabilitation at the end of the operation's life. As at 30 November 2004, approximately A\$120 million has been provisioned against future closure costs.

Full details of WMC's environment, health and safety performance and programs are available on the Company's website ([www.wmc.com](http://www.wmc.com)).

(c) **Marketing**

WMC's metal marketing group has offices in Toronto, London and Melbourne, and is responsible for the sale of WMC's production of copper, uranium oxide, nickel,

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### **WMC Resources Ltd - Target's Statement**

nickel intermediate products and cobalt. The metal marketing group continues to achieve strong relationships with major customers, a consistent customer base and negligible bad debts.

The key commodities produced by WMC are marketed and sold as follows:

**Copper** - Most of WMC's copper production in 2005 will be sold in Asia and Australia to some of the largest consumers and trading companies in those regions.

**Uranium** - Uranium oxide produced by WMC is sold under long term contracts to major nuclear power utilities in North America, Europe and Asia.

**Nickel** - WMC contracts with some of the largest stainless steel producers in the world for the sale of its nickel. Commencing in 2005, the majority of WMC's nickel-in-matte sales will be made to China, under long term contracts.

**Cobalt** - The sale of WMC's cobalt is undertaken through WMC's innovative internet-based website, which has become an industry reference and market leader.

Major marketing initiatives currently being pursued by WMC include assisting the Australian Government to expedite a bilateral safeguard agreement with China for the supply of uranium oxide. China has plans to quadruple its number of nuclear power plants by 2020, and WMC therefore anticipates that it would benefit from the implementation of such an agreement.

#### (d) **Business Units**

WMC's business units and their major achievements are described below.

##### (i) Copper and Uranium

WMC's Olympic Dam minerals processing operation (which produces copper, uranium oxide, gold and silver) is a world class operation located in South Australia. Olympic Dam is the world's fourth largest remaining copper resource, the fourth largest remaining gold resource and the largest remaining uranium resource.

In terms of output, Olympic Dam is currently the world's 1<sup>st</sup> largest copper producer and third largest uranium producer. The mine itself is the largest underground mine in Australia. The Olympic Dam operation employs about 1,670 staff (including contractors). During 2004, it is expected that approximately 224,000 tonnes of copper and 4,400 tonnes of uranium oxide will have been produced at Olympic Dam, based on the mining and treatment of approximately 8.8 million tonnes of ore.



Application of the IORM program and knowledge gained from WMC's reliability review contributed significantly to the reduction of business interruptions at Olympic Dam during 2004.

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**WMC Resources Ltd - Target's Statement**

Achievements at Olympic Dam include:

**Forecast record copper production:** Record copper production of approximately 224,000 tonnes is forecast for 2004 reflecting increased smelter utilisation and record throughput. Refinery performance for 2004 is also expected to be a record, with performance above design levels in the third and fourth quarters.

**Significant improvements in uranium recovery:** A three year technical program has been developed to increase uranium recoveries from historical levels of 65 to 70% to a target range of 80 to 85%. The first phase of this program (tails leach optimisation) was implemented during 2004 and resulted in record uranium recovery of 77% in the fourth quarter of 2004. Further process enhancements are planned for 2005 and 2006 in a series of low capital, high return projects. Opportunities to improve both copper and gold recovery have also been identified and are being implemented.

**Improving mining and milling rates:** A program is in place to lift both mining and milling rates to achieve a target of 10.5 million tonnes per annum by the end of 2005. The program targets a number of low cost initiatives which include removal of flow restrictions in milling, and materials handling utilisation in mining. A further program targeting rates of 12.3 million tonnes per annum by 2010 is also being developed.

**Increasing returns:** Opportunities to increase operating results from Olympic Dam to a target of 10% return on net assets have been developed and are being progressed through a five year business plan. The drivers of these opportunities will be low-cost production improvement, increased recovery and expenditure reduction.

(ii) Nickel

Located in Western Australia, WMC's fully integrated nickel business comprises:

mines and concentrators at Leinster and Mount Keith;

a concentrator at Kambalda, fed by ore from third party mines;

a smelter at Kalgoorlie;

a refinery at Kwinana; and

new projects in various stages of development.

WMC's nickel business is currently the world's third largest producer of nickel-in-concentrate.



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Achievements of the nickel business include:

**Significant recovery improvements:** Metallurgical recovery at the Mount Keith concentrator has increased by about 10% over the past six years through technology initiatives. Similarly, recovery improvements of over 6% at the Leinster concentrator have also been achieved since 2000.

**World's best process intensity at the Kwinana nickel refinery:** By increasing the nickel solution strength in key process streams, more nickel can be treated in the existing equipment. In the last eight years, nickel strength at the Kwinana refinery has increased by over 20%. Process intensity is over 40% better than the average of all nickel competitors using similar technologies, and over 30% better than the next best performer.

**Low cost increases to plant capacity at the Kwinana nickel refinery:** During the past 10 years, output capacity of nickel metal at the Kwinana nickel refinery has been increased by more than 60% to 70,000 tonnes per annum (from 42,000 tonnes per annum), following completion of a series of innovative, low-cost plant de-bottlenecking programs. The three most recent expansion programs have delivered a 32% increase in capacity in the past five years at an average cost of less than A\$0.40 per pound of annual production capacity. By way of comparison, this is approximately one tenth of the cost of new greenfield refining capacity.

**Increased production from the Kambalda nickel concentrator:** Production from the Kambalda nickel concentrator is forecast to be 33,000 tonnes of nickel-in-concentrate in 2005, up 14% on expected 2004 levels, as output from a number of the third party mines continues to increase.

**Increasing returns:** Return on assets has increased significantly, up from 17% in 2002 to a forecast 50% in 2004. These excellent returns are expected to continue during 2005.

(iii) Fertilizers

WMC's fertilizer business has two arms – the Queensland Fertilizer Operations (**QFO**) business, which is a vertically integrated production facility located in Queensland, and the marketing and distribution arm of Hi-Fert. The fertilizers business comprises:

a fertilizer plant at Phosphate Hill, south-east of Mount Isa, which processes phosphate rock from WMC's own deposits;

an acid plant at Mount Isa that captures the off-gases from Xstrata's copper smelting facilities at Mount Isa and burns sulphur;

a port facility at Townsville; and

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a one-third interest in the fertilizer distribution business of Hi-Fert.

Achievements of WMC's QFO business include:

commissioning of a new screening system in the granulation plant in 2004 for improved product sizing and handling;

installation of plant to produce sulphur-fortified mono-ammonium phosphate (*MAP-S*) for which WMC expects to earn a price premium;

planned improvements to the Mount Isa acid plant, including enhanced process control, increased smelter gas uptake, increased sulphur capture and conversion efficiencies to enhance acid production capacity;

planned modifications to the Mount Isa acid plant so it can produce sulphuric acid by burning sulphur when there are interruptions to the supply of sulphur dioxide from Xstrata's operations; and

planned small capital projects and de-bottlenecking over the next three years which are expected to increase annual fertilizer production from 980,000 tonnes (forecast 2005 production) to 1.1 million tonnes.

### 2.5 Exciting Program of Growth

WMC has commenced a significant growth phase. It is investing in internal and external growth opportunities in order to improve returns and increase shareholder value. Growth opportunities being pursued include:

expansion of Olympic Dam;

a growth strategy for the Company's nickel business;

the Corridor Sands mineral sands (titanium dioxide) project in Mozambique;

exploration within Australia and offshore; and

a range of technological improvements and step-changes.

The anticipated future growth in the market for uranium oxide also provides WMC with growth opportunities.

These growth opportunities are described below.

(a) **Olympic Dam Expansion**

In May 2004, WMC announced a A\$48 million pre-feasibility study to be completed by early 2006, including:

the preparation of a detailed resource model of the southern part of the Olympic Dam deposit through 72 kilometres of drilling in 90 surface diamond drill holes (subsequently increased as described below);

assessment of the viability of alternative mining, treatment and recovery methods for the southern part of the deposit;

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development of a whole-of-life mine plan;

environmental studies and impact assessment, including scoping of a new environmental impact statement;

identification and evaluation of options for water and energy supply;

development of an integrated marketing and logistics plan, including the possibility of linking Olympic Dam to the national rail network; and

consideration of township development options at Roxby Downs.

WMC has established strong management control over the study and its deliverables. The study team comprises senior technical and operational WMC personnel working with some of the world's most experienced and reputable industry consultants.

The study is being conducted in two stages. Stage One comprises the evaluation of mining methods and scale of operations so that a preferred mining methodology can be recommended in early 2005. In parallel with this, bench scale metallurgical test work and water studies are being undertaken. Stage Two will progress the detailed mine planning, flowsheet development, infrastructure design and cost estimates.

On the basis of work to date, options include increasing copper production to approximately 500,000 tonnes per annum using an integrated block caving operation in conjunction with the current underground mine, or open pit mining of the southern regions combined with the existing underground operation.

Since commencement of the study, surface drilling has identified significant intersections in the south eastern region of the deposit. These intersections are closer to the surface and therefore mean less pre-stripping would be required in the case of an open pit mining operation. On the basis of these encouraging results, the study's drilling program has been expanded and further funds (in addition to the A\$48 million referred to above) have been allocated to the study. It is now anticipated that over 200 kilometres of surface drilling will be conducted as part of the pre-feasibility study in order to issue a probable ore reserve (for the purposes of the JORC Code) at the conclusion of the study in early 2006.

The pre-feasibility study aims to identify the preferred route for an expansion to the surface processing facilities at Olympic Dam. The preferred processing route will be based on commercially proven processes and will maximise the utilisation of existing facilities, where possible. The most likely process flow-sheet at this stage of the study is a conventional two-stage smelting option utilising the existing direct to blister furnace as the flash converting furnace with a new flash smelting furnace to be constructed. It is anticipated that this plant would produce approximate annual quantities of 15,000 tonnes of uranium oxide and 500,000 ounces of gold in addition to 500,000 tonnes of copper.

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Whilst the pre-feasibility study is not due for completion until early 2006, key areas of the study are well advanced, and indications to date are that the expansion of Olympic Dam is feasible, utilising today's proven technology.

Details of the indications to date are included in the Independent Expert's Report (Annexure A, section 2.8). Those details include current indications that total required capital for a 40 million tonne per annum case will be of the order of A\$5 billion. The actual amount of capital that WMC will be required to procure for the expansion of Olympic Dam will depend on a range of factors including: ability to optimise capital estimates; offsetting cash flow from the existing operation during the construction period; decisions to secure infrastructure requirements from external providers (up to A\$600 million); decisions to purchase mining equipment (up to A\$800 million) versus contract mining; and marketing arrangements for future production which could include up-front payments.

WMC is working closely with the South Australian State Government, which jointly announced the Olympic Dam development study and has expressed strong support for the expansion of the Olympic Dam operation.

On 24 November 2004, WMC reported the upgrade of Olympic Dam's mineral resources by approximately 30%. The Olympic Dam resource is of a size that will support an expanded world class operation for many decades to come.

Since the Announcement Date, WMC has been involved in preliminary discussions with a number of interested parties (not including Xstrata) regarding possible transactions in relation to Olympic Dam, and has also provided some of those interested parties with confidential information. See section 4.3(b) for more details.

**(b) Growing Market for Uranium**

During 2004, total world demand for uranium oxide was approximately 78,600 tonnes. All of this was used by the nuclear power industry to generate electricity.

According to the World Nuclear Association, as at November 2004, there were 438 nuclear power plants operating in the world, with an additional 27 plants under construction. Planning is well advanced on building a further 37 plants. Much of this growth will occur in Japan (16), India (9), the People's Republic of China (8) and South Korea (8).

As detailed in the report for WMC included as Annexure C to this Target's Statement, the consulting firm International Nuclear, Inc (*iNi*) forecasts that total demand for uranium oxide will grow to 84,000 tonnes by 2010, rising to nearly 91,900 tonnes by 2020. This is equal to a compound annual growth of 1% per annum over the 16 years.



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The above forecast is considered conservative in that it makes no allowance for a potential increase in nuclear power generation arising from concerns over greenhouse gas emission issues associated with other forms of electricity generation. According to iNi, between 2004 and 2020, because of a decline in secondary supply (comprising stock draw-down and recycling of highly-enriched

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uranium), primary production of uranium oxide will have to rise by nearly 28,000 tonnes or 60% to 74,500 tonnes to meet demand.

During 2004, total world production of uranium oxide was estimated to be 46,700 tonnes. The shortfall of 31,900 tonnes was made up of secondary supplies.

Scheduled production from existing and currently committed operations is expected to remain flat if not decline over the next decade. The proposed expansion at Olympic Dam to an average 15,000 tonnes per annum of uranium oxide (based on current indications of the pre-feasibility study) will partially satisfy the expected future shortfall in global uranium oxide production.

WMC estimates that Olympic Dam produced 4,400 tonnes of uranium oxide in 2004. This is equal to 9.4% of current world mine production.

Olympic Dam is well positioned to take advantage of the expected growth in demand and the expected increase in uranium prices. iNi predicts that, over the period 2005-2020, the average spot price for uranium oxide will be around US\$22.50/lb, rising to over US\$26.00/lb in the longer term. This is approximately double the average spot price of US\$13.25/lb achieved over the last decade. All prices quoted above are expressed in constant (or real) 2004 US Dollars, which is net of future inflation.

#### **(c) Nickel Growth Strategy**

Building on its strong performance and capitalising on continued growth in demand for nickel, WMC has identified a five-point development and growth strategy for its Western Australian nickel business. The key aspects of the strategy are described below.

(i) Maintain base production above 100,000 tonnes a year

Production of approximately 8,000 tonnes per year from the recently acquired Cliffs project is planned to commence in 2007. Pre-feasibility studies are underway at the Yakabindie project, with production intended to commence around the end of the decade to replace expected declining production from the Kambalda region. Further, the Leinster mine life is likely to be extended into the second half of the next decade following completion of mining studies and in-fill drilling at the Perseverance mine during 2005. WMC has recognised that the management of magnesia from these sources is important to maximise smelter performance, and appropriate steps are currently being undertaken to address this.

(ii) Increase output by approximately 25,000 tonnes a year by applying technology to unlock value from stockpiled low grade and talc ores

WMC's operations at Mount Keith and the planned Yakabindie project (which is located nearby) are proposed to form one integrated mining operation and processing facility. The Mount Keith operations will be expanded to add approximately 25,000 tonnes per year of nickel

production from 2008/2009. A new circuit will be purpose-built, to initially

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treat over 20 million tonnes of talc and low grade ore from existing stockpiles and subsequently treat similar ore produced from ongoing mining operations. It is envisaged that the plant will also ultimately treat similar ore that is known to be present within nickel deposits at the Yakabindie project. The new circuit will produce a high value intermediate product that will either be treated at an expanded Kwinana nickel refinery or sold, whichever is most profitable.

- (iii) Extend business life by continuing to convert resources to reserves

WMC's Nickel business has a strong ore reserve position, with lives in excess of 22 years at Mount Keith and 8 years at Leinster. These ore reserves are complemented by the large mineral resources at Mount Keith, Leinster, Yakabindie, Cliffs and major ground holdings in prospective nickel regions. WMC has a strong track record of converting mineral resources into ore reserves.

- (iv) Apply new in-house technology to identify deeper ore bodies that are beyond the range of conventional geophysical techniques

WMC has developed a deep-penetrating electro-magnetic geophysical system capable of accurately detecting conductive sulphides to a depth of at least 500 metres. This innovative technology will be systematically deployed to identify new target areas on our extensive existing lease holdings and will be followed up with drill-testing of anomalies.

- (v) Continue regional exploration to identify a new nickel province

WMC has developed a robust portfolio of nickel sulphide exploration projects in Western Australia. The exciting Collurabbie prospect is the most advanced project in the portfolio.

Over A\$90 million will be invested by WMC in 2005 for resource drilling, development studies and regional exploration in Western Australia to support the implementation of this nickel growth strategy.

### (d) **Fertilizers**

The strategic objectives for WMC's QFO business are to develop domestic markets and increase production of value-added fertilizers.

In the second half of 2004, it is expected that QFO produced 29,000 tonnes of the new sulphur-fortified MAP-S which is expected to increase to 168,000 tonnes in 2005 and up to 285,000 tonnes annually in future years. QFO is also developing the option of producing a sulphur-fortified di-ammonium phosphate (**DAP-S**) product for the domestic market along with other specialty ammonium phosphate products.

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On 9 December 2004 Hi-Fert, WMC's wholly-owned fertilizer distribution business, agreed to form a strategic partnership in the fertilizer industry with AWB Limited (Landmark) and Elders Limited (a subsidiary of Futuris Corporation Limited) to increase competition and drive cost savings in the east coast fertilizer supply chain.

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The joint venture creates a stronger, integrated fertilizer sales and distribution group, bringing together the strength of a producer, a wholesaler and a retailer in a strategic partnership. WMC's ongoing interest in the Hi-Fert joint venture will remain a key part of WMC's integrated fertilizer business.

As Australia's only producer of ammonium phosphate fertilizers, QFO will be a primary supplier to the new Hi-Fert joint venture. Accordingly, WMC is expected to benefit from an increase in the quantity of product that will be sold through Hi-Fert into the profitable domestic market.

#### **(e) Corridor Sands**

Consistent with WMC's strategy of growing through the development of large, long-life, globally competitive operations, the Corridor Sands project in Mozambique contemplates the exploitation of massive undeveloped heavy mineral sand deposits. The project envisages an integrated mining, concentrating and smelting operation to produce titanium dioxide slag, used to produce pigments for brightness and opacity in the manufacture of paint, paper and plastics, high-purity foundry iron and other minor by-products. WMC is working towards development of the project to meet forecast demand for additional titanium dioxide in 2009.

The value of the Corridor Sands project is found in:

the enormous ore body (which is the world's largest known undeveloped ilmenite resource);

anticipated low cash costs, assessed as being in the lower third of the costs of current world heavy mineral producers;

proven technology and sourcing of regionally available, experienced staff;

a stable market for titanium dioxide slag, which is characterised by long term contracts; and

a favourable, agreed and decreed investment regime and the strong support of the Mozambique Government and the local community.

During 2004, community discussions were completed to agree on the relocation of people residing in the mine area, environmental approvals were finalised, and discussions continued with major customers to establish firm purchase agreements. Negotiations for a power supply agreement with suppliers from Mozambique (Eletricidade de Moçambique (EdM)) and South Africa (Eskom) are well advanced.

A revalidation of the bankable feasibility study previously conducted in 2002 is planned to commence in early 2005.

(f) **Exploration**

WMC has a proud history of minerals discovery. WMC's global minerals exploration program concentrates on finding deposit styles capable of providing excellent returns by supporting current operations, or as stand-alone projects, both in Australia and around the world.

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The primary commodity focus is on sulphide deposits containing nickel, copper and platinum group elements and on magmatic-associated copper-gold deposits.

WMC's exploration group supports the growth and sustainability of WMC in the areas described below:

(i) Brownfields Exploration

This exploration is focused around WMC's existing mines, targeting opportunities with a relatively short time horizon and a lower risk-reward profile. The emphasis is near-mine exploration around our Western Australian nickel operations. WMC is deploying its recently developed and highly encouraging deep-penetrating electro-magnetic technology in the Agnew-Wiluna belt.

(ii) Greenfields Exploration

This exploration is focused on delivering significant increments of growth through the discovery of new world-class mineral deposits and mineral provinces. Examples include:

The Collurabie project, which is located about 180 kilometres east-north east of WMC's Mount Keith operation, where WMC has a 70-30 joint venture with Falcon Minerals NL, and where WMC also holds 100% of other tenements covering a large area. Recent drilling at the Olympia project within the joint venture has intersected significant nickel, copper and platinum group element mineralisation over a strike length of 600 metres.

The Babel-Nebo deposit at West Musgrave, discovered by WMC in 2000 and located 800 kilometres north east of Leonora in Western Australia. A total of 125 holes have been drilled to test the potential of the deposit. This drilling has identified an inventory of mineralisation in the order of one million tonnes of nickel metal and one million tonnes of copper metal (with platinum group elements and cobalt credits). At this stage, a mineral resource has not been defined for the deposit. Further metallurgical studies are planned and will facilitate evaluation of the project economics. Two drilling programs, one to test for deep mineralisation at Babel and one to test a significant electromagnetic anomaly in the region, are also planned for early 2005.

WMC has developed considerable exploration experience in China, having undertaken several exploration programs for gold, copper and nickel since the mid-1990s. Most recently, WMC entered into an exploration joint venture with Jinchuan Group Ltd covering a number of under-explored areas in Gansu Province and western Inner Mongolia. Exploration planned for early 2005 includes regional aero-magnetic surveys and preliminary drilling.



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WMC has also completed an exploration agreement with Albidon Ltd covering large early-stage greenfields exploration areas in Botswana, Zambia, Tanzania, Tunisia and Malawi. These areas contain significant potential for large nickel-copper and platinum group element deposits and WMC has embarked on an aggressive exploration program aimed at developing several drilling projects by mid-2006.

WMC is also exploring for nickel-copper and platinum group element deposits in selected areas of the United States and Canada.

Early-stage programs for copper-gold deposits are also underway in northern Peru and southern Mexico.

#### (g) **Technical Innovation**

Adding value through technical improvements, from exploration to metal refining, is a key component of WMC's success and its growth prospects.

Dedicated mining and processing teams focus on business leverage points to develop innovative solutions to maximise returns from new ore bodies and the existing asset base. The associated know-how that is generated is protected by patents (32 patents have been granted and a further 72 patents are pending).

WMC's in-house technology developments are utilised to leverage reciprocal technology exchange arrangements with peer mining companies in areas of special interest or are commercialised through suppliers to the relevant industry.

From 2002 to 2004, an estimated A\$587 million in net present value has been added to WMC's business units through technological improvements. Two of WMC's recent in-house developments – deep-penetrating electro-magnetic exploration technology and technology facilitating the recovery of finely disseminated nickel – have been validated, patented and successfully implemented.

A further suite of technological projects is expected to deliver additional value over the next five years. Key projects that are currently being pursued include:

further recovery and throughput improvements at Mount Keith and Leinster;

the processing of high-talc content ore stockpiles and low-grade nickel ores from Mount Keith and Yakabindie;

the development of a new mining system and metal recovery improvements at Olympic Dam; and

further improvements to WMC's deep-penetrating electro-magnetic exploration technology.

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**2.6 WMC Financial Information (Including 2005 Forecasts)**

This section 2.6 sets out certain historical financial information concerning WMC.

It also includes forecast financial information for both 2004 (as WMC's actual financial results for the year to 31 December 2004 have not yet been determined) and 2005.

The 2004 forecasts represent actual year to date results for the period to November 2004 and forecast results for December 2004.

The forecasts set out in this section 2.6 have been prepared with due care and attention and reflect your Directors' judgement of the likely full year results based upon current operating and economic conditions and strategic plans to be undertaken.

By their nature, the 2004 and 2005 forecasts involve risk and uncertainty and depend upon future circumstances, particularly due to WMC's sensitivity to commodity price and exchange rate fluctuations.

**(a) General Assumptions in Relation to the Forecast Information**

The general assumptions adopted in preparing these forecasts are set out below:

no significant changes in Australian Commonwealth or State legislation, tax legislation, regulatory requirements or government policy;

no material downturn in 2005 in economic conditions in the key markets of WMC's customers, particularly in the Asian region;

no material acquisitions or disposals;

no disruption to WMC's operations other than scheduled and forecasted maintenance shutdowns;

no costs arising as a result of industrial/contractual disputes or litigation for WMC or its major suppliers;

no significant changes to WMC's funding or capital structure other than as set out in, or contemplated by, this Target's Statement;  
and

a general consumer price index increase of 3% per annum during the forecast period and other market related increases where appropriate.

The actual and forecast information included in this Target's Statement has been prepared in accordance with the measurement and recognition principles prescribed in Accounting Standards and other mandatory professional reporting requirements in Australia and the accounting policies adopted by WMC as disclosed in Note 1 to the financial statements in WMC's 2003 Annual Report.

The forecast information has also been prepared assuming that there are no changes of a material nature to accounting policies, or to Australian Accounting Standards, Statements of Accounting Concepts or other mandatory professional reporting requirements including Urgent Issues Consensus Views and the Corporations Act (which could have a material effect on WMC's forecast financial results). The potential impact of the introduction of Australian equivalents to

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International Financial Reporting Standards (*AIFRS*) from 1 January 2005 is outlined in section 2.6(I).

**(b) Specific Assumptions in Relation to the Forecast Information**

The specific assumptions for commodity prices, exchange rates, production and sales volumes adopted in preparing the 2004 and 2005 forecasts are summarised in Table 1.

For 2004, the commodity price assumptions are based on average year to date prices for the period to November 2004 and forecasts for December 2004.

The 2005 forecast is based on the average commodity prices which are consistent with those used for the 2004 forecast. The Australian Dollar commodity prices for 2005 (as presented in Table 1) have been derived using a forecast average AUD:USD exchange rate of 0.74.

The 2004 production and sales full year forecast is based on actual year to date volumes for the period to November 2004 and forecasts for December 2004.

For 2005, the forecast level of production and sales is based upon the current view of the operational and sales plans for the relevant business and takes account of known operational constraints due to planned shutdowns and forecast ore grades and activity rates.

**Table 1 Commodity Price Assumptions**

In forecasting sales revenue for 2004 and 2005, the following commodity prices have been assumed. The 2003 actual average commodity prices are also shown for comparative purposes.

	<b>Actual 2003</b>	<b>Forecast 2004</b>	<b>Forecast 2005</b>
<b>Commodity Prices</b>			
Nickel (USD/lb)	4.37	6.25	6.25
Copper (USD/lb)	0.81	1.29	1.29
DAP (USD/tonne)	179	221	221
Gold (USD/oz)	364	408	408
Nickel (AUD/lb)	6.70	8.45	8.45
Copper (AUD/lb)	1.24	1.74	1.74
DAP (AUD/tonne)	274	299	299
Gold (AUD/oz)	558	551	551

Most of WMC's uranium oxide sales are at contracted volumes and prices. Uranium spot prices have increased significantly in view of expectations of a tighter supply and demand balance. As uranium is sold under long term contracts,

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realised prices will trend towards spot prices over time as new contracts are put in place. Prices assumed for 2005 realisations are therefore at a considerable discount to current spot prices.

**Table 2 Production and Sales Volumes**

In preparing the 2004 and 2005 forecasts, the following production and sales volumes have been assumed. The forecast 2004 volumes represent actual year to date volumes during the period to November 2004 and forecast performance for December 2004. The 2003 actual volumes are also shown for comparative purposes.

	<b>Actual 2003</b>	<b>Forecast 2004</b>	<b>Forecast 2005</b>
<b>Production Volumes</b>			
Nickel (kt)			
- nickel-in-concentrate	117.7	114.9	117.8
- nickel-in-matte	99.2	97.7	107.5
- nickel metal	61.4	62.3	67.5
Copper (kt)	160.1	224.0	226.0
Uranium (kt)	3.2	4.4	4.7
MAP/DAP (kt)	922.0	890.0	980.0
Gold (koz)	86.1	87.6	115.3
<b>Sales Volumes</b>			
Nickel (kt)			
- nickel-in-concentrate	14.9	14.3	5.3
- nickel-in-matte	36.5	32.1	39.7
- nickel metal	60.9	62.2	68.0
Copper (kt)	174.5	231.3	228.5
Uranium (kt)	4.6	4.2	5.0
MAP/DAP (kt)	893.5	950.8	972.2
Gold (koz)	85.7	85.3	114.9

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The 2005 forecast profit after tax is sensitive to variations in the following key commodity prices and the AUD:USD exchange rate. Sensitivities for 2004 are not shown as the 2004 forecast is based on 11 months of actual data.

**Table 3 Sensitivity Analysis**

<b>Financial Year 2005 Forecast Sensitivity</b>	<b>Movement</b>	<b>Impact on Forecast 2005 Profit after Tax</b>
		<b>A\$ million</b>
AUD/USD	+/- 0.01	31.7
AUD/USD	+/- 0.02	64.3
Commodity Prices		
Nickel (USD/lb)	+/- 0.10	19.4
Copper (USD/lb)	+/- 0.01	4.6
DAP (USD/tonne)	+/-10.00	8.4

Care should be taken in interpreting these sensitivities. In particular, the sensitivity analysis in Table 3 treats each movement in the variables in isolation, whereas, in most cases, movements will be interdependent.

**(d) WMC Earnings Profile**

Revenue from operations (pre-hedging) is forecast to increase 30% from A\$2,933 million in 2003 to A\$3,816 million in 2004. Buoyant commodity prices, strong volumes across all commodities and insurance proceeds received/receivable are contributing to the revenue growth.

Stronger sales volumes forecast for 2005 more than offset the reduction in fertilizer revenues as a consequence of the restructuring of Hi-Fert in December 2004 and insurance receipts recognised in 2004, with total revenue remaining steady year-on-year.

The consolidated profit after tax for 2004 is forecast at A\$1,327 million compared with A\$246 million for 2003. The higher result compared with 2003 reflects increased Australian Dollar commodity prices, a turnaround in operational reliability and profitability at Olympic Dam and improved revenues and earnings growth in the nickel operations. The forecast 2004 result also benefits from tax credits totalling approximately A\$567 million arising from the recognition of all known Australian tax losses and other timing differences not previously brought to account, residual hedge obligations settled in 2004 and restatement of deferred tax balances on entry to the Australian tax consolidation regime.





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Forecast profit after tax for 2005 is A\$710 million. The absence of tax credits and insurance proceeds in 2005 is partially offset by stronger sales volumes and margin improvement.

The results reported in Table 4 are impacted by certain items considered significant, due to their nature and/or amount. For comparative purposes, these have been adjusted in determining a normalised level of earnings for each of the years presented. The normalised results are set out in section 2.6(e).

On a normalised basis, profit after tax increases from A\$243 million in 2003 to a forecast A\$697 million in 2004. Normalised profit after tax for 2005 is forecast at A\$709 million, an increase of 2%. Stronger operational performance in 2005 is offset by lower hedging gains (A\$30 million) and increased spending on growth related activities (A\$41 million).

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The summarised profit and loss for WMC for the year ended 31 December 2003, and forecast for the year ended 31 December 2004 and the year ending 31 December 2005, are set out below.

Year ended 31 December (A\$ million)	Actual 2003	Forecast 2004 <sup>1</sup>	Forecast 2005 <sup>2</sup>
Operating Revenue			
Nickel	1,822	2,155	2,294
Copper-Uranium	696	1,200	1,196
Fertilizer	423	461	344
Elimination of intra-group sales	(8)		
<b>REVENUE from operations (pre-hedging)</b>	<b>2,933</b>	<b>3,816</b>	<b>3,834</b>
Earnings before interest, tax, depreciation and amortisation (EBITDA)			
Nickel	673	977	950
Copper-Uranium	98	410	425
Fertilizer	12	43	57
Other EBITDA from operations	15	(13)	7
<b>EBITDA from operations (pre-hedging)</b>	<b>798</b>	<b>1,417</b>	<b>1,439</b>
Earnings before interest and tax (EBIT)			
Nickel	430	788	740
Copper-Uranium	(120)	184	213
Fertilizer	(31)	(6)	9
Other EBIT from operations	11	(13)	8
<b>EBIT from operations (pre-hedging)</b>	<b>290</b>	<b>953</b>	<b>970</b>
Net currency and commodity hedging gains	72	148	118
<b>EBIT from operations (post-hedging)</b>	<b>362</b>	<b>1,101</b>	<b>1,088</b>
Corporate costs	(21)	(22)	(26)
Non-recurring corporate costs (including takeover related costs)	(8)	(13)	(8)
Finance and other costs	(3)	34	21
Exploration and new business	(36)	(65)	(96)
<b>Total EBIT</b>	<b>294</b>	<b>1,035</b>	<b>979</b>
Net borrowing costs	(46)	(23)	(13)
<b>PROFIT before income tax credit/(expense)</b>	<b>248</b>	<b>1,012</b>	<b>966</b>
Income tax credit/(expense)	(2)	315	(256)
<b>PROFIT AFTER TAX</b>	<b>246</b>	<b>1,327</b>	<b>710</b>

Notes:

<sup>1</sup> The full year forecast of 2004 profit represents actual year to date results for the period to November 2004 and forecast performance for December 2004. The actual profit and loss for the year ended 31 December 2004 has not yet been determined but will be released by WMC as soon as all relevant information is available.



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<sup>2</sup> The 2005 forecast profit is for the 12 months ending 31 December 2005.

**(e) Normalisation of Earnings**

The results reported in Table 4 are impacted by certain items considered significant, due to their nature and/or amount.

For comparative purposes, these have been adjusted in determining a normalised level of earnings for each of the years presented.

**Table 5 Normalisation of Earnings Before Interest and Tax (EBIT)**

Year ended 31 December (A\$ million)	Actual 2003	Forecast 2004 <sup>1</sup>	Forecast 2005 <sup>2</sup>
<b>EARNINGS BEFORE INTEREST AND TAX</b>	<b>294</b>	<b>1,035</b>	<b>979</b>
Adjust for significant items impacting earnings:			
Insurance proceeds received/receivable	(4)	(70)	
Idle capacity charges associated with insurable events	62	2	
Non-recurring corporate costs (including takeover related costs)	8	13	8
Gain on sale of tenements	(10)	(26)	(7)
<b>EARNINGS BEFORE INTEREST AND TAX (normalised)</b>	<b>350</b>	<b>954</b>	<b>980</b>

Notes:

<sup>1</sup> The full year forecast of 2004 profit represents actual year to date results for the period to November 2004 and forecast performance for December 2004. The actual profit and loss for the year ended 31 December 2004 has not yet been determined but will be released by WMC as soon as all relevant information is available.

<sup>2</sup> The 2005 forecast profits is for the 12 months ending 31 December 2005.

**Table of Contents****WMC Resources Ltd - Targets Statement****Table 6 Normalisation of Profit after Tax**

Year ended 31 December (A\$ million)	Actual 2003	Forecast 2004 <sup>1</sup>	Forecast 2005 <sup>2</sup>
<b>PROFIT AFTER TAX</b>	<b>246</b>	<b>1,327</b>	<b>710</b>
Adjust for significant items impacting profit after tax:			
Insurance proceeds received / receivable	(3)	(48)	
Idle capacity charges associated with insurable events	43	2	
Non-recurring corporate costs (including takeover related costs)	6	9	6
Gain on sale of tenements	(10)	(26)	(7)
Tax credit on recognition of Australian tax losses and timing differences not previously brought to account	(39)	(398)	
Tax credit on entry to tax consolidation regime		(169)	
<b>PROFIT AFTER TAX (normalised)</b>	<b>243</b>	<b>697</b>	<b>709</b>

Notes:

1. The full year forecast of 2004 profit represents actual year to date results for the period to November 2004 and forecast performance for December 2004. The actual profit and loss for the year ended 31 December 2004 has not yet been determined but will be released by WMC as soon as all relevant information is available.
2. The 2005 forecast profit is for the 12 months ending 31 December 2005.

**Table of Contents****WMC Resources Ltd - Targets Statement****Table 7 Normalisation of Cash Flow from Operations**

Year ended 31 December (A\$ million)	Actual 2003	Forecast 2004 <sup>1</sup>	Forecast 2005 <sup>2</sup>
<b>CASH FLOW FROM OPERATIONS</b>	<b>676</b>	<b>1,369</b>	<b>1,309</b>
Adjust for significant items impacting cash from operations:			
Insurance proceeds received / receivable	(10)	(99)	(9)
Non-recurring corporate costs	8	3	
<b>CASH FLOW FROM OPERATIONS (normalised)</b>	<b>674</b>	<b>1,273</b>	<b>1,300</b>

Notes:

1. The full year forecast of 2004 cash flow represents actual year to date results for the period to November 2004 and forecast performance for December 2004. The actual cash flow for the year ended 31 December 2004 has not yet been determined but will be released by WMC as soon as all relevant information is available.
2. The 2005 forecast cash flow is for the 12 months ending 31 December 2005.

**(f) Selected Financial Measures and Metrics**

Set out below is a selection of key cash flow measures, balance sheet items and return measures.

Year ended 31 December (A\$ million)	Actual 2003	Forecast 2004 <sup>1</sup>	Forecast 2005 <sup>2</sup>
<b>CASH FLOW MEASURES</b>			
Cash flow from operations	676	1,369	1,309
Cash flow from operations (normalised) <sup>3</sup>	674	1,273	1,300
Capital expenditure	662	421	654
Depreciation and amortisation	510	464	475
Cash flow before debt and equity funding	(86)	895	590
<b>KEY BALANCE SHEET ITEMS</b>			
Net debt	1,253	508	880
Working capital	534	456	470
<b>KEY MEASURES AND METRICS</b>			
Return on Equity (%)			
- reported earnings	6	26	14
- adjusted for normalisations <sup>3</sup>	6	14	14
Earnings per share (cents per share)			
- reported earnings	22	114	62

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- adjusted for normalisations <sup>3</sup>	22	60	62
Gearing (%)	24	10	17

### Notes:

- <sup>1.</sup> The full year forecast of 2004 profit and cash flow represents actual year to date results for the period to November 2004 and forecast performance for December 2004. The actual profit and loss and cash flow for the year ended 31 December 2004 has not yet been determined but will be released by WMC as soon as all relevant information is available. The forecast balance sheet as at 31 December 2004 has been used to calculate gearing and other ratios.



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2. The 2005 forecast profit and cash flow is for the 12 months ending 31 December 2005.
3. Refer to Tables 5, 6 and 7 for summary of normalisation adjustments.

**(g) Comparison of Financial Performance - Financial Year 2004 Forecast versus Financial Year 2003 Actual**

*All references to EBIT in respect of operations are quoted on a pre-hedging basis.*

**Nickel**

Nickel 2004 EBIT is forecast at A\$788 million compared with 2003 EBIT of A\$430 million. The increase primarily reflects stronger realised Australian Dollar nickel prices and lower amortisation charges. However, the 2004 margin is impacted by higher prices paid and increased volumes received for third party feed purchases of nickel.

Revenue for the nickel operations is expected to rise from A\$1,822 million in 2003 (excluding hedging) to a forecast of A\$2,155 million in 2004 driven by stronger metal volumes and a higher average nickel price (up 26% from A\$6.70/lb to A\$8.45/lb).

Metal sales in 2004 are expected to increase by approximately 2% as a result of higher production. Matte sales are forecast to be 12% lower primarily due to reduced concentrate feed availability from the Mount Keith mine as a result of transitioning from Stage E to F mining and matte production diverted to higher value-added metal production.

During 2004, the sale of Lanfranchi tenements contributed A\$26 million to revenue.

Amortisation costs are expected to reduce by A\$48 million, compared with 2003, primarily as a result of reduced mining at the Harmony open pit.

Volumes and prices paid for third party feed purchases from mines operated in the Kambalda project increased reflecting production from five new mines, increased production from existing mines and the impact of the higher Australian Dollar nickel price.

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#### **Copper-Uranium**

The copper-uranium EBIT for 2004 is forecast at A\$184 million, compared with a A\$120 million loss for 2003. The A\$304 million turnaround reflects stronger commodity prices, increased copper sales volumes and insurance revenues, partly offset by higher costs.

Higher realised prices are expected to improve EBIT by A\$274 million, mainly driven by an increase in the average copper price from A\$1.24/lb to A\$1.74/lb.

Copper sales volumes are expected to be higher by approximately 57,000 tonnes in 2004 partially offset by a reduction in uranium sales of 400 tonnes. The higher copper volumes reflect a 40% increase in production volumes due to significantly improved operating performance in both the Olympic Dam smelter and refinery and commissioning of solvent extraction plants.

Settlement of the solvent extraction plant and heat exchanger insurance claims contributed around A\$80 million to 2004 operating revenue and EBIT, including the amounts paid by the WMC Group's captive insurer.

Higher forecast cash costs reflect higher production volumes and product purchases to meet customer commitments. Non-cash costs are forecast to increase by A\$48 million, largely due to the write-off of certain carried forward costs and also due to higher depreciation costs associated with the new solvent extraction plant.

#### **Fertilizer**

Fertilizer operations are forecasting a loss in 2004 of A\$6 million, an improvement over the 2003 loss of A\$31 million.

The improvement is a result of higher Australian Dollar sales prices partly offset by the costs of importing fertilizer to meet customer demand.

#### **Other Operations**

The forecast loss in 2004 relates to the self insurance amount on the Olympic Dam heat exchanger insurance claim payable by the WMC Group's captive insurer.

**Net Currency and Commodity Hedging Gains**

For 2004, hedging gains are forecast at A\$148 million compared with the 2003 hedging gain of A\$72 million reflecting the increase in the average exchange rate of the Australian Dollar in 2004 compared to 2003 and a higher volume of US Dollar hedging positions in 2004.

**Corporate**

The marginal increase in forecast corporate costs for 2004 compared to 2003 reflects higher governance and compliance related expenditure.

Corporate one-offs in 2004 include an accrual for takeover related costs incurred during the year.

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### **WMC Resources Ltd - Target's Statement**

#### **Finance and Other Costs**

Financing gains are forecast to increase from a loss of A\$3 million in 2003 to a gain of A\$34 million in 2004. The increase reflects the impact of the strengthening of the Australian Dollar upon translation of foreign currency denominated debt and the consequent amortisation of net deferred gains arising.

#### **Exploration and New Business**

The increase in the level of exploration and new business expenditure largely relates to the Olympic Dam and Yakabindie development studies and an increase in the level of Australian based exploration programs and activities.

#### **Net Borrowing Costs**

Net borrowing costs are expected to reduce from A\$46 million in 2003 to A\$23 million in 2004 due to lower effective interest rates and reduced net debt levels.

#### **Income Tax Credit**

The tax credit for 2004 is forecast at A\$315 million. Tax expense on current year EBIT was more than offset by a tax credit of around A\$398 million from the recognition of all known Australian tax losses and other timing differences not previously brought to account, and other credits including A\$35 million relating to residual hedge obligations in respect of the former gold operations. In addition, a tax credit on restatement of deferred tax balances on entry to the Australian tax consolidation regime of A\$169 million has been brought to account.

### **(h) Comparison of Financial Performance - Financial Year 2005 Forecast versus Financial Year 2004 Forecast**

#### **Nickel**

Nickel 2005 EBIT is forecast at A\$740 million compared with 2004 EBIT forecast of A\$788 million. Increased metal and matte sales are offset by reduced concentrate sales as well as the non-recurring nature of the gain on the sale of the Lanfranchi tenements. In addition, higher costs as a result of higher production, increased volumes of third party feed purchases and increased growth project costs (A\$13 million) have contributed to the lower 2005 forecast.

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Revenue for the nickel operations is expected to rise from A\$2,155 million forecast in 2004 (excluding hedging) to a forecast A\$2,294 million in 2005 driven by higher matte and metal sales volumes. This is due to the completion of concentrate sales contracts, allowing concentrate production to be diverted to higher margin matte and metal sales.

Metal sales in 2005 are expected to increase by approximately 9% to 68,000 tonnes and matte sales are forecast to be 24% higher at 39,700 tonnes primarily due to increased concentrate availability.

In 2005, costs are expected to increase due to higher matte and metal production, relatively higher cost ore at the 11 Mile Well pit at Leinster, third party purchased volumes and increases in consumable prices and reliability management costs.

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#### **Copper-Uranium**

EBIT from copper-uranium is expected to improve from the 2004 forecast of A\$184 million to A\$213 million in 2005.

Forecast 2005 EBIT is strengthened by higher uranium oxide sales volumes and contracted prices, however, this is partly offset by a reduction in insurance proceeds of approximately A\$80 million.

Copper revenues are in line with those forecast in 2004. Uranium revenues are forecast to increase due to both higher average realised prices from long term contracts following a recent tightening of the uranium spot market and higher sales volumes as a result of improved production recoveries and higher processing rates. No further insurance proceeds are expected in 2005 after claims of A\$80 million were finalised in 2004.

Cash costs in 2005 are expected to reduce with a lower level of product purchases. Some cost increase is expected in the mine area, particularly due to increased operating development and backfill as the mine ramps up to a rate of 10.5 million tonnes per annum of ore extraction.

#### **Fertilizer**

The 2005 EBIT for the fertilizer business is forecast at A\$9 million, an improvement of A\$15 million on the 2004 forecast driven mainly by higher production volumes, lower unit costs and improved margins.

#### **Other Operations**

In 2004, other operations included the self insurance amount on the Olympic Dam heat exchanger insurance claim payable by the WMC Group s captive insurer.

The forecast gain in 2005 represents net income in the WMC Group s captive insurer matched by premiums paid by the business units resulting in no net EBIT impact for the group.

#### **Corporate**

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In 2005, the forecast increase in corporate costs compared to 2004 largely reflects higher governance and compliance related expenditure.

Corporate one-offs include an estimate for 2005 takeover related costs.

### **Net Currency and Commodity Hedging Gains**

For 2005, hedging gains are forecast at A\$118 million.

During 2003 and early 2004, all currency and commodity contracts for the periods 2005 to 2008 and 2005 to 2010 respectively were closed out, crystallising the amounts to be recognised during these periods. The hedging result for 2005 is fixed, reflecting the gain crystallised during 2003 and early 2004, in contrast to 2004 where the gains are dependent on the underlying AUD:USD exchange rate.

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#### **Finance and Other Costs**

Financing gains are forecast at A\$21 million for 2005 reflecting the amortisation of net gains arising on translation of foreign currency denominated debt.

#### **Net Borrowing Costs**

Net borrowing costs are expected to reduce from A\$23 million forecast in 2004 to A\$13 million in 2005, commensurate with the lower average net debt balance over the course of the year. Forecast 2004 net borrowing costs include the expensing of approximately A\$3 million of facility establishment costs following the early closure of certain facilities in 2004.

#### **Exploration and New Business**

The increase in the level of 2005 expenditure compared to 2004 reflects the increased focus on WMC's growth projects and in particular the Olympic Dam development study and nickel growth strategy projects.

#### **Income Tax Expense**

In 2004, the net tax credit included significant credits in respect of the recognition of Australian tax losses and other timing differences not previously brought to account and the restatement of deferred tax balances on entry to the Australian tax consolidation regime.

In 2005, the effective tax charge is expected to be around 26%. The difference between the effective rate and the Australian corporate tax rate of 30% is largely attributable to hedge gains which are non-assessable for Australian taxation purposes.

#### **(i) Summary of Cash Flows**

The summarised cash flow statement for WMC for the year ended 31 December 2003 and forecast for the year ended 31 December 2004 and the year ending 31 December 2005 are summarised below.



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Year ended 31 December (A\$ million)	Actual 2003	Forecast 2004 <sup>1</sup>	Forecast 2005 <sup>2</sup>
EBITDA from operations (pre-hedging)	798	1,417	1,439
EBITDA Corporate/Finance/Exploration/New Business	(66)	(66)	(103)
<b>EBITDA from operations (excluding currency and commodity hedging gains)</b>	<b>732</b>	<b>1,351</b>	<b>1,336</b>
Movements in working capital	(27)	22	(13)
Currency and commodity hedging receipts	8	43	
Other balance sheet movements	17	(25)	(5)

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Income tax paid	(3)		
Net borrowing costs paid	(51)	(22)	(9)
<b>Cash flow from operations</b>	<b>676</b>	<b>1,369</b>	<b>1,309</b>
Capital expenditure	(662)	(421)	(654)
Proceeds on sale of investments	23	77	21
Other investing cash flows	4	(13)	(57)
<b>Net cash flow before financing</b>	<b>41</b>	<b>1,012</b>	<b>619</b>
Repayment of GBU hedging	(33)	(117)	
Payment on close out of interest rate hedge	(39)		
Defence costs			(18)
Other	(55)		(11)
<b>Net cash flow before debt and equity transactions</b>	<b>(86)</b>	<b>895</b>	<b>590</b>

Notes:

- The full year forecast of 2004 profit and cash flow represents actual year to date results for the period to November 2004 and forecast performance for December 2004. The actual profit and loss and cash flow for the year ended 31 December 2004 has not yet been determined but will be released by WMC as soon as all relevant information is available.
- The 2005 forecast profit and cash flow is for the 12 months ending 31 December 2005.

**(j) Commentary on Major Cash Flow Movements****(i) Comparison of Cash Flows - Financial Year 2004 Forecast versus Financial Year 2003 Actual**

Forecast cash flow from operations for the 12 months to 31 December 2004 is A\$1,369 million compared with A\$676 million for 2003.

The significant increase in cash flow from operations for 2004 is largely attributable to higher sales volumes across all commodities, higher Australian Dollar commodity prices and proceeds from insurance claims.

In 2004, working capital levels in nickel and copper are expected to fall, realising net cash of A\$22 million.

The other balance sheet items reflect cash movements in treasury related items, provisions and other non-working capital related balances.

Capital expenditure for 2004 is forecast at A\$421 million, compared with A\$662 million in 2003, reflecting reduced expenditure on the construction of the Olympic Dam solvent extraction plants and lower scheduled major maintenance compared with the 2003 year.



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Other net investing cash flows for 2004 represent the capital outlays in respect of certain growth activities, principally the Olympic Dam development study.

During 2004, WMC took advantage of the strong operating cash flows to arrange early repayment of residual foreign exchange and gold hedge obligations relating to the gold operations (GBU) previously conducted by the WMC Group. The 2004 cash flow reflects the settlement of the obligations together with current period payments, totalling in aggregate A\$117 million.

(ii) Comparison of Cash Flows - Financial Year 2005 Forecast versus Financial Year 2004 Forecast

Forecast cash flow from operations for the 12 months to 31 December 2005 is A\$1,309 million compared with A\$1,369 million for 2004.

The 2004 year benefited from cash proceeds on settlement of certain insurance claims in the order of A\$99 million. Excluding this amount, cash flow from operations is relatively steady year-on-year.

Working capital levels are expected to increase slightly in 2005, notably within the fertilizer operations as stocks increase towards the end of 2005 to meet 2006 customer requirements.

Capital expenditure for 2005 is forecast to increase to A\$654 million reflecting increased mine development activity in nickel and copper, nickel growth strategy projects, fertilizer production improvement and the Corridor Sands bankable feasibility study update. A study to evaluate Mount Keith mining rates beyond current forecast levels is currently being reviewed. Increasing the mining rates would involve the purchase of an additional fleet and advancing stripping costs (totalling an estimated A\$42 million of capital expenditure and capitalised mine development in 2005) and would yield additional nickel production from 2006.

Other net investing cash flows include payment of approximately A\$36 million (US\$27 million) as final consideration for WMC's purchase of Mount Keith in 1993 and capital outlays for the Olympic Dam development study.

(k) **WMC Statement of Financial Position**

The consolidated statement of financial position for WMC as at 31 December 2003 and as at 31 October 2004 is set out below.

<u>A\$ million</u>	<u>31 December 2003</u> Actual	<u>31 October 2004</u> Actual
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<b>Current assets</b>		
Cash	100	96
Receivables	451	446
Other financial assets	13	14

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Inventories	546	611
Other	68	72
	<u>          </u>	<u>          </u>
<b>Total current assets</b>	<b>1,178</b>	<b>1,239</b>
	<u>          </u>	<u>          </u>
<b>Non-current assets</b>		
Receivables	277	205
Other financial assets	21	20
Inventories	71	76
Exploration & evaluation	69	79
Property, plant & equipment	4,520	4,462
Acquired mineral rights	1,355	1,335
Deferred tax assets	46	503
Other (including intangibles)	23	20
	<u>          </u>	<u>          </u>
<b>Total non-current assets</b>	<b>6,382</b>	<b>6,700</b>
	<u>          </u>	<u>          </u>
<b>Total assets</b>	<b>7,560</b>	<b>7,939</b>
	<u>          </u>	<u>          </u>
<b>Current liabilities</b>		
Payables	432	377
Interest bearing liabilities	212	
Current tax liabilities	1	2
Provisions	68	80
Other	184	190
	<u>          </u>	<u>          </u>
<b>Total current liabilities</b>	<b>897</b>	<b>649</b>
	<u>          </u>	<u>          </u>
<b>Non-current liabilities</b>		
Payables	379	195
Interest bearing liabilities	1,141	947
Deferred tax liabilities	382	543
Provisions	122	126
Other	689	550
	<u>          </u>	<u>          </u>
<b>Total non-current liabilities</b>	<b>2,713</b>	<b>2,361</b>
	<u>          </u>	<u>          </u>
<b>Total liabilities</b>	<b>3,610</b>	<b>3,010</b>
	<u>          </u>	<u>          </u>
<b>Net assets</b>	<b>3,950</b>	<b>4,929</b>
	<u>          </u>	<u>          </u>
<b>Equity</b>		
Contributed equity	3,748	3,828

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Reserves	2	4
Retained earnings	200	1,097
	<u>          </u>	<u>          </u>
<b>Total equity</b>	<b>3,950</b>	<b>4,929</b>
	<u>          </u>	<u>          </u>

**Commentary on Major Balance Sheet Items as at 31 October 2004**

The WMC Group is in a strong financial position. As the operator of large world class assets, WMC seeks to finance its assets and growth opportunities with a mix of equity and debt financing that best balances risk and reward to shareholders.

At 31 October 2004, total assets were A\$7.9 billion.

The tax balances have been restated as at 31 October 2004 to reflect the progressive recognition of all known Australian tax losses and other timing differences not previously brought to account and the restatement of deferred tax balances on entry to the Australian tax consolidation regime as announced on 9 December 2004.

At 31 October 2004, the WMC Group's gearing (measured as debt to debt-plus-equity) was 15%. The 2003 Global Bond program (US\$500 million 10 year and US\$200 million 30 year) remains in place as the core long term facility.

WMC announced on 9 December 2004 certain capital management initiatives, comprising capital returns and share buy-backs in addition to the ordinary dividend program, targeted at providing improved shareholder returns and optimising the WMC Group's gearing ratio. Following the capital return and buy-back proposed to be undertaken in 2005, it is expected that the WMC Group's gearing will be 17%, closer to the target gearing range of 25 to 35%.

At 31 October 2004, total equity was A\$4.9 billion, an increase of just under A\$1 billion from total equity as at 31 December 2003 of A\$3.9 billion. Total equity has been strengthened by the year to date earnings during the period to October 2004, partly offset by the payment of the 2003 final and 2004 interim dividends, net of dividend reinvestment.

**(1) Impact of Australian Equivalents to International Financial Reporting Standards (AIFRS)**

WMC will be required to prepare financial statements which comply with Australian equivalents to International Financial Reporting Standards (AIFRS), as issued by the Australian Accounting Standards Board, from 1 January 2005. The financial report for the half year ending 30 June 2005 will be the first financial report prepared in compliance with AIFRS. Comparative information will be required to be restated to reflect the application of AIFRS to that comparative period.

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As WMC is an SEC foreign registrant, it is required to present statements of financial performance and cash flows and related notes for a three year period for its United States financial report on Form 20-F. This would normally require the WMC AIFRS transition date to be on 1 January 2003, one year earlier than required for Australian only listed entities. The SEC is currently considering

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### **WMC Resources Ltd - Target's Statement**

whether the additional comparative year requirement will be waived for foreign registrants. As a result, WMC's transition date may be either 1 January 2003 or 1 January 2004. Irrespective of the actual transition date, WMC will provide a complete reconciliation from existing Australian generally accepted accounting principles to AIFRS accounting principles.

During 2003, WMC established a project team to manage and plan the transition to AIFRS, to ensure all stakeholders are informed and to identify solutions to issues which arise during the project. A detailed technical evaluation, calculation of transition adjustments and management of any process or system changes required, are underway.

Based on the analysis completed to date, the Directors do not believe the transition to AIFRS will result in any material adjustments to the 2005 forecasts.

The following summarises the key areas in which AIFRS will have an impact for WMC.

(i) Provision for Environmental Rehabilitation

Environmental obligations associated with the retirement or disposal of long lived assets will be recognised when the disturbance occurs and are based on the extent of damage incurred. The provision is measured as the present value of the future expenditure. A corresponding rehabilitation asset is also recognised.

On an ongoing basis, the rehabilitation liability will be remeasured at each reporting period in line with the changes in the time value of money (recognised as an expense in the statement of financial performance and an increase in the provision), and additional disturbances/change in rehabilitation costs will be recognised as additions/changes to corresponding asset and rehabilitation liability. The rehabilitation asset will be amortised to the statement of financial performance on the same basis as the development asset.

Currently, WMC has a rehabilitation liability which progressively increases (with the corresponding amount booked to the statement of financial performance) over the life of the operation.

#### *Impact on WMC:*

Transition impact - WMC will be required to remeasure the existing environmental rehabilitation provision to the present value of the future expenditure and recognise a related rehabilitation asset. Retained earnings will be impacted to the extent that this net position differs from the existing rehabilitation provision.

Continuing impact - The statement of financial performance will recognise both an accretion expense and amortisation of the rehabilitation asset.

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#### (ii) Derivatives

Some financial assets and liabilities, including all derivatives, will be recorded on the face of the statement of financial position at fair value. Assuming certain conditions are met, hedges are classified as either cash flow hedges, fair value hedges or hedges of investments in foreign operations. Changes in the fair value of cash flow hedges can be deferred in an equity account in the statement of financial position, provided the hedges are effective. Changes in the market value of fair value hedges together with changes in the fair value of underlying positions are booked to the statement of financial performance. WMC currently values hedges at spot prices and defers gains and losses on effective hedges as assets and liabilities on the statement of financial position until the underlying hedged transaction occurs.

#### *Impact on WMC:*

**Transition impact** WMC is yet to determine the date of transition, however it is likely that the existing derivative based balances will be revalued to market rates and any deferred gains or losses transferred to equity.

**Continuing impact** As WMC closed out its 2005 to 2008 currency and 2005 to 2010 commodity hedge books in 2003 and 2004 (and it is assumed to continue its policy of not hedging) and the effect of the 2004 legacy hedge book will be finalised in 2004, there should not be a significant impact on earnings.

#### (iii) Defined Benefit Superannuation Plan

An asset/liability, being the net of the defined benefit obligation (adjusted for unrecognised actuarial gains/losses and past service costs) and the fair value of the plan assets, will be recognised in the statement of financial position. On an ongoing basis, the movement in this net balance will be recognised in the statement of financial performance. Currently, WMC recognises the cash contributions to the defined benefit super fund as an expense in the statement of financial performance.

#### *Impact on WMC:*

**Transition impact** - WMC will recognise a defined benefit liability in the statement of financial position with the corresponding impact to retained earnings.

**Continuing impact** Movements in the net position of the defined benefit fund at subsequent reporting periods will be recognised in the statement of financial performance.



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#### (iv) ***Income Tax***

Income tax will be calculated based on the balance sheet approach, replacing the current income statement method. This may result in the recognition of additional deferred tax assets and liabilities. In addition, tax losses will be recognised as an asset to the extent that future taxable profits are probable. This may result in greater deferred tax assets when compared to the existing criteria for recognising future income tax benefits when tax losses are virtually certain of being realised and timing differences where realisation is assured beyond reasonable doubt.

#### *Impact on WMC:*

Transition impact - The change to the balance sheet approach may result in the recognition of additional deferred tax assets and liabilities with a corresponding impact to retained earnings.

Continuing impact - Movements in deferred tax assets and liabilities will be recognised in the statement of financial performance.

## **2.7 Risk Factors Relating to WMC**

There are a number of risks, both specific to WMC and general investment risks, which may materially and adversely affect the future operating and financial performance of WMC and the value of WMC Shares. Those (and other) risks could cause WMC's performance to differ materially from the forecasts included in this Target's Statement. Many of these risks are outside the control of WMC and its Directors.

This section 2.7 describes some of those material risks. The risks described in this section 2.7 are not the only ones WMC faces – some risks may not be known to WMC, and some that WMC currently believe to be immaterial could later turn out to be material. One or more or a combination of these risks could materially impact WMC's business, revenues, operating income, net income, cash flow, net assets, liquidity or capital resources.

### (a) **Development and Exploration Uncertainties**

WMC's ability to sustain or increase its current level of production, and therefore its potential revenues and profits, is partly dependent on the development of new projects and on the expansion of existing operations.

Planned development and expansion projects are subject to risks and uncertainties, and may not result in the entire anticipated additional production. These include uncertainties associated with estimating factors such as reserves, resources, recovery rates, production rates, capital and operating costs, future commodity prices and exchange rates. In particular, estimates of reserves, recoveries and operating costs are largely dependent on the interpretation of geological data obtained from sampling techniques and feasibility studies, which are subject to uncertainties.

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No assurance can be given that resource estimates will be directly converted to reserves. WMC's financial performance and funding

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### **WMC Resources Ltd - Target's Statement**

capacity at any given time will also influence the extent to which projects and exploration are undertaken.

WMC seeks to mitigate these risks by utilising highly skilled, qualified and experienced personnel (including employees, contractors and consultants) and by committing to the use and/or development of new technologies that assist in ameliorating exploration and development uncertainties.

#### **(b) Operational Risks**

WMC has developed a comprehensive program to identify and manage operational risks. Two key components of WMC's operational risk management activities are the IORM program and the operational reliability program (see section 2.4(a)). The application of the IORM and operational reliability programs have contributed to the reduction of business interruptions at Olympic Dam, and are being implemented across all of WMC's sites.

While WMC believes that its reliability and operational risk management programs are equal to, or better than, other comparable programs in the minerals industry, it must be acknowledged that no reliability program or risk management process can guarantee elimination of incidents that can have material impacts on business outcomes.

WMC's mining and processing operations are subject to many factors that can cause material delays or material increases in operating costs for varying lengths of time. These factors include weather and natural disasters, unexpected maintenance or technical problems, key equipment failures, disruptions to or other problems with infrastructure, variations in geological conditions, increases in the cost of key inputs and the non-availability of key inputs.

Industrial disruptions, work stoppages and industrial accidents can result in production losses and delays in the delivery of product, which may also adversely affect WMC's operations and financial performance.

#### **(c) Stock Market Fluctuations**

The market price of WMC Shares may be affected by influences that may affect the stock market as a whole, including factors unrelated to WMC's financial and operating performance, over which WMC has no control. Such factors include currency exchange rates, commodity prices, the level of industrial production, changes in government fiscal, monetary and regulatory policy, investor attitudes, stock market fluctuations in Australia and other stock markets around the world, changes in interest rates and inflation, and variations in general market or economic conditions.

#### **(d) Commodity Price Risk and Exchange Rate Risk**

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WMC generates revenue from the sale of commodities including nickel, copper, uranium, fertilizer and intermediate products. The prices for each commodity are determined predominantly by world markets, which are affected by numerous factors outside WMC's control.

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### **WMC Resources Ltd - Target's Statement**

WMC generates the great majority of its revenue in US Dollars. Accordingly, the amount of Australian Dollar revenue generated by WMC to pay dividends and Australian dollar operating costs fluctuates with changes in the AUD:USD exchange rate. Changes in that exchange rate are outside WMC's control.

WMC holds most of its borrowings in USD in order to provide a natural hedge against these currency fluctuations.

To mitigate against commodity price and exchange rate risks, WMC has implemented a price risk management policy which delineates hedging limits and delegated management authorities. The management of exposures is delegated to the Risk Management Committee within parameters set by the Directors. Due to the scale, diversity and competitiveness of WMC's operations, hedging activity under the policy is currently limited to securing acceptable returns for new projects, avoiding financial distress and enabling large capital exposure programs.

#### **(e) Regulatory Risks**

WMC's mining operations, and the mining industry generally, are subject to extensive government regulation (including environmental regulation) in Australia and overseas. Changes in the regulatory environment can have a material impact on WMC's operations, and therefore, on its financial condition. Such changes can also have a material impact on the businesses of WMC's customers, which can then result in material indirect consequences for WMC.

#### **(f) Political Risks**

Some of WMC's exploration activities and new business projects are located in countries that have a higher political risk than Australia. Accordingly, any significant changes in the political environment in those countries may be destabilising or disruptive to WMC's activities there.

#### **(g) Native Title in Australia**

There are current claimant applications for native title determinations (ie, determinations with respect to certain rights and interests that Aboriginal and Torres Strait Islander people may have in land and waters) in the Federal Court of Australia over areas that include Olympic Dam, the Nickel business and QFO. Native title may be held to exist in those areas where it has not been extinguished (ie removed).

Each of Olympic Dam, the Nickel business and QFO are located on either freehold, pastoral lease or mining lease land or a combination of those tenure types. The High Court has made it clear that native title is extinguished over freehold title (Olympic Dam is located on freehold title) and that a mining lease or pastoral lease granted in Western Australia (where the Nickel business is located) extinguishes any native title right to control access to land. Amendments to the *Native Title Act 1993* (Cth) in association with complementary State legislation have put beyond doubt that WMC has valid title to its material interests.

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Much of the native title compensation exposure for tenements granted after 1975 but before 1994 rests with government, although it can be passed to the holder of the

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**WMC Resources Ltd - Target's Statement**

mining tenements in certain circumstances. WMC's exposure to compensation in respect of QFO is anticipated to be negligible because the main production lease was granted before 1975 and is not due for renewal for many years. The exposure to compensation liability in respect of the existing Nickel and Olympic Dam businesses is anticipated to be relatively low because of the age and type of tenure held by WMC.

However, court decisions and legislation regarding native title make it evident that there remain complex legal and factual issues affecting the potential impact of native title on WMC's existing and future interests. That potential impact is being closely monitored by WMC, but cannot be finally determined until future court decisions (both generally and relating specifically to WMC) are handed down.

**(h) Loss of Key Personnel**

WMC regards people as one of its four key business drivers. Significant effort is directed towards attracting and retaining a quality workforce and minimising the risk of turnover, particularly amongst key personnel and key elements of WMC's workforce. However, WMC's business could be materially prejudiced if WMC loses access to key personnel or if WMC is unable to attract and retain highly skilled and qualified personnel in the future.

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WMC Resources Ltd - Target's Statement

**3. Investigating Accountant's Report on Historical and Forecast Financial Information**

[PRICEWATERHOUSECOOPERS SECURITIES LTD LETTERHEAD]

**PricewaterhouseCoopers**

**Securities Ltd**

**ACN 003 311 617**

**ABN 54 003 311 617**

**Holder of Australian Financial**

**Services Licence No 244572**

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The Directors

WMC Resources Ltd

Level 16, 60 City Road

Southbank Victoria 3006

31 December 2004

**Subject: Investigating Accountant s Report on Historical and Forecast Financial Information**

Dear Directors

We have prepared this report on Historical and Forecast Financial Information of WMC Resources Ltd and its controlled entities (together WMC or the Group ) for inclusion in a Target s Statement dated on or about 4 January 2005 ( the Target s Statement ) relating to the takeover offer ( the Offer ) announced on 22 November 2004 by Xstrata plc ( Xstrata ) for all the ordinary shares in WMC Resources Ltd ( the Company ).

Expressions defined in the Target s Statement have the same meaning in this report.

The nature of this Report is such that it should be given by an entity which holds an Australian Financial Services licence under the Corporations Act 2001 (Cwlth). PricewaterhouseCoopers Securities Ltd is wholly owned by PricewaterhouseCoopers and holds the appropriate Australian Financial Services licence.

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**WMC Resources Ltd - Target's Statement**

**Scope**

You have requested PricewaterhouseCoopers Securities Ltd to prepare an Investigating Accountant's Report (the Report) covering the following information:

*Historical financial information*

- (a) the historical statements of financial performance and cash flows of WMC for the year ended 31 December 2003;
- (b) the statements of financial position of WMC as at 31 December 2003 and 31 October 2004 (collectively, the Historical Financial Information).

*Forecast financial information*

- (c) forecast statements of financial performance and cash flows of WMC for the years ending 31 December 2004 and 31 December 2005 (the Forecasts).

This Report has been prepared for inclusion in the Target's Statement. We disclaim any assumption of responsibility for any reliance on this Report or on the Historical Financial Information or the Forecasts to which it relates for any purposes other than for which it was prepared.

**Scope of review of Historical Financial Information**

The Historical Financial Information set out in Sections 2.6(d), 2.6(i) and 2.6(k) of the Target's Statement has been derived from:

- a. the 31 December 2003 Financial Report of WMC, which was audited by PricewaterhouseCoopers, who issued an unmodified audit report on the Financial Report; and
- b. the unaudited 31 October 2004 management accounts of WMC.

The Directors are responsible for the preparation of the Historical Financial Information.

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We have conducted our review of the Historical Financial Information in accordance with Australian Auditing Standard AUS 902 Review of Financial Reports . We made such inquiries and performed such procedures as we, in our professional judgement, considered reasonable in the circumstances including:

an analytical review of the financial performance of WMC for the relevant historical period,

a review of work papers, accounting records and other documents,

a comparison of consistency in application of the recognition and measurement principles in Accounting Standards and other mandatory professional reporting requirements in Australia and the accounting policies adopted by WMC disclosed in Note 1 to the 2003 Financial Report (copies of which are available on the Company 's website), and

enquiry of Directors, management and others.

These procedures do not provide all the evidence that would be required in an audit, thus the level of assurance provided is less than given in an audit. We have not performed an audit and, accordingly, we do not express an audit opinion.

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### **WMC Resources Ltd - Target's Statement**

#### **Review statement on Historical Financial Information**

Based on our review, which is not an audit, nothing has come to our attention which causes us to believe that the Historical Financial Information, as set out in Section 2.6(d), 2.6(i) and 2.6(k) of the Target's Statement, does not present fairly the historical financial performance, cash flows and financial position of WMC for the year ended 31 December 2003 and the financial position of WMC as at 31 October 2004 in accordance with the recognition and measurement principles prescribed in Accounting Standards and other mandatory professional reporting requirements in Australia and the accounting policies adopted by WMC disclosed in Note 1 to the 2003 Financial Report.

#### **Scope of review of Forecasts**

The Directors are responsible for the preparation and presentation of the Forecasts as set out in Sections 2.6(d) and 2.6(i), including the best estimate assumptions on which they are based as set out in Sections 2.6(a) and 2.6(b) of the Target's Statement.

Our review of the Forecasts was conducted in accordance with Australian Auditing Standard AUS 902 Review of Financial Reports. Our procedures consisted primarily of enquiry and comparison and other such analytical review procedures we considered necessary so as to adequately evaluate whether the best estimate assumptions provide a reasonable basis for the Forecasts. These procedures included discussion with the Directors and management of WMC and have been undertaken to form an opinion whether anything has come to our attention which causes us to believe that the best estimate assumptions do not provide a reasonable basis for the preparation of the Forecasts and whether, in all material respects, the Forecasts are properly prepared on the basis of the assumptions and are presented fairly in accordance with the recognition and measurement principles prescribed in Accounting Standards and other mandatory professional reporting requirements in Australia and the accounting policies of WMC disclosed in Note 1 to the 2003 Financial Report so as to present a view of WMC which is consistent with our understanding of WMC's past, current and future operations.

The Forecasts have been prepared by the Directors of WMC to provide investors with a guide to WMC's potential future financial performance and cash flows based upon the achievement of certain economic, operating, development and trading assumptions about future events and actions that have not yet occurred and may not necessarily occur. There is a considerable degree of subjective judgement involved in the preparation of Forecasts. Actual results may vary materially from the Forecasts and the variation may be materially positive or negative. Accordingly, investors should have regard to the risks set out in Section 2.7 of the Target's Statement.

Our review of the Forecasts that are based on best estimate assumptions is substantially less in scope than an audit examination conducted in accordance with Australian Auditing and Assurance Standards. A review of this nature provides less assurance than an audit. We have not performed an audit and we do not express an audit opinion on the Forecasts.

#### **Review statement on the Forecasts**



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Based on our review of the Forecasts, which is not an audit, and based on an investigation of the reasonableness of the best estimate assumptions giving rise to the Forecasts, nothing has come to our attention which causes us to believe that:

- (a) the best estimate assumptions set out in Sections 2.6(a) and 2.6(b) of the Target's Statement do not provide a reasonable basis for the preparation of the Forecasts;

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**WMC Resources Ltd - Targets Statement**

- (b) the Forecasts are not properly compiled on the basis of the best estimate assumptions and presented fairly in accordance with the recognition and measurement principles prescribed in Accounting Standards and other mandatory professional reporting requirements in Australia and the accounting policies adopted by WMC disclosed in Note 1 to the 2003 Financial Report; and
- (c) the Forecasts are unreasonable.

The underlying assumptions are subject to significant uncertainties and contingencies often outside the control of WMC. If events do not occur as assumed, actual results and distributions achieved by WMC may vary significantly from the Forecasts. Accordingly, we do not confirm or guarantee the achievement of the Forecasts, as future events, by their very nature, are not capable of independent substantiation.

**Subsequent events**

Apart from the matters dealt with in this Report, and having regard to the scope of our Report, to the best of our knowledge and belief no material items, transactions or events outside of the ordinary business of WMC have come to our attention that would require comment on, or adjustment to, the information referred to in our Report or that would cause such information to be misleading or deceptive.

**Independence or Disclosure of Interest**

PricewaterhouseCoopers is the auditor of WMC. Neither PricewaterhouseCoopers nor PricewaterhouseCoopers Securities Ltd has any interest in the outcome of the Offer other than the preparation of this Report and participation in due diligence procedures for which normal professional fees will be received.

Yours faithfully

Jock O'Callaghan  
Authorised Representative of  
PricewaterhouseCoopers Securities Ltd

Paul Bendall  
Authorised Representative of  
PricewaterhouseCoopers Securities Ltd

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WMC Resources Ltd - Target's Statement

[PRICEWATERHOUSECOOPERS SECURITIES LTD LETTERHEAD]

**FINANCIAL SERVICES GUIDE**

**This Financial Services Guide is dated 31 December 2004**

**1. About us**

PricewaterhouseCoopers Securities Ltd (ABN 54 003 311 617, Australian Financial Services Licence no 244572) ( **PwC Securities** ) has been engaged by WMC Resources Ltd ( **WMC** ) to provide a report in the form of an Investigating Accountant's Report in relation to the historical and forecast financial information for inclusion in the Target's Statement dated 4 January 2005 (the **Report** ).

You have not engaged us directly but have been provided with a copy of the Report as a retail client because of your connection to the matters set out in the Report.

**2. This Financial Services Guide**

This Financial Services Guide ( **FSG** ) is designed to assist retail clients in their use of any general financial product advice contained in the Report. This FSG contains information about PwC Securities generally, the financial services we are licensed to provide, the remuneration we may receive in connection with the preparation of the Report, and how complaints against us will be dealt with.

**3. Financial services we are licensed to provide**

Our Australian financial services licence allows us to provide a broad range of services, including providing financial product advice in relation to various financial products such as securities, interests in managed investment schemes, derivatives, superannuation products, foreign exchange contracts, insurance products, life products, managed investment schemes, government debentures, stocks or bonds, and deposit products.

**4. General financial product advice**

The Report contains only general financial product advice. It was prepared without taking into account your personal objectives, financial situation or needs.

You should consider your own objectives, financial situation and needs when assessing the suitability of the Report to your situation. You may wish to obtain personal financial product advice from the holder of an Australian Financial Services Licence to assist you in this assessment.

**5. Fees, commissions and other benefits we may receive**

PwC Securities charges fees to produce reports, including this Report. These fees are negotiated and agreed with the entity who engages PwC Securities to provide a report. Fees are charged on an hourly basis or as a fixed amount depending on the terms of the agreement with the person who engages us. In the preparation of this Report our fees are based on time cost basis using agreed hourly rates.

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**WMC Resources Ltd - Target's Statement**

Directors or employees of PwC Securities, PricewaterhouseCoopers, or other associated entities, may receive partnership distributions, salary or wages from PricewaterhouseCoopers.

**6. Associations with issuers of financial products**

PwC Securities and its partners, employees and associates may from time to time have relationships with the issuers of financial products. For example, PwC Securities may be the auditor of, or provide financial services to, the issuer of a financial product in the ordinary course of its business. PricewaterhouseCoopers is the auditor of WMC.

**7. Complaints**

If you have a complaint, please raise it with us first, using the contact details listed below. We will endeavour to satisfactorily resolve your complaint in a timely manner. In addition, a copy of our internal complaints handling procedure is available upon request.

If we are not able to resolve your complaint to your satisfaction within 45 days of your written notification, you are entitled to have your matter referred to the Financial Industry Complaints Service ( **FICS** ), an external complaints resolution service. You will not be charged for using the FICS service.

**8. Contact Details**

PwC Securities can be contacted by sending a letter to the following address:

Jock O'Callaghan

Level 16

333 Collins Street

Melbourne VIC 3000

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**WMC Resources Ltd - Target's Statement**

**4. Other Important Information about Xstrata's Offer**

**4.1 Xstrata's Offer**

On 22 November 2004, Xstrata announced its intention to make the Offer, being an offer to WMC Shareholders to acquire all of the WMC Shares.

Xstrata's Offer has been made through a wholly-owned subsidiary of Xstrata plc, Xstrata Capital.

On 16 December 2004, Xstrata served WMC with a copy of the Xstrata Bidder's Statement, which contains Xstrata's Offer. This replaced an original bidder's statement that had been served on WMC by Xstrata on 30 November 2004.

**(a) What Xstrata is Offering**

The consideration being offered to you under Xstrata's Offer is A\$6.35 cash for each WMC Share you hold.

Xstrata's Offer is to acquire all of your WMC Shares, including any rights attaching to those shares. Xstrata's Offer extends to WMC Shares that are issued to you during the Offer Period as a result of the exercise of WMC Options.

You may only accept Xstrata's Offer for all of your WMC Shares. You cannot accept Xstrata's Offer for only some of your WMC Shares.

The consideration that Xstrata has offered will only become payable to you if all of the numerous conditions of Xstrata's Offer are satisfied or waived. These conditions are described in sections 4.2 to 4.5 (inclusive).

**(b) Offer Period**

Xstrata's Offer is open for acceptance from 21 December 2004 until 7.00pm (Sydney time) on 28 January 2005, unless Xstrata extends the Offer Period in accordance with the Corporations Act.

**(c) Withdrawal by Xstrata**

Xstrata may be able to withdraw its Offer with the written consent of ASIC, subject to the conditions (if any) specified in such consent.

(d) **Lapse of Xstrata's Offer**

Xstrata's Offer will lapse if, at the end of the Offer Period, the conditions to which Xstrata's Offer is subject are not satisfied or waived. If this occurs then any acceptances given by WMC Shareholders will be void. WMC Shareholders will continue to own the WMC Shares the subject of any such acceptances and will be free to deal with them as they choose. See further sections 4.2 to 4.5.

**4.2 Conditions of Xstrata's Offer**

Xstrata's Offer is subject to a number of conditions. Those conditions are set out in full in Appendix 2 to the Xstrata Bidder's Statement.

By way of a broad overview, the conditions of Xstrata's Offer include:

- (a) Xstrata acquiring a relevant interest in at least 90% of the WMC Shares;

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**WMC Resources Ltd - Target's Statement**

- (b) Xstrata receiving all regulatory approvals required for its Offer, including ACCC clearance, necessary FIRB approval, European Commission approval and approval from certain US regulatory agencies;
- (c) no decision or order being made, no application being made, and no action or investigation being announced, threatened or commenced in connection with Xstrata's Offer, by a Public Authority (as that term is defined in the Xstrata Bidder's Statement), which restrains or prohibits or otherwise materially adversely impacts on the making of Xstrata's Offer or the rights of Xstrata in respect of WMC and the WMC Shares to be acquired under Xstrata's Offer or requires any divestiture by Xstrata of the WMC Shares or assets of WMC or the Xstrata group;
- (d) all necessary resolutions to approve, effect and implement, or authorise the implementation of, Xstrata's Offer and the acquisition of WMC Shares by Xstrata being passed by the requisite majority of the Xstrata shareholders at an Extraordinary General Meeting to be held on or about 13 January 2005;
- (e) all pre-conditions to availability of the debt financing facilities of Xstrata described in section 6 of the Xstrata Bidder's Statement being satisfied and there being no event of default under those facilities;
- (f) no event occurring that has a material adverse effect or is reasonably likely to have a material adverse effect on the assets and liabilities, financial position and performance, profits and losses or prospects of WMC;
- (g) no acquisitions or disposals being undertaken, agreed or announced by WMC of an amount greater than A\$300 million, and no agreements or other arrangements which would require expenditure or foregoing of revenue of an amount greater than A\$50 million being entered into or announced by WMC, other than in the ordinary course of its business;
- (h) no persons exercising rights under certain agreements or instruments resulting in any monies borrowed becoming repayable, any such agreement or interest of WMC being terminated or modified or the business of WMC being adversely affected, as a result of the acquisition of WMC Shares by Xstrata, where that is material in the context of WMC or the WMC Group taken as a whole;
- (i) no decline occurring in the S&P/ASX 200 index to below 3,500;
- (j) Xstrata being given equal access to any confidential information made available by WMC to third parties in connection with potential competing transactions or proposals; and
- (k) no prescribed occurrences .

Events and arrangements identified by WMC that may trigger some of these conditions are discussed in section 4.3.



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**WMC Resources Ltd - Target's Statement**

**4.3 Comments Regarding Particular Conditions**

Most of the numerous conditions of Xstrata's Offer are outside WMC's control and your Directors are therefore unable to give any indication as to whether those conditions will be satisfied. However, in relation to the following conditions of Xstrata's Offer, the Directors comment as follows.

**(a) Acquisitions and Disposals of Assets**

Xstrata's Offer is subject to a condition (Xstrata Bidder's Statement, paragraph (k) of Appendix 2) that, in summary, requires that, except for transactions publicly announced by WMC before the Announcement Date, none of the following events occurs during the period from the Announcement Date to the end of the Offer Period:

- (i) WMC or any of its subsidiaries acquires or offers or agrees to acquire any companies, businesses or assets for an amount in aggregate greater than A\$300 million;
- (ii) WMC or any of its subsidiaries disposes of, or offers or agrees to dispose of, any companies, businesses or assets for an amount, or in respect of which the book value as at 30 June 2004 is, in aggregate greater than A\$300 million; or
- (iii) WMC or any of its subsidiaries enters into, or offers or agrees to enter into, any agreement which would require expenditure or the foregoing of revenue by the WMC Group of an amount which is in aggregate more than A\$50 million, other than in the ordinary course of business.

Xstrata's Offer is also subject to conditions (Xstrata Bidder's Statement, paragraph (o) of Appendix 2) that, during the Offer Period, no subsidiary of WMC:

issues (or agrees to issue) any shares (sub-paragraph (o)(iv)); or

disposes (or agrees to dispose) of the whole, or a substantial part, of its business or property (sub-paragraph (o)(vi)).

On 9 December 2004, WMC announced that it had established a strategic partnership in the fertilizer industry with AWB Limited and Elders Limited (a wholly owned subsidiary of Futuris Corporation Limited) (the *Hi-Fert Transaction*). A subsidiary of each of AWB Limited and Elders Limited will form a joint venture company to acquire two-thirds of the shares in WMC's wholly owned subsidiary, Hi-Fert. WMC will retain one-third of the shares in Hi-Fert, meaning each party will have a one-third equity interest in Hi-Fert (which will, in essence, become an incorporated joint venture). Definitive legal agreements have been signed, and the Hi-Fert Transaction was completed on 9 December 2004.

WMC considers that the Hi-Fert Transaction does not result in a trigger of condition (k) of Xstrata's Offer. Further, as Hi-Fert is not a substantial part of the business of its immediate holding company, WMC Fertilizers Pty Ltd, WMC considers that the Hi-Fert Transaction does not result in

a trigger of condition (o)(vi)

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### **WMC Resources Ltd - Target's Statement**

either. However, as the Hi-Fert Transaction involves an issue of shares by Hi-Fert, it triggers condition (o)(iv) of Xstrata's Offer.

The Hi-Fert Transaction had been under consideration for some time as part of WMC's broader strategic objectives for its fertilizer business. Binding heads of agreement (albeit conditional and confidential) regarding the Hi-Fert Transaction had been entered into by the parties before the Announcement Date. As such, in entering into and completing the Hi-Fert Transaction, WMC has been carrying out an agreement entered into in the ordinary course of business, before Xstrata's Offer was known.

On the basis of the above, it is likely that condition (o)(iv) of Xstrata's Offer has been triggered. Accordingly, unless that condition is waived at least seven days before the end of the Offer Period, Xstrata will not be obliged to proceed with the acquisition of any WMC Shares that are the subject of any acceptances given to it under its Offer. To date, Xstrata has not announced the waiver of condition (o)(iv) or any intention to waive that condition.

#### **(b) Equal Access to Information**

Xstrata's Offer is subject to a condition (Xstrata Bidder's Statement, paragraph (n) of Appendix 2) that, in summary, requires that, at all times during the period from the Announcement Date to the end of the Offer Period, WMC promptly (and in any event within two business days (as defined in the Xstrata Bidder's Statement)) provides to Xstrata a copy of all information that is not generally available (within the meaning of the Corporations Act) relating to WMC or any of its subsidiaries or any of their businesses or operations that has been provided by WMC or its agent for the purpose of soliciting, encouraging or facilitating a proposal or offer by that person or any other person in relation to a transaction under which:

- (i) any person may acquire voting power of 10% or more in WMC or any subsidiary;
- (ii) any person may acquire any interest in all or a substantial part of the business or assets of WMC or any subsidiary; or
- (iii) that person may otherwise acquire control of or merge or amalgamate with WMC or any subsidiary.

In order to satisfy their fiduciary and statutory duties, your Directors are open to receiving and considering proposals from third parties which may create value for WMC Shareholders.

In this regard, since the Announcement Date, WMC has received approaches from a variety of interested parties suggesting a variety of proposals. WMC has engaged in discussions with those interested parties, and those discussions have involved the transfer of information. In the case of certain interested parties (not including Xstrata), those discussions have resulted in WMC providing the interested party with confidential information, subject to ensuring appropriate protections of that confidentiality. The main focus of the discussions has been

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### **WMC Resources Ltd - Target's Statement**

possible transactions in relation to WMC's Olympic Dam operations in South Australia.

The provision of access and confidential information to the interested parties has not led to WMC receiving any definitive material proposals, or to WMC entering into any definitive material negotiations or arrangements, as at the date of this Target's Statement.

Xstrata has chosen to make an unsolicited hostile takeover bid for WMC at a price which it knew your Directors considered to be inadequate. When the Directors rejected Xstrata's proposal for an agreed acquisition (by scheme of arrangement) in October 2004 at a price per share equal to the Offer Price, Xstrata chose to make its hostile bid, rather than negotiate a price that the WMC Board considered it could recommend to WMC Shareholders, or discuss other proposals which could add value to WMC Shareholders.

In those circumstances, the Directors see no reason to facilitate Xstrata's materially inadequate Offer by granting access to confidential information. There is no requirement under Australian law or practice for WMC to give Xstrata access to confidential information. However, WMC is prepared to discuss with Xstrata granting it access to the confidential information (subject to Xstrata providing WMC with appropriate confidentiality undertakings) if Xstrata is able to present an alternative proposal to WMC which is value enhancing for WMC Shareholders and which recognises the true value of WMC's world class assets.

In the meantime, WMC will continue to keep WMC Shareholders informed of any material developments.

On the basis of the above, it is likely that condition (n) of Xstrata's Offer has been, and will in the future be, triggered. Accordingly, unless that condition is waived at least seven days before the end of the Offer Period, Xstrata will not be obliged to proceed with the acquisition of any WMC Shares that are the subject of any acceptances given to it under its Offer. To date, Xstrata has not announced the waiver of condition (n) or any intention to waive that condition.

#### **(c) Prescribed Occurrences**

Xstrata's Offer is subject to a prescribed occurrences condition (Xstrata Bidder's Statement, paragraph (o) of Appendix 2) that, in summary, requires (so far as is relevant) that during the Offer Period none of the following events happen:

- (i) WMC or a subsidiary undertakes a buy-back of its shares; or
- (ii) WMC or a subsidiary resolves to reduce its share capital in any way.

On 9 December 2004, WMC announced to ASX a series of proposed capital management initiatives, including a pro-rata capital return of A\$0.30 per WMC Share to WMC Shareholders and an extension of a previously announced on-market share buy-back program.

WMC has not bought back any shares under the buy-back program since the Announcement Date. The WMC Directors currently intend not to proceed with the

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### **WMC Resources Ltd - Target's Statement**

purchase of any shares under the buy-back program during the Offer Period. To date, Xstrata has not announced the waiver of that condition or any intention to waive that condition.

The payment of the proposed capital return would be undertaken only with the approval of WMC Shareholders (which approval is likely to be sought at WMC's Annual General Meeting in May 2005, or before if practicable) and, accordingly, is not yet the subject of any applicable resolution of WMC. Accordingly, the condition of Xstrata's Offer regarding capital returns has not yet been triggered.

If, during the Offer Period, WMC Shareholders resolve to approve the capital return and the condition of Xstrata's Offer regarding capital returns is not waived by Xstrata at least seven days before the end of the Offer Period, Xstrata will not be obliged to proceed with the acquisition of any WMC Shares that are the subject of any acceptances given to it under its Offer. To date, Xstrata has not announced any intention to waive that condition if it is triggered.

#### **(d) Change of Control Provisions in WMC's Financing Arrangements**

It is possible that the condition in paragraph (l) of Appendix 2 of the Xstrata Bidder's Statement, which relates to the exercise (or announcement of an intention to exercise) of change of control rights by any party to any material contract of the WMC Group, may be triggered in relation to one of the WMC Group's material debt facility agreements. See section 5.4 for more details.

If condition (l) is triggered during the Offer Period and that condition is not waived by Xstrata at least seven days before the end of the Offer Period, Xstrata will not be obliged to proceed with the acquisition of any WMC Shares that are the subject of any acceptances given to it under its Offer. WMC has no knowledge as to whether Xstrata would waive that condition if it is triggered.

#### **(e) Xstrata's Financing**

Xstrata proposes to source the funds to pay for its Offer from various loan facilities that are described in section 6 of the Xstrata Bidder's Statement (*Facilities*). The availability of funds under those Facilities is subject to various conditions precedent remaining satisfied and there being no events of default under the terms of the Facilities.

In this regard, Xstrata's Offer is subject to a condition (Xstrata Bidder's Statement, paragraph (i) of Appendix 2) that, in summary, requires that during, and at the end of, the Offer Period:

the conditions precedent to the availability of the loans under those Facilities remain satisfied; and

there is no event of default (or potential event of default) under those Facilities.

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Xstrata may choose to waive condition (i). If it does so, there is a risk that Xstrata may not have the funds to pay any WMC Shareholder who accepts its Offer if any of the conditions precedent under the Facilities fails to be satisfied or if any event

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of default occurs (unless the satisfaction of the applicable condition precedent or the applicable event of default is waived by the lenders under the Facilities). WMC has no knowledge of whether the applicable lenders would provide a waiver in those circumstances.

#### **4.4 Status of Regulatory Approvals**

Xstrata's Offer is subject to a number of regulatory approvals, including approvals, clearances or no action advices from:

the Australian Treasurer, on the advice of FIRB;

the ACCC;

the European Commission; and

certain US regulatory agencies.

As at 22 December 2004, none of those regulatory approvals, clearances or no action advices had been obtained, except to the extent that, on 21 December 2004, the ACCC announced that it would not oppose Xstrata's proposed acquisition of WMC.

#### **4.5 Consequences of Conditions Not Being Satisfied**

As discussed in section 4.3, WMC considers that there is a real risk that some of the conditions of Xstrata's Offer may not be satisfied.

You should be aware that, even if the conditions of Xstrata's Offer are not satisfied (or are triggered, as appropriate), they may be waived by Xstrata.

If any condition is unsatisfied (or has been triggered), and has not been waived, Xstrata will have an option as to whether to proceed with the acquisition of WMC Shares under its Offer or allow its Offer to lapse with unsatisfied conditions. In those circumstances, generally speaking, Xstrata would not have to decide whether to proceed with the acquisition of WMC Shares under its Offer until the date that it is required to provide its Notice of Status of Conditions (namely, 20 January 2005) which, as discussed in section 4.6, can be postponed if the Offer Period is extended.

#### **4.6 Notice of Status of Conditions**



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The Xstrata Bidder's Statement indicates that Xstrata will give a Notice of Status of Conditions on 20 January 2005.

Xstrata is required to set out in its Notice of Status of Conditions:

whether Xstrata's Offer is free of any or all of the conditions of the Offer;

whether, so far as Xstrata knows, any of the conditions have been fulfilled; and

Xstrata's then current voting power in WMC.

If the Offer Period is extended before the time by which that notice is to be given, the date that Xstrata must give its Notice of Status of Conditions will be taken to be postponed for the same period. In the event of such an extension, Xstrata is required, as soon as reasonably practicable after the extension, to give notice to ASX and WMC that states the new date for giving the Notice of Status of Conditions.

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In addition, if a condition of Xstrata's Offer is fulfilled during the Offer Period but before the date on which the Notice of Status of Conditions is required to be given, Xstrata must, as soon as practicable, give ASX and WMC a notice that states that the particular condition has been fulfilled.

#### 4.7 Extension of the Offer Period

Xstrata may extend the Offer Period at any time before giving the Notice of Status of Conditions while the Offer is subject to conditions. However, if the Offer is unconditional (that is, all the conditions are satisfied or waived), Xstrata may extend the Offer Period at any time before the end of the Offer Period.

In addition, there will be an automatic extension of the Offer Period if, within the last seven days of the Offer Period:

Xstrata improves the consideration under the Offer; or

Xstrata's voting power in WMC increases to more than 50%.

If either of these two events occurs, the Offer Period is automatically extended so that it ends 14 days after the relevant event occurs.

#### 4.8 Effect of Acceptance and Rights of Withdrawal

Accepting Xstrata's conditional Offer would (subject to the withdrawal rights discussed below):

**prevent you from accepting any higher takeover bid** that may be made by a third party or any alternative transaction proposal that may be recommended by the WMC Board (including any proposal regarding the possible transactions that are described in section 4.3(b));

**relinquish control of your WMC Shares to Xstrata with no guarantee of payment** until the Xstrata Offer becomes, or is declared, unconditional and as the Offer Period could be extended by Xstrata so that its Offer is open for up to 12 months, this could result in further delays in payment from Xstrata;

**give Xstrata the option** to keep your WMC Shares if the conditions of its Offer are not satisfied (ie by waiving the conditions) or return your WMC Shares (as discussed in section 4.5); and

**prevent you from selling your WMC Shares on ASX** (bearing in mind that since Xstrata's Offer was announced, WMC Shares have traded at prices materially above the A\$6.35 being offered to you by Xstrata).

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If you accept Xstrata's Offer, you will have a right to withdraw your acceptance in some circumstances. Those withdrawal rights comprise general statutory withdrawal rights under the Corporations Act, a withdrawal right to the extent that the FIRB approval condition of Xstrata's Offer remains unsatisfied, and specific withdrawal rights included in the terms of Xstrata's Offer. In summary:

### **Statutory withdrawal rights under the Corporations Act**

Under the Corporations Act, you may withdraw your acceptance of Xstrata's Offer if Xstrata varies its Offer in a way that postpones, for more than one month, the time when Xstrata needs to meet its obligations under the Offer. This will occur if Xstrata extends the Offer Period by more than one month and Xstrata's Offer is still subject to conditions.

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In those circumstances, you will have a period of one month after the date that Xstrata's Offer is extended to withdraw your acceptance. Your statutory withdrawal rights will terminate upon the expiry of that one month period, although if the Offer Period is then further extended you may receive further statutory withdrawal rights.

#### **FIRB approval condition**

You may withdraw your acceptance if the FIRB approval condition of Xstrata's Offer (set out in paragraph (b) of Appendix 2 of the Xstrata Bidder's Statement) has not, at the time of your withdrawal, been fulfilled.

#### **Withdrawal rights under the terms of Xstrata's Offer**

The terms of Xstrata's Offer include certain withdrawal rights (*Xstrata Offer Withdrawal Rights*) which are discussed in section 4.9.

If Xstrata improves the Offer Price, all WMC Shareholders who accept Xstrata's Offer (whether or not they have accepted prior to that improvement) will be entitled to the benefit of that improved consideration.

The effect of acceptance of Xstrata's Offer is set out in more detail in section 6.8 of Appendix 1 to the Xstrata Bidder's Statement. You should read those provisions in full to understand the effect that acceptance will have on your ability to exercise the rights attaching to your WMC Shares and the representations and warranties that you are deemed by Xstrata to give to it by accepting Xstrata's Offer.

#### **4.9 Xstrata Offer Withdrawal Rights**

You can withdraw your acceptance by use of a specific regime set out in section 4.7 of Appendix 1 to the Xstrata Bidder's Statement at any time before:

Xstrata announces the satisfaction of the 90% minimum acceptance condition of its Offer;

the expiry of 14 days after Xstrata lodges a supplementary bidder's statement notifying termination of the Xstrata Offer Withdrawal Rights; or

the end of the Offer Period,

whichever occurs first.

You should note the following important aspects of the Xstrata Offer Withdrawal Rights.

(a) **Satisfaction of the 90% Minimum Acceptance Condition**

You will not receive any advance notice from Xstrata as to when the 90% minimum acceptance condition will be satisfied, and therefore when your Xstrata Offer Withdrawal Rights may automatically terminate as a result of the satisfaction of that condition. Rather, you will need to monitor the acceptance levels yourself by

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checking the substantial holder notices lodged by Xstrata with ASX during the Offer Period.

Satisfaction of the 90% minimum acceptance condition (and, therefore, immediate termination of the Xstrata Offer Withdrawal Rights) does not mean that you will definitely get paid your cash consideration for accepting Xstrata's Offer. Rather, all conditions of Xstrata's Offer must be satisfied or waived before you can be paid. In this regard:

Some of those conditions (such as FIRB approval) may remain unsatisfied at the time the Xstrata Offer Withdrawal Rights are terminated, and as those conditions are outside the control of Xstrata (or WMC), there is no guarantee that those conditions will subsequently be satisfied quickly or at all.

Other conditions giving Xstrata the option of whether to proceed with its Offer (such as the condition regarding equal access to confidential information) may have been triggered before the time that the Xstrata Offer Withdrawal Rights are terminated. Those conditions may not have been waived by Xstrata at that time, and may never be waived.

#### **(b) Waiver of the 90% Minimum Acceptance Condition**

If Xstrata waives its 90% minimum acceptance condition, you will still be able to withdraw your acceptance if Xstrata has not lodged a supplementary bidder's statement with ASIC notifying termination of the Xstrata Offer Withdrawal Rights. If such a supplementary bidder's statement has been lodged, you will still be able to withdraw your acceptance unless the 14 day withdrawal period following the date of lodgement of the supplementary bidder's statement has expired.

#### **(c) Issue by Xstrata of a Supplementary Bidder's Statement**

If the Xstrata Offer Withdrawal Rights are terminated by Xstrata through notification of termination in a supplementary bidder's statement lodged with ASIC, Xstrata will despatch a supplementary bidder's statement and another withdrawal form to each WMC Shareholder.

You will have 14 days to withdraw your acceptance after the supplementary bidder's statement is lodged with ASIC. As you are unlikely to receive the supplementary bidder's statement on the day it is lodged, it will be important that you determine the date of lodgement so that you are aware of the date that the 14 day withdrawal period expires.

Despite the 14 day withdrawal period described above, your Xstrata Offer Withdrawal Rights may be terminated automatically before that 14 day period expires if the 90% minimum acceptance condition is satisfied, or the Offer Period expires, during the intervening period.

#### **(d) Effect of Termination on Statutory Withdrawal Rights**

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Termination of the Xstrata Offer Withdrawal Rights does not affect the other withdrawal rights that you may have that are described in section 4.8, namely:

your statutory withdrawal rights under the Corporations Act; and

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your right to withdraw your acceptance while the FIRB approval condition of Xstrata's Offer remains unsatisfied.

**4.10 Compulsory Acquisition**

**(a) Intention of Xstrata**

Xstrata may compulsorily acquire all remaining WMC Shares under Part 6A.1 of the Corporations Act if, by the end of the Offer Period, Xstrata and its associates have a relevant interest in at least 90% of the WMC Shares and have acquired 75% of the WMC Shares which Xstrata offered to acquire under the Offer.

Xstrata has stated in section 4.4(a) of its Bidder's Statement that it intends to compulsorily acquire the remaining WMC Shares if it becomes entitled to do so.

Compulsory acquisition is commenced by lodging a compulsory acquisition notice with ASIC and sending the notice to ASX and all remaining WMC Shareholders who did not accept Xstrata's Offer.

**(b) WMC Shares Issued upon Exercise of WMC Options**

Xstrata's Offer extends to WMC Shares that are issued on the exercise of WMC Options during the period from the Register Date to the end of the Offer Period.

If Xstrata becomes entitled to proceed to compulsory acquisition and does so, Xstrata must (under the Corporations Act) acquire the WMC Shares which are issued, on exercise of WMC Options, before the end of the Offer Period.

Xstrata may (though it is not obliged to do so) compulsorily acquire WMC Shares that are issued, on exercise of WMC Options, after the end of the Offer Period where the WMC Shares have been issued:

before the compulsory acquisition notice is issued; or

within six weeks after the compulsory acquisition notice is issued.

**(c) WMC Options**



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Xstrata has not stated whether it will compulsorily acquire WMC Options if it becomes entitled to do so under the Corporations Act.

If Xstrata and its associates achieve a relevant interest in at least 90% of all WMC Shares on issue by the end of the Offer Period, WMC Optionholders will have the right to have their WMC Options bought by Xstrata for fair value under Part 6A.1 of the Corporations Act.

### (d) **Statutory Rights to Challenge Compulsory Acquisition**

WMC Shareholders and WMC Optionholders have statutory rights to challenge compulsory acquisition, but if Xstrata establishes to the satisfaction of a court that the consideration being offered for the securities represents fair value, the court must approve the compulsory acquisition on those terms.

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**(e) Timing of Payment**

WMC Shareholders and WMC Optionholders should be aware that if their WMC Shares or WMC Options are compulsorily acquired, they are not likely to receive payment until at least one month after the compulsory acquisition notice is issued by Xstrata.

**4.11 Implications if Xstrata Acquires Less than 90% of the WMC Shares**

In section 4.5 of the Xstrata Bidder's Statement, Xstrata sets out its intentions if it were to declare its Offer free from the 90% minimum acceptance condition and gain effective control of WMC, but not receive sufficient acceptances to proceed to compulsory acquisition.

Xstrata has stated that it reserves the right to declare its Offer free from the 90% minimum acceptance condition. As indicated by Xstrata in section 4.5 of its Bidder's Statement, Xstrata will need to obtain the consent of its financiers to waive that condition. There is a risk that this consent will never be given.

If Xstrata is able to obtain the consent of its financiers and waives the 90% minimum acceptance condition, and obtains a majority shareholding in WMC of less than 90%, those WMC Shareholders who do not accept Xstrata's Offer will become minority shareholders in WMC. This has a number of possible implications, including:

Xstrata will be in a position to cast the majority of votes at a general meeting of WMC. This will enable it to control the composition of the WMC Board and senior management and control the strategic direction of the businesses of WMC and its subsidiaries;

Xstrata has stated in section 4.5(b) of its Bidder's Statement that, subject to the Corporations Act and WMC's constitution, Xstrata intends to replace the members of the WMC Board with nominees of Xstrata and an appropriate number of independent directors to represent minority shareholders;

future WMC dividend policy under the management of Xstrata may vary from current WMC dividend policy, and may result in a lower proportion of profits being paid as dividends;

if Xstrata acquires 75% or more of the WMC Shares, it will be able to pass special resolutions at meetings of WMC Shareholders. This will enable Xstrata to, among other things, change WMC's constitution;

some or all of the synergies referred to in the Xstrata Bidder's Statement may not be achieved;

the liquidity of the WMC Shares is likely to be significantly lower than at present; and

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it is possible the WMC Group may lose its ability to draw down under the USD Syndicated Facility Agreement discussed in section 5.4(b) if the relevant facility is cancelled in accordance with the change of control provisions in that agreement.

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**5. Additional Information**

**5.1 Details of Directors**

The Directors of WMC as at the date of this Target's Statement are:

<u>Name</u>	<u>Position</u>
Mr Tommie C-E Bergman	Chairman
Mr Andrew G Michelmore	Chief Executive Officer
Mr Alan K Dundas	Executive Director
Professor Adrienne E Clarke AC	Non-Executive Director
Mr Peter J Knight	Non-Executive Director
Mr Graeme W McGregor AO	Non-Executive Director
Mr David E Meiklejohn	Non-Executive Director
Mr G John Pizzey	Non-Executive Director
Mr Ian E Webber AO	Non-Executive Director

**5.2 Directors' Recommendation and Intentions**

In assessing Xstrata's Offer, your Directors have had regard to a number of considerations, including the information set out in the Xstrata Bidder's Statement.

Based on this assessment, and for the reasons set out in this Target's Statement (in particular, those set out on pages 3 to 18), your Directors believe that the consideration offered by Xstrata of A\$6.35 cash per WMC Share is materially inadequate.

**EACH DIRECTOR'S RECOMMENDATION TO  
WMC SHAREHOLDERS IS TO  
REJECT XSTRATA'S MATERIALLY  
INADEQUATE OFFER**

Each of your Directors intends to reject Xstrata's Offer for all WMC Shares held by them or in which they have a relevant interest.

**5.3 Interests of Directors**

**(a) Interests in Securities of WMC**

The only marketable securities that WMC has on issue are WMC Shares and WMC Options. As at 22 December 2004, WMC had 1,172,036,332 WMC Shares and 6,324,362 WMC Options on issue.

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The number, description and amount of marketable securities of WMC in which each Director has a relevant interest are as follows:

<u>Director</u>	<u>WMC Shares</u>	<u>WMC Options</u>
Mr Tommie C-E Bergman	60,000	
Mr Andrew G Michelmore	401,982	230,000
Mr Alan K Dundas	243,157	182,000
Professor Adrienne E Clarke	5,239	
Mr Peter J Knight	6,109	
Mr Graeme W McGregor	5,235	
Mr David E Meiklejohn	5,000	
Mr G John Pizzey	11,290	
Mr Ian E Webber	20,000	

**(b) Dealings in Securities of WMC**

Except as set out below, in the four months immediately preceding 21 December 2004, being the date of Xstrata's Offer, no Director provided or agreed to provide, or received or agreed to receive, consideration for any marketable securities of WMC under a sale, purchase or agreement for sale or purchase of such securities.

On 22 September 2004, the following Directors acquired the following WMC Shares under the WMC Dividend Reinvestment Plan for a consideration of A\$4.89 per WMC Share:

<u>Director</u>	<u>WMC Shares acquired</u>
Professor Adrienne E Clarke	176
Mr Graeme W McGregor	176
Mr G John Pizzey	243

On 20 December 2004, the following Directors acquired WMC Shares as a result of the exercise of WMC Options at an exercise price of A\$3.90 per option:

<u>Director</u>	<u>WMC Shares acquired</u>
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Mr Andrew G Michelmore

50,000

Mr Alan K Dundas

20,000

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(c) **Interests in Securities of Xstrata Capital or Xstrata plc**

None of the Directors has any relevant interest in any marketable securities of Xstrata Capital or Xstrata plc.

(d) **Dealings in Securities of Xstrata Capital or Xstrata plc**

In the four months immediately preceding 21 December 2004, being the date of Xstrata's Offer, no Director provided or agreed to provide, or received or agreed to receive, consideration for any marketable securities of Xstrata Capital or Xstrata plc under a sale, purchase or agreement for sale or purchase of such securities.

(e) **Conditional Agreements**

No Director is party to any agreement or arrangement with any other person in connection with or conditional on the outcome of Xstrata's Offer.

(f) **Contracts with Xstrata Capital or Xstrata plc**

No Director has any interest in any contract entered into by Xstrata Capital or Xstrata plc.

(g) **Payments and Benefits**

No benefit (other than a benefit permitted by section 200F or 200G of the Corporations Act) will or may be given to a Director:

in connection with their retirement from office in WMC or a related body corporate of WMC; or

in connection with the transfer of the whole or any part of the undertaking or property of WMC.

**5.4 Potential Impact of Xstrata's Offer on WMC's Financing Arrangements and Material Contracts**

(a) **Overview**

Other than the USD Syndicated Facility Agreement described below, WMC is not, after due inquiry, aware of any other financing arrangement, or any contract, that has been entered into by WMC or a related body corporate of WMC, which WMC considers to be material in the context of



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WMC or the WMC Group taken as a whole, that contains a change of control provision which may be triggered if Xstrata acquires WMC Shares as a result of its Offer.

Although WMC and various of its related bodies corporate have entered into other contracts that contain change of control provisions which may be triggered if Xstrata acquires WMC Shares as a result of its Offer, WMC does not consider any of those contracts to be material in the context of WMC or the WMC Group taken as a whole.

### (b) **USD Syndicated Facility Agreement**

The following is a summary of the relevant provisions of the USD Syndicated Facility Agreement. This information has been included in this Target's Statement because:

it may impact on the future prospects of WMC if Xstrata obtains a relevant interest in more than 50% of the WMC Shares. This may be relevant if any WMC Shareholders remain as minority shareholders in WMC; and

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it may be relevant in assessing the likelihood of the change of control condition of Xstrata's Offer (set out in paragraph (l) of Appendix 2 to the Xstrata Bidder's Statement) being satisfied or waived.

WMC and Commonwealth Bank of Australia (*CBA*) (as agent and arranger of a syndicate of applicable lender banks comprising CBA, Australia and New Zealand Banking Group Limited, Citibank NA, Deutsche Bank AG, JP Morgan Chase Bank, National Australia Bank Limited and Westpac Banking Corporation (collectively, the *Lenders*)) are parties to a US\$250 million Syndicated Dual Currency Revolving Cash Advance Facility Agreement (*USD Syndicated Facility Agreement*) dated 19 October 2004.

Under the USD Syndicated Facility Agreement, WMC has available a US\$250 million syndicated dual currency revolving cash advance facility with the Lenders. The facility may be used for general corporate purposes. The facility is not currently drawn down and has never been drawn down. It is anticipated that the first drawdown under the facility will take place in the second quarter (April to June) of 2005.

If WMC becomes a subsidiary (as defined in the Corporations Act) of another entity, and that parent entity has a Standard & Poor's long term credit rating lower than BBB, a review event occurs, which gives the Lenders the right to cancel the facility (and declare any outstanding loans, together with accrued interest, immediately due and payable). If this right is exercised, the WMC Group may lose the ability to draw on the funds under this facility (and may have to repay any loans that are outstanding under the facility at the applicable time).

As at the date of this Target's Statement, no member of the WMC Group has received any written notice from CBA that the Lenders intend to exercise their rights under the change of control provisions. However, WMC considers that it is commercially unrealistic to expect the Lenders to waive those rights.

### **5.5 Material Litigation**

There is no current litigation of a material nature against any member of the WMC Group and the Directors have no knowledge of any potential material litigation.

### **5.6 Impact of Offer on WMC Employee Incentive Plans**

WMC operates currently, and has in the past operated, a number of employee incentive plans, involving the provision of WMC Shares, or options to subscribe for WMC Shares, or equivalent cash benefits, to employees. This section 5.6 outlines the implications of Xstrata's Offer in relation to those plans.

#### **(a) WMC Share Plans**

WMC operates three WMC Share Plans, being the Staff Share Plan (*SSP*), the Performance Share Plan (*PSP*) and the Executive Share Plan (*ESP*). The ESP



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was adopted by the WMC Board in December 2002, while the SSP and PSP were each adopted by the WMC Board in November 2003.

WMC Shares acquired by employees under each WMC Share Plan are subject to disposal restrictions. In the case of the SSP, WMC Shares acquired under the SSP may not be dealt with for three years from the date of acquisition, except upon cessation of employment. As at 22 December 2004, 455,424 WMC Shares acquired by employees under the SSP remain subject to this disposal restriction (***SSP Restricted Shares***). Holders of the SSP Restricted Shares may not accept Xstrata's Offer in respect of those WMC Shares.

In the case of each of the PSP and the ESP, WMC Shares acquired by employees under those plans may not be dealt with for 10 years from the date of acquisition except upon:

- (i) cessation of employment with the WMC Group;
- (ii) the WMC Board determining that the relevant disposal restriction ceases to apply, which determination may only be made if a takeover bid or scheme of arrangement is made or undertaken in respect of WMC; or
- (iii) the WMC Board consenting to the sale, transfer or disposal of WMC Shares by the relevant holder. In respect of the ESP Restricted Shares, the WMC Board must not give its consent if, after the sale, transfer or disposal, the relevant participant would hold less WMC Shares than the amount calculated in respect of a particular formula.

As at 22 December 2004, 624,759 WMC Shares acquired by employees under the PSP (***PSP Restricted Shares***), and 2,108,565 WMC Shares acquired by employees under the ESP (***ESP Restricted Shares***), remain subject to this disposal restriction. Holders of the PSP Restricted Shares and the ESP Restricted Shares may not accept Xstrata's Offer in respect of those WMC Shares.

As at 22 December 2004, the WMC Board has not determined to remove the disposal restriction applying to either the PSP Restricted Shares or the ESP Restricted Shares as a result of Xstrata's Offer, and does not currently intend to make such a determination. Similarly, the WMC Board does not currently intend to give its consent to the sale, transfer or disposal of PSP Restricted Shares or ESP Restricted Shares upon request by the holder solely because of Xstrata's Offer, although it will take Xstrata's Offer into account together with all other relevant commercial considerations in accordance with the terms of the PSP or the ESP (as relevant).

If Xstrata becomes entitled to proceed to compulsory acquisition and does so, Xstrata may acquire all SSP Restricted Shares, PSP Restricted Shares and ESP Restricted Shares. The possible compulsory acquisition of WMC Shares is discussed in section 4.10.

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WMC has in the past granted various WMC Options under the WMC Option Plans to WMC Group employees. Details of the WMC Options on issue as at 22 December 2004 are as follows.

<u>Number</u>	<u>Issue price</u>	<u>Expiry date</u>
1,043,100	A\$ 3.48	18 December 2005
2,192,500	A\$ 4.33	30 November 2006
3,088,762	A\$ 4.34	23 December 2007

All WMC Options are currently exercisable, and will remain exercisable regardless of the outcome of Xstrata's Offer, subject to the normal lapse of those WMC Options under the terms of the respective WMC Option Plans.

**(c) WMC Stock Appreciation Plans**

WMC has in the past granted various rights under Stock Appreciation Plans (*SAPs*) for the benefit of WMC Group employees. The purpose of the SAPs was to provide those employees (who, due to securities law constraints, were not eligible to participate in the WMC Option Plans), with benefits similar to those conferred by WMC Options.

Under each SAP, eligible employees who applied received rights which entitle them, on redemption, to a cash payment from WMC calculated by reference to the difference between the WMC Share price on ASX when the SAP rights were granted (as adjusted subsequently in accordance with the terms of the SAPs) and the prevailing price of WMC Shares on ASX at the time of redemption (assuming the latter amount is higher).

Details of the SAP rights in existence as at 22 December 2004 are as follows.

<u>Number</u>	<u>Notional issue price</u>	<u>Expiry date</u>
9,500	A\$ 3.48	18 December 2005
36,800	A\$ 4.33	30 November 2006
39,000	A\$ 4.34	23 December 2007

All of the SAP rights are currently redeemable by the holders, and will remain redeemable regardless of the outcome of Xstrata's Offer, subject to the normal lapse of those SAP rights under the terms of the respective SAPs.

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WMC is also currently entitled to redeem those SAP rights on behalf of holders at any time in the six month period that commenced when Xstrata's original bidder's statement was given to WMC (ie until 30 May 2005). However, WMC does not currently intend to redeem those SAP rights.

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#### **5.7 Taxation Considerations for WMC Shareholders**

Acceptance of Xstrata's Offer by you is likely to have tax consequences. You should note that scrip for scrip capital gains tax roll-over relief will not be available if you accept Xstrata's Offer. The tax consequences for you will depend on your individual circumstances.

Section 7 of the Xstrata Bidder's Statement sets out a general overview of the Australian tax implications of a WMC Shareholder accepting Xstrata's Offer, and disposing of their WMC Shares to Xstrata. You should not rely on it as advice on your own affairs. It does not deal with the position of certain WMC Shareholders. For example, it does not deal with WMC Shareholders who are share traders or who hold their WMC Shares on revenue account, or who acquired their WMC Shares under the WMC Share Plans, or on the exercise of WMC Options acquired under the WMC Option Plans.

You should seek your own independent financial and taxation advice, which takes into account your personal circumstances, before making a decision as to whether or not to accept Xstrata's Offer for your WMC Shares.

#### **5.8 Information for ADR Holders**

Since December 2002, WMC Shares have traded in the United States on the New York Stock Exchange under the trading symbol **WMC** in the form of American Depository Shares (**ADSs**) evidenced by American Depository Receipts (**ADRs**). Section 8.2 of the Xstrata Bidder's Statement sets out a general overview of information relevant to holders of ADSs/ADRs in connection with Xstrata's Offer.

#### **5.9 Change in Financial Position of WMC Since Last Financial Report**

WMC's last published financial statements are for the six months ended 30 June 2004. Except as disclosed in this Target's Statement and in any announcement made by WMC to ASX since 11 August 2004, the Directors are not aware of any material change to the financial position of WMC since 30 June 2004.

#### **5.10 ASIC Modifications and Exemptions**

WMC has obtained from ASIC a modification of section 638(5) of the Corporations Act so that WMC does not need Xstrata's consent to the inclusion of statements in this Target's Statement that fairly represent statements that were made in a document notified to a Regulatory Information Service or made available through the UK Listing Authority, or lodged with the operator of the SWX Swiss Exchange, by or on behalf of Xstrata in compliance with the listing rules of the London Stock Exchange or the SWX Swiss Exchange, respectively, provided certain conditions are satisfied. See section 5.13.

ASIC has also published various class order instruments providing for modifications to and exemptions from the Corporations Act that apply generally to all persons, including WMC.

**5.11 Consent to Inclusion of Statements**

The following persons have given and have not, before the date of this Target's Statement, withdrawn their consent to the inclusion of the following information in the form and context

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**WMC Resources Ltd - Target's Statement**

in which it is included, and to all references in this Target's Statement to that information in the form and context in which they appear:

PricewaterhouseCoopers to WMC's 2003 audited results and the statements attributed to PricewaterhouseCoopers in the Investigating Accountant's Report section 3;

PricewaterhouseCoopers Securities Ltd to the inclusion of the Investigating Accountant's Report in section 3;

Grant Samuel & Associates Pty Limited to the inclusion of the Independent Expert's Report and related financial services guide in Annexure A;

AMC Consultants Pty Ltd to the inclusion of the report in Annexure B;

International Nuclear, Inc to the inclusion of the report in Annexure C;

World Nuclear Association to the inclusion of the statements attributed to it in section 2.5(b);

Mr Seamus French to the inclusion of the statement made by him on page 26;

Mr Howard Barnes to the inclusion of the statement made by him on page 26; and

Mr Dick Pettigrew to the inclusion of the statement made by him on page 26.

This Target's Statement also includes statements made by, or statements based on statements made by, Xstrata plc and Xstrata Capital. Neither of those persons has consented to those statements being included in this Target's Statement. See section 5.13.

**5.12 Disclaimers Regarding Responsibility**

Each person named above as having given consent to the inclusion of a statement in this Target's Statement (or who is otherwise named in this Target's Statement as acting in a professional capacity for WMC in relation to Xstrata's Offer):

does not make, or purport to make, any statement in this Target's Statement or any statement on which a statement in this Target's Statement is based other than, in the case of a person referred to above as having given their consent to the inclusion of a statement, a statement included in this Target's Statement with the consent of that person; and

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to the maximum extent permitted by law, expressly disclaims and takes no responsibility for any part of this Target's Statement, other than, in the case of a person referred to above as having given their consent to the inclusion of a statement, any statement or report which has been included in this Target's Statement with the consent of that party.

### **5.13 Publicly Available Information**

This Target's Statement contains statements which are made in, or based on statements made in, documents lodged with ASIC, or given to ASX, or notified to a Regulatory Information Service or made available through the UK Listing Authority in compliance with

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**WMC Resources Ltd - Target's Statement**

the listing rules of the London Stock Exchange, or lodged with the SWX Swiss Exchange, by Xstrata plc and/or Xstrata Capital. Those documents are:

the Xstrata Bidder's Statement;

Xstrata's announcement to ASX on 22 November 2004 in which it publicly announced its intention to make the Offer;

Xstrata's shareholder circular entitled "Proposed acquisition of WMC Resources Limited and Notice of Extraordinary General Meeting dated 17 December 2004";

Xstrata's 2003 Annual Report dated 23 February 2004;

Xstrata's 2004 Interim Report dated 12 August 2004; and

Xstrata's offering circular in relation to "Convertible Bonds due 2010" dated 11 August 2003.

As required by ASIC Class Order [CO 01/1543] and the modification granted by ASIC to WMC (see section 5.10), WMC will make available a copy of these documents (or of relevant extracts from these documents), free of charge, to WMC Shareholders who request it during the Offer Period. To obtain a copy of these documents (or the relevant extracts), WMC Shareholders may telephone the official WMC Shareholder Information Line on 1800 067 505 (toll-free within Australia) or +61 3 9415 4198 (from outside Australia).

**5.14 No Other Material Information**

This Target's Statement is required to include all the information that WMC Shareholders and their professional advisers would reasonably require to make an informed assessment whether to accept Xstrata's Offer, but:

only to the extent to which it is reasonable for WMC Shareholders and their professional advisers to expect to find such information in this Target's Statement; and

only if the information is known to any of the Directors.

The Directors are of the opinion that the information that WMC Shareholders and their professional advisers would reasonably require to make an informed assessment whether to accept Xstrata's Offer is:

- (a) the information contained in the Xstrata Bidder's Statement;

- (b) the information contained in WMC's releases to ASX prior to the date of this Target's Statement; and
- (c) the information contained in this Target's Statement.

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**WMC Resources Ltd - Target's Statement**

**6. Definitions and Interpretation**

**6.1 Definitions**

In this Target's Statement, unless the context requires otherwise:

*A\$, \$, Australian Dollars* or *AUD* means the lawful currency of Australia.

*ACCC* means the Australian Competition and Consumer Commission.

*ADR* means American Depository Receipt.

*ADS* means American Depository Share.

*AIFRS* means Australian equivalents to International Financial Reporting Standards.

*Announcement Date* means 22 November 2004, being the date on which Xstrata publicly announced its intention to make the Offer.

*ASIC* means the Australian Securities and Investments Commission.

*ASX* means Australian Stock Exchange Limited (ABN 98 008 624 691) or, as the context requires, the financial market operated by it.

*CI costs* are direct cash production costs (which essentially comprise labour, energy and supplies, including maintenance, incurred at each stage from mining through to the production of a finished, marketable, metal product), net of any by-product credits.

*CBA* means Commonwealth Bank of Australia (ABN 48 123 123 124).

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**CIS** means the Commonwealth of Independent States. Member States include Russia, Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Tajikistan, Turkmenistan, Uzbekistan and Ukraine.

**Corporations Act** means the Corporations Act 2001 (Cth).

**DAP** means di-ammonium phosphate.

**DAP-S** means sulphur-fortified di-ammonium phosphate.

**Director** means a member of the WMC Board.

**EBIT** means operating profits before net borrowing costs and income tax expense.

**EBITDA** means operating profits before depreciation, amortisation, net borrowing costs and income tax expense.

**ESP Restricted Shares** has the meaning given in section 5.6(a).

**FIRB** means the Foreign Investment Review Board.

**GBU** means the Gold Business Unit (a former business unit of WMC that was sold in 2001).

**Hi-Fert** means Hi-Fert Pty Ltd (ABN 76 008 038 962).

**Hi-Fert Transaction** has the meaning given in section 4.3(a).

**Independent Expert** means Grant Samuel & Associates Pty Limited (ABN 28 050 036 372).

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**WMC Resources Ltd - Target's Statement**

***Independent Expert's Report*** means the report and the related financial services guide prepared by the Independent Expert, as set out in Annexure A.

***iNi*** means International Nuclear, Inc.

***Investigating Accountant's Report*** means the report prepared by PricewaterhouseCoopers Securities Ltd, as set out in section 3.

***IORM program*** means the Integrated Operational Risk Management program described in section 2.4(a).

***JORC Code*** means Australian Code for Reporting of Mineral Resources and Ore Reserves, September 1999.

***koz*** means kilo ounces (ie thousands of ounces).

***kt*** means kilo tonnes (ie thousands of tonnes).

***MAP-S*** means sulphur-fortified mono-ammonium phosphate.

***Notice of Status of Conditions*** means Xstrata's notice disclosing the status of the conditions of its Offer which is required to be given under section 630(3) of the Corporations Act.

***NYSE*** means New York Stock Exchange, Inc or, as the context requires, the financial market operated by it.

***lb*** means pounds.

***Offer Period*** means the period during which Xstrata's Offer remains open for acceptance in accordance with the Xstrata Bidder's Statement.

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**Offer Price** means the consideration offered under Xstrata's Offer for each WMC Share. As at the date of this Target's Statement, that consideration is A\$6.35 for each WMC Share.

**Olympic Dam** means the WMC Group's copper and uranium mining and processing operation located in South Australia.

**PSP Restricted Shares** has the meaning given in section 5.6(a).

**QFO** means WMC's Queensland Fertilizer Operations business.

**Register Date** means the date set by Xstrata under section 633(2) of the Corporations Act, being 13 December 2004.

**Related Entity** means, in relation to a person, any entity which is related to that person within the meaning of section 50 of the Corporations Act or which is in an economic entity (as defined in any approved Australian Accounting Standard) that is controlled by that person.

**reserve or ore reserve** is the economically mineable part of a measured or indicated mineral resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting



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**WMC Resources Ltd - Target's Statement**

that extraction could reasonably be justified. Ore reserves are sub-divided in order of increasing confidence into probable ore reserves and proved ore reserves.

**resource** or **mineral resource** is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a mineral resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral resources are sub-divided, in order of increasing geological confidence, into inferred, indicated and measured categories.

**SEC** means the United States Securities and Exchange Commission.

**SSP Restricted Shares** has the meaning given in section 5.6(a).

**Target's Statement** means this document, being the statement of WMC under Part 6.5 of the Corporations Act relating to Xstrata's Offer.

**US\$, US Dollars** or **USD** means the lawful currency of the United States of America.

**USD Syndicated Facility Agreement** means the US\$250 million Syndicated Dual Currency Revolving Cash Advance Facility Agreement described in section 5.4.

**WMC** or **Company** means WMC Resources Ltd (ABN 76 004 184 598) and/or (as applicable) its Related Entities.

**WMC Board** or **Board** means the board of directors of WMC.

**WMC Group** means WMC and its Related Entities as at the date of this Target's Statement.

**WMC Option Plan** means each of:

(a)

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the WMC Resources Option Plan , the terms and conditions of which are set out in the scheme of arrangement under Part 5.1 of the Corporations Act between WMC Limited (ABN 85 004 820 419) (now Alumina Limited) and holders of options to subscribe for ordinary shares in that company implemented on 11 December 2002; and

- (b) the WMC Resources 2002 Option Plan , promulgated by WMC in December 2002.

**WMC Optionholder** means a person registered in the register of optionholders of WMC as a holder of one or more WMC Options.

**WMC Options** means options to subscribe for WMC Shares issued under a WMC Option Plan which are on issue at the Register Date.

**WMC Shares** or **Shares** means fully paid ordinary shares in the capital of WMC.

**WMC Share Plan** means each of:

- (a) the WMC Resources Staff Share Plan (which was adopted by the WMC Board in November 2003);
- (b) the WMC Resources Performance Share Plan (which was adopted by the WMC Board in November 2003); and

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### **WMC Resources Ltd - Target's Statement**

(c) the WMC Resources Executive Share Plan (which was adopted by the WMC Board in December 2002).

**WMC Shareholder** means a person registered in the register of members of WMC as a holder of one or more WMC Shares.

**Xstrata** means Xstrata Capital and/or (as applicable) Xstrata plc.

**Xstrata Bidder's Statement** or **Bidder's Statement** means the bidder's statement relating to Xstrata's Offer, prepared by Xstrata and dated 16 December 2004.

**Xstrata Capital** means Xstrata Capital Holdings Pty Limited (ACN 111 756 337), a wholly-owned subsidiary of Xstrata plc.

**Xstrata Offer Withdrawal Rights** has the meaning given in section 4.8.

**Xstrata's Offer** or **Offer** means the off-market takeover bid by Xstrata for WMC Shares under Chapter 6 of the Corporations Act, as described in the Xstrata Bidder's Statement.

## **6.2 Interpretation**

In this Target's Statement, unless the context requires otherwise.

- (a) Headings are for convenience only and do not affect interpretation.
- (b) The singular includes the plural and conversely.
- (c) A reference to a section or Annexure is to a section of, or annexure to, this Target's Statement.
- (d) A gender includes all genders.
- (e) Where a word or phrase is defined, its other grammatical forms have a corresponding meaning.

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- (f) A reference to a person, corporation, trust, partnership, unincorporated body or association or other entity includes any of them.
- (g) A reference to a person includes a reference to the person's executors, administrators, successors, substitutes (including persons taking by novation) and assigns.
- (h) A reference to any legislation or to any provision of any legislation includes any modification or re-enactment of it, any legislative provision substituted for it and all regulations and statutory instruments issued under it.
- (i) A reference to any instrument or document includes any variation or replacement of it.
- (j) A term not specifically defined in this Target's Statement has the meaning given to it in the Corporations Act.
- (k) A reference to time is a reference to Melbourne time.

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**WMC Resources Ltd - Target's Statement**

**7. Approval of Target's Statement**

This Target's Statement has been approved by a resolution of the directors of WMC Resources Ltd.

**Dated** 4 January 2005.

**Signed** on behalf of WMC Resources Ltd:

**Andrew G Michelmore**

**Director**

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Annexure A

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[www.grantsamuel.com.au](http://www.grantsamuel.com.au)

22 December 2004

The Directors

WMC Resources Ltd

Level 16 IBM Centre

60 City Road

Southbank VIC 3006

Dear Sirs

**Xstrata Takeover Offer**

**1. Introduction**

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On 28 October 2004, WMC Resources Ltd ( WMC ) announced that it had received an acquisition proposal from Xstrata Plc ( Xstrata ). Xstrata 's proposal was to acquire WMC by way of a scheme of arrangement at a price of \$6.35 cash per WMC share. The WMC directors decided not to proceed with the proposal. On 22 November 2004, Xstrata announced its intention to make an off-market takeover offer for all the ordinary shares of WMC Resources Limited ( WMC ) at \$6.35 cash per share (the Xstrata Offer ). Xstrata 's Bidder 's Statement was lodged with WMC on 30 November 2004.

WMC is one of Australia 's largest resources companies. Its major assets are:

the Olympic Dam copper/uranium mine in South Australia. Olympic Dam is a world class ore body, with an extremely long life, low production costs and substantial expansion potential;

a large integrated nickel business (the Nickel Business Unit) in Western Australia, consisting of mining, smelting and refining operations; and

the Queensland Fertilizer Operation ( QFO ), consisting of an integrated phosphate mine, ammonia plant and ammonium phosphate fertilizer production facility.

There is no statutory requirement for WMC to commission an independent expert 's report in relation to the Xstrata Offer. However, the directors of WMC have engaged Grant Samuel & Associates Pty Limited ( Grant Samuel ) to prepare an independent expert 's report on the Xstrata Offer. The report is to set out Grant Samuel 's opinion as to whether the Offer is fair and reasonable and the reasons for forming that opinion.

Grant Samuel is independent of WMC and Xstrata. Grant Samuel has no involvement with, or interest in the outcome of, the Xstrata Offer other than the preparation of this report. A copy of this report is to be despatched to shareholders with the Target 's Statement prepared by WMC.

This report has been prepared to assist the directors of WMC in making their recommendations to shareholders in relation to the Xstrata Offer and to assist the shareholders of WMC to assess the merits of the Xstrata Offer. The sole purpose of this report is an expression of Grant Samuel 's opinion as to whether the Xstrata Offer is fair and reasonable. This report should not be used for any other purpose or by any other party.

GRANT SAMUEL & ASSOCIATES PTY LIMITED ABN 28 050 036 372 AFS LICENCE NO 240985

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### 2. Summary of Opinion

In Grant Samuel's view the Xstrata Offer of \$6.35 cash per WMC share is neither fair nor reasonable.

WMC has world class copper, uranium and nickel assets. Olympic Dam is the world's fourth largest copper resource, the largest uranium resource and the fourth largest gold resource. The significant recent strengthening of the uranium market underpins the potential for a major expansion of Olympic Dam. WMC's Nickel Business Unit is the world's third largest nickel producer, with low production costs and an expected life of over twenty years. WMC is a uniquely attractive acquisition target in the international resources sector.

WMC's share price has traded well above the Xstrata Offer price (generally above \$7.00) since the announcement of the Xstrata Offer. This presumably reflects an expectation of a significantly higher offer, either from Xstrata or from one of a number of resources companies that would be interested in acquiring WMC.

Grant Samuel has valued WMC in the range \$7.17-8.24 per share. Judgements regarding the value of WMC are critically dependent on assumptions regarding future exchange rates and commodity prices, and on the value attributable to the expansion potential at Olympic Dam. Differing assumptions could result in materially differing estimates of WMC's underlying value. However, regardless of debates regarding full underlying value, the fundamental issue for WMC shareholders is how to respond to the Xstrata Offer in a way which maximises the value of their shareholdings. In Grant Samuel's view it is reasonable for shareholders to expect that a higher offer will be forthcoming, either from Xstrata or another bidder, at least if shareholders do not accept the current Xstrata Offer. In any event, shareholders can currently realise significantly more value than the Xstrata Offer price by selling their shares on market.

Accordingly, Grant Samuel has concluded that shareholders would be better off not accepting the current Xstrata Offer, and that the offer is neither fair nor reasonable.

### 3. Key Conclusions

Grant Samuel has valued WMC in the range \$7.17-8.24 per share:

#### WMC Limited Valuation Summary

	Valuation (US\$M)		Valuation (A\$M)	
	Low	High	Low	High
Olympic Dam	3,700	4,100	4,868	5,395
Nickel Business Unit	2,400	2,700	3,158	3,553
Queensland Fertilizer Operation	350	380	461	500
			<b>8,487</b>	<b>9,448</b>
Exploration and development projects			385	590



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Other			100	130
Corporate overheads			(150)	(100)
<b>Total enterprise value</b>			<b>8,822</b>	<b>10,068</b>
(Debt)	(700)	(700)	(921)	(921)
Cash			407	407
Other receivables			106	126
<b>Value of net assets</b>			<b>8,414</b>	<b>9,680</b>
Shares on issue (millions)			1,171	1,171
<b>Net value per share</b>			<b>7.18</b>	<b>8.26</b>
<b>Net value per share diluted for options</b>			<b>7.17</b>	<b>8.24</b>

WMC has been valued by aggregating the estimated fair market value of WMC's businesses and other assets and deducting net borrowings. Net borrowings are based on WMC's actual debt and projected cash as at 31 December 2004. The valuation is appropriate for the acquisition of WMC as a whole.

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The principal approach to valuing WMC's major assets was discounted cash flow analysis. A number of different scenarios were developed for each asset. The production rates and operating and capital costs assumed in each scenario were reviewed in detail by independent technical specialists, AMC Consultants Pty Ltd (AMC). The discounted cash flow models project cash flows from 1 January 2005 onwards. Cash flows were projected in US dollar terms. Projected A\$ cash flows (principally operating costs) were translated to US\$ at rates approximating A\$:US\$ forward exchange rates. Projected ungeared US\$ cash flows were discounted to a present value using nominal discount rates of 8.5-9.5% for Olympic Dam and the Nickel Business Unit and 8.0-9.0% for QFO. Net present values were determined for each scenario across a range of commodity prices and discount rates. Values denominated in US dollars were converted to Australian dollars at a spot exchange rate of A\$1.00=US\$0.76.

AMC valued WMC's exploration interests and interests in developing projects.

The valuations were cross checked having regard to earnings multiples and, where appropriate, rules of thumb based on production measures.

**The valuation of WMC implies multiples of earnings consistent with the multiples on which major resources companies are trading.**

The multiples of earnings implied by the valuation of WMC are compared with the earnings multiples for large diversified resources companies in the following table:

**WMC Valuation Implied Earnings Multiples**

	EBITDA Multiples		EBITA Multiples	
	2004F	2005F	2004F	2005F
<b>WMC Valuation - Low</b>	<b>6.5</b>	<b>6.6</b>	<b>10.1</b>	<b>10.3</b>
<b>- High</b>	<b>7.5</b>	<b>7.5</b>	<b>11.5</b>	<b>11.8</b>
BHP Billiton	7.2	6.8	8.7	8.2
Rio Tinto	11.1	7.8	15.4	9.7
Anglo American	7.6	7.0	10.7	10.0
Xstrata	6.4	5.7	8.9	7.8
CVRD	7.9	6.0	8.2	6.8

The multiples for the comparable companies are based on share market prices: they do not incorporate a premium for control. Comparisons between WMC and the large diversified resources companies are difficult because of differences in asset mixes and growth opportunities. Overall, however, Grant Samuel believes that the multiple analysis supports the valuation of WMC in the range \$7.17-8.24 per share.

**The valuation represents a substantial premium to the pre-bid WMC share price.**

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Grant Samuel's valuation range represents a 40-61% premium to the WMC share price of \$5.13 immediately prior to the announcement of Xstrata's approach to WMC on 28 October 2004, and a 42-63% premium to the weighted average share price of \$5.06 for the three months preceding 28 October 2004. Although shares normally trade at a discount to full underlying value, the differential between WMC's pre-bid share price and the valuation range is large. In Grant Samuel's view there are credible reasons to explain the deep discount to underlying value at which WMC shares were trading before the news of the Xstrata approach:

notwithstanding strong operating performance over the last twelve months, serious operational issues at Olympic Dam in 2001 and 2003 and poor historical returns on capital invested in the project may have resulted in lingering scepticism on the part of analysts and investors as to the prospects for Olympic Dam;

in particular, analysts and investors may have been focused on the likely near term performance of Olympic Dam rather than the potentially significant additional value to be

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generated by a medium term expansion of the operation. WMC has only recently released additional information highlighting the expansion prospects for Olympic Dam;

the substantial strengthening of the uranium market in recent times, together with WMC's opportunity to materially increase its uranium sales through an expansion of Olympic Dam, mean that the Olympic Dam uranium resource is now a major source of value for WMC. However, until recently uranium was generally viewed as no more than a by-product of the Olympic Dam copper production process; and

the valuation incorporates substantial head office cost savings that should be available to potential acquirers of WMC that have established operations in Australia. These cost savings would not have been reflected in the WMC pre-bid share price.

### **WMC represents a unique opportunity to acquire world class copper and nickel assets.**

The international resources sector has seen significant rationalisation in recent years. Major transactions have included the Rio acquisition of North, the merger of BHP and Billiton, the Newmont acquisition of Normandy and the Xstrata acquisition of MIM. The process has been driven, in part, by a perception that increased market capitalisation and share liquidity result in lower costs of capital, while reduced industry fragmentation results in less volatile commodity markets and improved industry returns on capital. The result of this process has been the development of a small number of very large resources companies, chief amongst which are BHP Billiton, Rio and Anglo American.

WMC is attractive not only for the additional scale that it would provide to an acquirer. WMC's copper and nickel assets are world class. They have long operating lives, low costs and low risk characteristics, given their Australian location. Olympic Dam, in particular, has the potential for substantial growth. WMC represents an opportunity for each of the major resources companies to cement its leading position within the international resources sector. For mid-sized companies (such as Xstrata), an acquisition of WMC represents a unique opportunity to join the ranks of the major resources companies.

### **Valuation of WMC is critically dependent on assumptions regarding exchange rates and commodity prices.**

The valuation of WMC is critically dependent on assumptions regarding exchange rates and commodity prices. Judgements regarding exchange rates and commodity prices are particularly uncertain given current circumstances in currency and commodity markets. Currency markets appear to be in the midst of a major realignment, with the US dollar weakening significantly against a number of major currencies. Prices for almost all commodities (as quoted in US\$ terms) have been at multi-year highs in recent months, reflecting the weakening of the US dollar, strong demand from China, and, for many commodities, supply concerns.

Grant Samuel has adopted exchange rate assumptions reflecting current spot and forward exchange rates. These reflect an objective, market consensus view on exchange rates. Grant Samuel's assumptions regarding commodity prices (in US\$ terms) reflect the recent depreciation of the US\$ and a judgement that Chinese demand will underpin commodity demand in at least the medium term.

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The major assumptions are summarised as follows:

**Exchange Rate and Commodity Price Assumptions**

	<u>Spot</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Long Term</u>
<b>A\$/US\$ Exchange Rate</b>	0.76	0.75	0.74	0.73	
<b>Real Commodity Prices (US\$/lb)</b>					
Copper - low	1.43	1.20	1.10	1.00	0.95
high		1.30	1.20	1.10	1.05
Nickel - low	6.04	5.50	5.10	4.40	3.80
high		5.70	5.30	4.60	4.00
Uranium -low	20.50	20.00	20.00	20.00	20.00
high		22.00	22.00	22.00	22.00
<b>Real Commodity Prices (A\$/lb)</b>					
Copper - low	1.88	1.58	1.45	1.32	1.25
high		1.71	1.58	1.45	1.38
Nickel - low	7.94	7.23	6.71	5.79	5.00
high		7.50	6.97	6.05	5.26
Uranium - low	26.97	26.31	26.31	26.31	26.31
high		28.95	26.31	26.31	26.31

The copper and nickel markets are arguably currently enjoying peak-of-cycle conditions (at least in US\$ terms). However, the long term real A\$ nickel and copper prices implied by Grant Samuel's exchange rate and US\$ commodity price assumptions are at the low end of actual realised A\$ nickel and copper prices over the last five years:

**Comparison of Assumed and Historical A\$ Commodity Prices**

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>Grant Samuel Long Term (mid-point)</u>
Copper (A\$/lb)	1.41	1.38	1.31	1.25	1.74	1.32
Nickel (A\$/lb)	6.64	5.17	5.69	6.72	8.44	5.13

The exchange rate and commodity price assumptions set out above are inter-dependent. In Grant Samuel's view it would not be appropriate to significantly revise either exchange rate or commodity price assumptions on an individual basis and any analysis based on such an individual revision may be misleading.

It should be noted that the value of WMC could vary, perhaps significantly, with changes in exchange rates or changes in commodity price expectations, potentially resulting from factors such as shifts in global growth expectations, revised economic policy settings in major economies or changed attitudes to international security issues.

**Olympic Dam is a long life, low cost copper producer with vast copper and uranium resources and the potential to significantly expand production.**

Grant Samuel has valued Olympic Dam in the range US\$3.7-4.1 billion (A\$4.9-5.8 billion at a spot exchange rate of A\$1.00=US\$0.76).

Olympic Dam would be a prize asset in the portfolio of any major resources company. It is the world's fourth largest copper resource, fourth largest gold resource and largest uranium resource. It has low operating costs and a very long mine life. The recent strengthening of the uranium price, and expectations of strong long term demand for uranium, have significantly enhanced the economics of the operation.

WMC is currently mining the northern part of the ore body by way of highly mechanised bulk underground mining methods, to produce around 225,000 tpa of copper. It is expected that

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debottle-necking and incremental improvements will allow the current operation to increase production to around 250,000 tpa of copper.

However, the size of the ore body will support a substantial expansion in production. WMC has commenced a study to identify the most attractive expansion option. Based on recent drilling and an upgrading of the resource, there appear to be strong prospects of developing a large open pit operation mining the southern part of the ore body, to lift annual production to around 500,000 tonnes per annum of copper. Initial estimates are that the expansion could have a total start-up capital cost of around \$5.0 billion, including the cost of the pit pre-strip, mining fleet and treatment plant. The expansion case assumes the commencement of pit pre-stripping and plant construction in 2008 and copper production in 2010, with production reaching 500,000 tonnes per annum by 2012.

Discounted cash flow analysis suggests that the proposed expansion will deliver substantial incremental net present value. It is not appropriate to include this incremental net present value in full in the valuation of Olympic Dam, given the early stage estimates of capital and mining costs and the uncertainty regarding the timing of the expansion. Nonetheless, Grant Samuel's valuation of Olympic Dam reflects a judgement that it is highly likely that a major expansion of Olympic Dam will ultimately proceed. Moreover, even at the expanded production rate assumed in the expansion case, the current resource would support a very long mine life. It appears reasonable to expect that further expansions of the operation or other value enhancing developments would occur in due course. Grant Samuel believes that these valuable real options support its valuation of Olympic Dam, although no specific value has been attributed to them.

**WMC's Nickel Business Unit is the world's third largest nickel producer, with low production costs and an expected life of over twenty years.**

Grant Samuel has valued WMC's Nickel Business Unit in the range US\$2.4-2.7 billion (A\$3.2-3.6 billion at a spot exchange rate of A\$1.00=US\$0.76).

WMC operates a large, integrated nickel sulphide business, with mining at Leinster and Mt Keith, smelting in Kalgoorlie and nickel refining at Kwinana near Perth. The business is one of the world's major nickel producers and a major contributor to WMC's profitability. The valuation was based on a DCF analysis of various scenarios for the development of the business, cross-checked by reference to earnings and production multiples for comparable companies and relevant transaction evidence.

The valuation incorporates judgements that underground mining of the Perseverance ore body will support operations at Leinster for a further 14 years, and that the large Yakabindie ore body will be developed on an integrated basis with Mt Keith. Low grade ore from Mt Keith and Yakabindie will be treated through a new circuit, including low pressure leaching, to increase nickel production to around 125,000 tonnes per annum from 2008. The capital cost for the new circuit will be around \$600 million. The valuation reflects the real option value inherent in the long life of the operation and the ability of WMC's smelter and refinery assets to process additional nickel sulphide discoveries both for WMC and, potentially, third parties.

**Potential acquirers of WMC would be able to achieve substantial cost savings**

WMC currently incurs corporate costs of around \$175 million in its Melbourne head office and further costs of around \$60 million in its Perth office to support its Nickel Business Unit.

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Of the \$175 million of head office costs, approximately \$40 million represent costs directly associated with individual operations and are recovered from the business units. A further \$110 million are general corporate costs, which are allocated to the business units. The balance of approximately \$25 million represents the costs associated with the maintenance of WMC as a listed company.

Based on a review of the \$110 million of corporate costs recharged to the business units, Grant Samuel has assumed that approximately \$70 million of these costs could be saved by potential acquirers of WMC that have an existing presence in Australia. These savings have been reflected in the valuations of the individual operating businesses. Grant Samuel has assumed that a further \$25 million of Perth office costs could be saved. These savings have been reflected in the valuation



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of the Nickel Business Unit. Grant Samuel has assumed that of the residual head office costs of \$25 million, all but \$5-10 million would be eliminated.

Estimated costs associated with achieving the cost savings have been deducted from the valuation of WMC.

**The Xstrata Offer is not fair.**

The Xstrata Offer of \$6.35 per share is below Grant Samuel's valuation range of \$7.17-8.24 per share. Accordingly, the Xstrata Offer is not fair.

**The Xstrata Offer is not reasonable.**

A takeover offer can be reasonable, even if it is not fair, if there are circumstances that suggest that shareholders are unlikely to realize full underlying value and would be better off accepting the offer than not.

The Xstrata Offer price represents a significant premium to WMC's pre-bid price (although arguably WMC's share price would have increased over recent months in any event, at least to some extent, on news of the Olympic Dam resource upgrade and progress with the Olympic Dam expansion study).

On the other hand, the Xstrata Offer price is well below Grant Samuel's valuation range of \$7.17-8.24 per share and the recent WMC share trading range (since the announcement of the Xstrata Offer) of \$6.98-7.32. The weighted average share price over that period has been \$7.07.

It is almost certainly the case that the recent WMC share price reflects expectations of a higher offer, from Xstrata or from some other acquirer. WMC shares could trade below the Xstrata Offer price in the absence of the Xstrata Offer or some other proposal. In Grant Samuel's view, however, an expectation of a higher offer, whether from Xstrata or a third party, and whether in the near future or later, is realistic. The WMC copper, uranium and nickel assets should be highly attractive to a range of potential acquirers. Recent transactions in the resources sector have seen very high prices paid for assets in the context of competitive bidding processes. Shareholders currently have the option of selling their shares on market at prices that significantly exceed the Xstrata Offer price.

Accordingly, Grant Samuel believes that shareholders would be better off not accepting the current Xstrata Offer. In Grant Samuel's view the Xstrata Offer is neither fair nor reasonable.

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**4 Other Matters**

This report is general financial product advice only and has been prepared without taking into account the objectives, financial situation or needs of individual shareholders in WMC. Because of that, before acting in relation to their shareholdings, shareholders should consider the appropriateness of the advice having regard to their own objectives, financial situation or needs. Shareholders should read the Bidder's Statement issued by Xstrata and the Target's Statement issued by WMC in relation to the Xstrata Offer.

Acceptance or rejection of the Xstrata Offer is a matter for individual shareholders, based on their own views as to value and future market conditions, risk profile, liquidity preference, portfolio strategy and tax position. Shareholders who are in doubt as to the action that they should take in relation to the Xstrata Offer should consult their own professional adviser.

Grant Samuel has prepared a Financial Services Guide as required by the Corporations Act, 2001. The Financial Services Guide is included at the beginning of the full report.

This letter is a summary of Grant Samuel's opinion. The full report from which this summary has been extracted is attached and should be read in conjunction with this summary.

The opinion is made as at the date of this letter and reflects circumstances and conditions as at that date.

Yours faithfully

**GRANT SAMUEL & ASSOCIATES PTY LIMITED**

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**WMC Resources Ltd**

**Financial Services Guide and  
Independent Expert's Report  
in relation to the Offer by**

**Xstrata Capital Holdings Pty Ltd**

**Grant Samuel & Associates Pty Limited**

**(ACN 050 036 372)**

**22 December 2004**

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**Financial Services Guide**

Grant Samuel & Associates Pty Limited ( Grant Samuel ) carries on business at Level 6, 1 Collins Street, Melbourne VIC 3000. Grant Samuel holds Australian Financial Services Licence No. 240985 authorising it to provide financial product advice on securities and interests in managed investments schemes to wholesale and retail clients.

The Corporations Act requires Grant Samuel to provide this Financial Services Guide ( FSG ) in connection with its provision of an independent expert's report ( Report ) which is included in a document ( Disclosure Document ) provided to members by the company or other entity ( Entity ) for which Grant Samuel prepares the Report.

Grant Samuel does not accept instructions from retail clients. Grant Samuel provides no financial services directly to retail clients and receives no remuneration from retail clients for financial services. Grant Samuel does not provide any personal retail financial product advice to retail investors nor does it provide market-related advice to retail investors.

When providing Reports, Grant Samuel's client is the Entity to which it provides the Report. Grant Samuel receives its remuneration from the Entity. In respect of the Report for WMC Resources Ltd, Grant Samuel will receive a fixed fee plus reimbursement of out-of-pocket expenses for the preparation of the Report (as stated in Section 11.2 of the Report).

No related body corporate of Grant Samuel, or any of the directors or employees of Grant Samuel or of any of those related bodies or any associate receives any remuneration or other benefit attributable to the preparation and provision of the Report.

Grant Samuel is required to be independent of the Entity in order to provide a Report. The guidelines for independence in the preparation of Reports are set out in Practice Note 42 issued by the Australian Securities Commission (the predecessor to the Australian Securities & Investments Commission) on 8 December 1993. The following information in relation to the independence of Grant Samuel is stated in Section 11.2 of the Report:

*Grant Samuel and its related entities do not have at the date of this report, and have not had within the previous two years, any shareholding in or other relationship with WMC. A number of executives of Grant Samuel hold small parcels of shares in WMC. Grant Samuel has previously been engaged by WMC's predecessor company, WMC Limited, to:*

**prepare an independent valuation report to assist the directors of WMC Limited to respond to an acquisition proposal from Alcoa Inc. (November 2001); and**

**prepare an independent expert's report in relation to the demerger of WMC Limited (October 2002).**

*Grant Samuel considers itself to be independent in terms of Practice Note 42 published by ASIC.*

Grant Samuel has internal complaints-handling mechanisms and is a member of the Financial Industry Complaints Services Complaints Handling Tribunal, No. F 4197.

Grant Samuel is only responsible for the Report and this FSG. Complaints or questions about the Disclosure Document should not be directed to Grant Samuel which is not responsible for that document.

Grant Samuel will not respond in any way that might involve any provision of financial product advice to any retail investor.



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### **1 Details of the Offer**

On 28 October 2004 WMC Resources Ltd ( WMC ) announced that it had received an acquisition proposal from Xstrata Plc ( Xstrata ). Xstrata 's proposal was to acquire WMC by way of a scheme of arrangement at a price of \$6.35 cash per WMC share. The WMC directors decided not to proceed with the proposal. On 22 November 2004, Xstrata announced its intention to make an off-market takeover offer for all the ordinary shares of WMC Resources Limited ( WMC ) at \$6.35 cash per share (the Xstrata Offer ). The Xstrata Offer is being made through Xstrata 's wholly owned subsidiary, Xstrata Capital Holdings Pty Ltd. Xstrata 's Bidder 's Statement was lodged with WMC on 30 November 2004.

The Xstrata Offer is subject to a number of conditions, including:

minimum acceptances for at least 90% of the shares in WMC;

relevant regulatory approvals, including the approval of FIRB, ACCC, European Commission and other governmental agencies;

the approval of Xstrata shareholders; and

the financing arrangements of Xstrata required to fund the Xstrata Offer becoming unconditional and not being terminated.

Xstrata is an international resources group based in Switzerland and listed on the London Stock Exchange. It operates coal mines in South Africa and Australia, copper, lead and zinc mines and smelting operations in Australia and the United Kingdom, zinc mines and smelting operations in Spain and ferrochrome and vanadium production facilities in South Africa and Australia. It has a market capitalisation of approximately £5.9 billion (A\$15 billion). Its major shareholder is Glencore International AG ( Glencore ), a private Swiss based investment and commodity trading house.

Xstrata proposes to finance the acquisition of WMC by bank debt. Glencore has undertaken to vote in favour of the transaction at the meeting of Xstrata shareholders.

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### **2 Nature and Scope of the Report**

#### **2.1 Nature and Purpose of the Report**

The Directors of WMC have requested that Grant Samuel & Associates Pty Limited ( Grant Samuel ) prepare a report setting out Grant Samuel's opinion as to whether the Xstrata Offer is fair and reasonable. Grant Samuel is independent of WMC and Xstrata and has no other involvement with, or interest in, the outcome of the Xstrata Offer. A copy of the report is to be dispatched to shareholders with the Target's Statement by WMC.

This report has been prepared to assist the Directors of WMC in making their recommendation to shareholders in relation to the Xstrata Offer. The sole purpose of this report is an expression of Grant Samuel's opinion as to whether the Xstrata Offer is fair and reasonable. This report should not be used for any other purpose or by any other party.

This report is general financial product advice only and has been prepared without taking into account the objectives, financial situation or needs of individual WMC shareholders. Because of that, before acting in relation to their investment, shareholders should consider the appropriateness of the advice having regard to their own objectives, financial situation or needs. Shareholders should read the Bidder's Statement issued by Xstrata and the Target's Statement issued by WMC in relation to the Xstrata Offer.

Acceptance or rejection of the Xstrata Offer is a matter for individual shareholders based on their expectations as to value and future market conditions and their particular circumstances, including risk profile, liquidity preference, portfolio strategy and tax position. Shareholders who are in doubt as to the action they should take in relation to the Xstrata Offer should consult their own professional adviser.

Grant Samuel's opinion has been prepared on the basis of commodity price expectations, exchange rates and other economic conditions that applied over the third week of December 2004. All amounts are expressed in A\$ unless otherwise specified.

#### **2.2 Basis of Evaluation**

The term fair and reasonable has no legal definition although over time a commonly accepted meaning has evolved. In the context of a takeover, an offer is considered fair and reasonable if the price fully reflects the value of a company's underlying businesses and assets.

Policy Statement 75 issued by the Australian Securities Commission, the predecessor to the Australian Securities & Investment Commission (ASIC), attempts to provide a precise definition of fair and reasonable. The Policy Statement continues earlier regulatory guidelines that create a distinction between fair and reasonable. Fairness is said to involve a comparison of the offer price with the value that may be attributed to the securities that are the subject of the offer based on the value of the underlying businesses and assets. In determining fairness any existing entitlement to shares by the offeror is to be ignored. Reasonableness is said to involve an analysis of other factors that shareholders might consider prior to accepting a takeover offer such as:

the offeror's existing shareholding;

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other significant shareholdings;

the probability of an alternative offer;

the liquidity of the market for the target company's shares.

A takeover offer could be considered reasonable if there were valid reasons to accept the offer notwithstanding that it was not fair .

For the purpose of this report, Grant Samuel has treated fair and reasonable as separate concepts in accordance with Policy Statement 75. Fairness is a more demanding criterion. A fair offer will always be reasonable but a reasonable offer will not necessarily be fair .

A fair offer is one that reflects the full market value of a company's businesses and assets. A takeover offer that is in excess of the pre-bid market prices but less than full value will not be fair

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but may be reasonable if shareholders are otherwise unlikely in the foreseeable future to realise an amount for their shares in excess of the bid price. This is commonly the case in takeover offers where the bidder already controls the target company. In that situation the minority shareholders have little prospect of receiving full value from a third party offeror unless the controlling shareholder is prepared to sell its controlling shareholding.

Grant Samuel has determined whether the Xstrata Offer is fair by comparing the offer price with the estimated underlying value range of WMC. The Xstrata Offer will be fair if it falls within the estimated underlying value range. In considering whether the Xstrata Offer is reasonable, the factors that have been considered include:

the underlying value of WMC shares;

the existing shareholding structure of WMC;

any other benefits of the Xstrata Offer;

the likelihood of an alternative offer;

the likely market price and liquidity of WMC shares in the absence of the Xstrata Offer;

the costs, disadvantages and risks of the Xstrata Offer.

### **2.3 Sources of Information**

The following information was utilised and relied upon, without independent verification, in preparing this report:

#### ***Publicly Available Information***

the Bidder's Statement;

annual reports of WMC for the two years ended 31 December 2003;

half year announcement of WMC for the six months ended 30 June 2004;

broker's reports and recent press articles on WMC and the resources industry;

share market data and related information on listed companies comparable to WMC and comparable transactions in this industry.

*Non Public Information provided by WMC*

forecasts prepared by WMC management for the years ending 31 December 2004 and 31 December 2005;

other confidential documents, board papers, presentations and working papers;

life of mine plans for each of the operations of WMC;

management accounts and strategy documents.

In preparing this report Grant Samuel visited WMC's corporate offices in Melbourne and held discussions with WMC's senior management. Grant Samuel representatives also visited the major operations of WMC including Olympic Dam, the key operations of the nickel business unit and QFO.

During the course of this report Grant Samuel held discussions with, and received information from, the directors and senior management of WMC, and UBS and Citigroup, financial advisers to WMC.

#### **2.4 Limitations and Reliance on Information**

Grant Samuel believes that its opinion must be considered as a whole and that selecting portions of the analysis or factors considered by it, without considering all factors and analyses together, could create a misleading view of the process underlying the opinion. The preparation of an opinion is a complex process and is not necessarily susceptible to partial analysis or summary.

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Grant Samuel's opinion is based on economic, sharemarket, business trading, financial and other conditions and expectations prevailing at the date of this report. These conditions can change significantly over relatively short periods of time. If they did change materially, subsequent to the date of this report, the opinion could be different in these changed circumstances. However, Grant Samuel has no obligation or undertaking to advise any person of any change in circumstances which has come to its attention after the date of this report or to review, revise or update its report or opinion.

This report is also based upon financial and other information provided by WMC and its advisers. Grant Samuel has considered and relied upon this information. WMC represented in writing to Grant Samuel that to its knowledge the information provided by it was complete and not incorrect or misleading in any material aspect. Grant Samuel has no reason to believe that any material facts have been withheld.

The information provided to Grant Samuel has been evaluated through analysis, inquiry and review to the extent that it considers necessary or appropriate for the purposes of forming an opinion as to whether the Xstrata Offer is fair and reasonable to WMC shareholders. However, Grant Samuel does not warrant that its inquiries have identified or verified all of the matters that an audit, extensive examination or due diligence investigation might disclose. In any event, an opinion of the kind expressed in this report is more in the nature of an overall review rather than a detailed audit or investigation.

An important part of the information used in forming an opinion of the kind expressed in this report is comprised of the opinions and judgement of management. This type of information was also evaluated through analysis, inquiry and review to the extent practical. However, such information is often not capable of external verification or validation.

Preparation of this report does not imply that Grant Samuel has audited in any way the management accounts or other records of WMC. It is understood that the accounting information that was provided was prepared in accordance with generally accepted accounting principles and in a manner consistent with the method of accounting in previous years (except where noted).

Grant Samuel appointed technical specialists to review the mineral assets of WMC. AMC Consultants Pty Limited (AMC) was commissioned to review the assets of WMC. These reviews included a review of resources, reserves, life of mine plans, production schedules, operating costs, capital costs, potential reserve extensions and exploration. AMC also prepared valuations of WMC's exploration interests and interests in developing projects. A report by AMC is attached to and forms part of this report.

The information provided to Grant Samuel and AMC included forward looking information, including budgets, forecasts and life of mine plans for WMC and its key businesses. WMC is responsible for this forward looking information. Grant Samuel and AMC have considered and, to the extent deemed appropriate, relied on this forward looking information for the purpose of their analysis. Grant Samuel and AMC have assumed that this forward looking information was prepared appropriately and accurately based on the information available to management at the time and within the practical constraints and limitations of such budgets and forecasts. Grant Samuel and AMC have assumed that this forward looking information does not reflect any material bias, either positive or negative. Grant Samuel and AMC have no reason to believe otherwise. The life of mine plans were reviewed and adjusted by AMC as appropriate for valuation purposes. Grant Samuel takes no responsibility for these adjusted plans. The achievability of the assumptions and projections contained within the forward looking information is not warranted or guaranteed by Grant Samuel or AMC. Future profits and cash flows are inherently uncertain. They are predictions by management of future events that cannot be assured and are necessarily based on assumptions, many of which are beyond the control of the company or its management. Actual results may be significantly more or less favourable.

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Subject to these limitations, Grant Samuel considers that, based on the inquiries it has undertaken and only for the purposes of its analysis for this report (which do not constitute, and are not as extensive as, an audit or accountant's examination), there are reasonable grounds to believe that the forward looking information has been prepared on a reasonable basis. In forming this view, Grant Samuel has taken the following factors, inter alia, into account:

the models upon which WMC's life of mine plans have been based have been subject to a detailed third party review for accuracy and logical integrity;

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the forecasts were reviewed in detail by the Directors of WMC; and

the forecasts have been reviewed by investigating accountants, PricewaterhouseCoopers.

In forming its opinion, Grant Samuel has also assumed that:

matters such as title, compliance with laws and regulations and contracts in place are in good standing and will remain so and that there are no material legal proceedings, other than as publicly disclosed;

the information set out in the Target's Statement sent by WMC to its shareholders is complete, accurate and fairly presented in all material respects; and

the publicly available information relied on by Grant Samuel in its analysis was accurate and not misleading.

To the extent that there are legal issues relating to assets, properties, or business interests or issues relating to compliance with applicable laws, regulations, and policies, Grant Samuel assumes no responsibility and offers no legal opinion or interpretation on any issue.



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**3 Profile of WMC Limited**

**3.1 Overview**

WMC is one of Australia's leading resources companies, with a history dating back to the incorporation in 1933 of Western Mining Corporation Ltd. The company was renamed WMC Resources Limited in 1996 and became a separately listed company, following its demerger from Alumina Limited, in 2002. However, WMC is still often referred to as Western Mining. WMC had consolidated net assets at 31 October 2004 of approximately \$4.9 billion and is forecasting revenue and profit and tax for the year ended 31 December 2004 of \$3.8 billion and \$1.3 billion respectively.

WMC's main business is the discovery, development, production, processing, and marketing of minerals and metals. WMC's major assets are:

the Olympic Dam copper/uranium mine and treatment plant, located in South Australia;

an integrated nickel mining, smelting and refining business with operations in Western Australia ( Nickel Business Unit or NBU );

the Queensland Fertilizer Operation ( QFO ), which consists of an integrated phosphate mine and ammonium phosphate fertilizer production facility; and

the Corridor Sands mineral sands project in Mozambique.

In recent years, WMC has focused on its core businesses of copper, uranium, nickel and fertilizers. As part of this strategy, WMC has divested non-core assets, including:

in 2001, WMC sold its European talc interests and its Australian talc mine and mill at Three Springs;

in late 2001, WMC sold its St Ives and Agnew gold operations and its interests in Norseman Gold Corporation Ltd;

the demerger in late 2002 resulted in the separation of WMC's 40% interest in Alcoa World Alumina and Chemicals; and

since 2001, WMC has sold its mature Kambalda nickel mines to allow it to focus on its processing activities at Kambalda.

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At the same time, WMC has further developed its portfolio of large low cost assets:

WMC completed construction of the QFO at Phosphate Hill, Mount Isa and Townsville in 1999;

WMC commissioned the new fertilizer operations during 2000 and 2001;

in 2001, WMC acquired the Yakabindie nickel leases near its Mount Keith operations.

in December 2002, WMC completed the acquisition of the Corridor Sands project;

in 2003, WMC established a separate group to focus on the future development of Olympic Dam and in May 2004 announced the Olympic Dam Development Study, a \$50 million program of work to look at a major expansion.

**3.2 Operating Performance**

The consolidated historical financial operating performance of WMC is summarised below:

**WMC - Financial Performance**

(A\$ million)	Year ended 31 December					
	2000 (pro forma)	2001 (pro forma)	2002 (pro forma)	2003 (actual)	2004 (forecast)	2005 (forecast)
<b>Sales revenue</b>						
Nickel	1,862	1,343	1,374	1,822	2,155	2,294
Copper	895	913	765	696	1,200	1,196
Fertilizers	230	382	433	423	461	344
Other	122	90	119	(8)	0	0
<b>Group sales</b>	<b>3,108</b>	<b>2,728</b>	<b>2,691</b>	<b>2,933</b>	<b>3,816</b>	<b>3,834</b>
<b>EBIT</b>						
Nickel	823	288	250	430	788	740
Copper	263	223	28	(120)	184	213
Fertilizers	(53)	(60)	(27)	(31)	(6)	9
Exploration & New Business	(67)	(113)	(69)	(36)	(65)	(96)
Other			(15)	8	21	29
Corporate costs (including non-recurring costs)	(40)	(44)	(22)	(29)	(35)	(34)
<b>Net currency and commodity hedging gains/(losses)</b>	<b>(320)</b>	<b>(291)</b>	<b>(14)</b>	<b>72</b>	<b>148</b>	<b>118</b>
<b>Group EBIT</b>	<b>605</b>	<b>3</b>	<b>131</b>	<b>294</b>	<b>1,035</b>	<b>979</b>
Net interest			(57)	(46)	(23)	(13)
<b>Group profit before tax</b>			<b>74</b>	<b>248</b>	<b>1,012</b>	<b>966</b>
Income tax credit (expense)			2	(2)	315	(256)

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<b>Net profit after tax</b>			<b>75</b>	<b>246</b>	<b>1,327</b>	<b>710</b>
<i>EBIT margin) (%)</i>	<i>19.5%</i>	<i>0.1%</i>	<i>2.7%</i>	<i>10%</i>	<i>27.1%</i>	<i>25.5%</i>
<i>Net interest expense/EBIT (%)</i>			<i>44%</i>	<i>16%</i>	<i>2%</i>	<i>1.4%</i>
<i>Effective tax rate (%)</i>			<i>na</i>	<i>0.9%</i>	<i>(31.1)%</i>	<i>26.4%</i>

*Source: WMC. Numbers shown in this table may not add due to rounding.*

*Note: Divisional EBIT excludes hedging*

WMC's financial performance over the last four years reflects the cyclical nature of its business. In analysing WMC's financial performance, the following should be noted.

results for the year ended 31 December 2003 are based on audited accounts;

the pro forma earnings for the years ended 31 December 2000, 2001 and 2002 have been prepared by WMC on the basis that the demerger had been effective for those years;

forecast earnings for the year ended 31 December 2004 have been prepared by, and are the responsibility of, WMC management, and are based on 11 months of actual results and one month of forecast results;

forecast earnings for the year ended 31 December 2005 have been prepared by, and are the responsibility of, WMC management;

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WMC reported strong revenues and EBIT in 2000, reflecting strong A\$ commodity prices and a weak A\$/US\$ exchange rate;

group EBIT was affected in 2001 by a significant decline in commodity prices. In particular, the fall in the nickel price resulted in a significant decline in EBIT for the Nickel Business Unit. In addition, group EBIT in 2001 was affected by the inclusion of a number of non-recurring items;

group earnings in 2002 reflected a decline in earnings for Olympic Dam and the Nickel Business Unit, which is partly offset by improved earnings from the fertilizers business;

in 2002 and 2003, EBIT relating to other activities and corporate costs includes unallocated revenue, demerger costs and corporate restructuring costs;

in 2003, earnings improved as a result of the resolution of production issues at the Nickel Business Unit, and the strengthening of the US dollar nickel and copper price;

in 2003, WMC increased the proportion of shared service cost recoveries that are borne by the business units; and

record sales and EBIT are forecast for 2004, reflecting strong commodity prices for the year (particularly for nickel), improved operational performance at Olympic Dam and a significant reduction in losses from the fertilizer business.

Movements in earnings per share are summarised in the table below:

**WMC - Earnings and Dividends Per Share (A\$ million)**

	Year ended 31 December			
	2002 (pro-forma)	2003 (actual)	2004 (forecast)	2005 (forecast)
Profit after tax	75	246	1,327	710
Dividends declared/indicative to ordinary shareholders *		69	430	348
Weighted average number of shares (million)		1,131.7	1,160.8	1,160.6
Earnings per share (cents)	Na	21.7	114	62
Dividend declared per share (cents)		6	37	30
Percentage of dividends franked (%)	Na	0%	0%	0%
Payout ratio (%)	0%	28%	33%	50%

Source: WMC Annual Reports and WMC Forecasts

\* The indicative final 2004 dividend of 20 cents (2004 interim was 17 cents 2004 totalling 37 cents) is subject to Board approval following completion of WMC's 2004 accounts. The 2005 interim and final dividends are forecasts.

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The pro-forma 2002 results have been prepared on a consolidated entity basis for WMC Resources Ltd and its controlled entities and assume that the demerger took place on 1 January 2002.

Earnings per share for 2003 were 21.7 cents with an unfranked dividend of 6 cents per share. Shares on issue increased by 2% in 2003 through the exercise of options and the issue of seven million shares for the final payment relating to Corridor Sands. In 2003, WMC paid its first final dividend, which represented 35% of the second half profits. WMC's target payout ratio is 40-60% of profits. Earnings per share for 2004 are projected to grow strongly to \$1.14, reflecting the very strong performance of the NBU and improved performance from Olympic Dam.

For the first half of 2004, WMC declared an interim unfranked dividend of 17 cents per share, which was paid on 22 September 2004. This represented a payout ratio of 38%.

**Table of Contents****3.3 Cash Flow**

WMC's businesses generate strong operating cash flows:

**WMC Group Cash Flow**

(A\$ million)	Year ended 31 December			
	2002	2003	2004	2005
	(pro forma)	(actual)	(forecast)	(forecast)
EBITDA from Operations (pre-hedging)	758	798	1,417	1,439
EBITDA Corporate/Finance/Exploration/New Business	(94)	(66)	(66)	(103)
<b>EBITDA from operations (excluding currency and commodity hedging gains)</b>	<b>664</b>	<b>732</b>	<b>1,351</b>	<b>1,336</b>
Movements in working capital	(96)	(27)	22	(13)
Currency and commodity hedging receipts	(158)	8	43	
Other balance sheet movements	(27)	17	(25)	(5)
Income tax paid		(3)		
Net borrowing costs paid	(59)	(51)	(22)	(9)
<b>Cash flow from operations</b>	<b>324</b>	<b>676</b>	<b>1,369</b>	<b>1,309</b>
Capital expenditure	(471)	(662)	(421)	(654)
Proceeds on sale on investments	45	23	77	21
Other investing cash flows		4	(13)	(57)
<b>Net cash flow before financing</b>	<b>(102)</b>	<b>41</b>	<b>1,012</b>	<b>619</b>
Repayment of GBU hedging		(33)	(117)	
Interest rate swap closed	71			
Payment on close out of interest rate hedge		(39)		
Defence costs				(18)
Demerger costs paid		(55)		(11)
<b>Net cash flow before debt &amp; equity transactions</b>	<b>(30)</b>	<b>(86)</b>	<b>895</b>	<b>590</b>

Source: WMC. Numbers shown in this table may not add due to rounding.

The pro-forma 2002 cash flows have been prepared on a consolidated entity basis for WMC Resources Ltd and its controlled entities and assume that the demerger took place on 1 January 2002.

**Table of Contents****3.4 Financial Position**

The consolidated balance sheet of WMC is summarised below:

**WMC - Consolidated Financial Position**

(A\$ million)	As at 31 December		As at 31
	2002	2003	October 2004 (unaudited)
Receivables	396	343	390
Inventories	469	546	611
Creditors	(358)	(355)	(377)
<b>Working Capital</b>	<b>508</b>	<b>534</b>	<b>624</b>
Property, plant and equipment	4,336	4,520	4,462
Acquired mineral rights	1,269	1,355	1,335
Net deferred gains and creditor balances relating to hedging and debt revaluations	(708)	(916)	(658)
Provisions rehabilitation	(101)	(112)	(118)
Provisions employees	(13)	(14)	(14)
Provisions other	(62)	(64)	(76)
Exploration	153	69	79
Net deferred tax liability	(336)	(337)	(42)
Other (net)	127	169	189
<b>Total capital employed</b>	<b>5,174</b>	<b>5,203</b>	<b>5,781</b>
Net debt	(1,567)	(1,253)	(852)
<b>Net assets of WMC group</b>	<b>3,607</b>	<b>3,950</b>	<b>4,929</b>
<i>Number of shares on issue (million)</i>	<i>1,128.4</i>	<i>1,150.1</i>	<i>1,170.0</i>
<i>Net assets per share (\$)</i>	<i>3.20</i>	<i>3.43</i>	<i>4.21</i>
<i>Group gearing (net debt/total capital) (%)</i>	<i>30.3%</i>	<i>24.1%</i>	<i>14.7%</i>

Source: WMC audited financial statements. Numbers shown in this table may not add due to rounding.

In analysing WMC's balance sheet it is important to note the following:

in 2003, WMC closed out the legacy currency hedge book for 2005 to 2008. The resulting profit of \$367 million was deferred and will be recognised over the years from 2005 to 2008; and

WMC's level of gearing has fallen considerably since the demerger in December 2002. WMC's target gearing ratio is in the 25-35% range. At 31 October 2004, WMC's gearing ratio was below that target range.

WMC has advised that its forecast net debt position at 31 December 2004 is approximately A\$500 million as set out below:

**WMC Forecast Net Debt at 31 December 2004 (A\$ million)**

	US\$	A\$
	<u>          </u>	<u>          </u>
Debt	(700)	(921)
Cash		407
<b>Net Debt</b>		<b>(514)</b>

*Source: WMC.*

The debt is denominated in US\$ and has been converted by Grant Samuel at a spot rate of US\$:A\$0.76 for the purpose of estimating the net debt; and

WMC has no foreign currency or metal price hedge positions.

### 3.5 Tax Position

WMC estimates that, in its Australian companies at 31 December 2004, it will have approximately \$820 million of carry forward income tax losses and approximately \$240 million of other immediately available taxation timing benefits. In addition, WMC estimates that it will have \$140 million of carry forward capital losses at 31 December 2004. WMC has additional tax losses available to its foreign companies but these companies have minimal exposure to income tax.



**Table of Contents****3.6 Capital Structure and Share Price Performance****3.6.1 Capital Structure**

As at 30 November 2004, WMC had the following securities on issue:

1,171,322,932 fully paid ordinary shares; and

7,037,762 options over unissued ordinary shares with varying exercise prices, maturity dates and other conditions, issued under the WMC Employee Share Scheme.

The top 10 shareholders in WMC accounted for approximately 68.14% of shares on issue at 30 November 2004.

**WMC - Major Shareholders**

<b>Shareholders</b>	<b>As at 30 November 2004</b>	
	<b>Shares</b>	<b>Issued Capital</b>
	<b>(million)</b>	<b>(%)</b>
National Nominees Limited	214.7	18.33
Westpac Custodian Nominees Limited	179.4	15.32
JP Morgan Nominees Australia Limited	164.5	14.04
Citicorp Nominees Limited	81.0	6.92
ANZ Nominees Limited	67.7	5.78
Cogent Nominees Limited	23.7	2.02
Queensland Investment Corporation	19.8	1.69
Pan Australian Nominees Pty Ltd	18.4	1.57
RBC Global Services Australia Nominees Pty Limited	14.7	1.25
AMP Life Limited	14.3	1.22
<b>Subtotal Top 10 Shareholders</b>	<b>798.2</b>	<b>68.14</b>
Other shareholders	373.2	31.86
<b>Grand Total</b>	<b>1,171.3</b>	<b>100.0%</b>

Source:WMC.

As of 30 November 2004, WMC had two substantial shareholders. The Capital Group Companies Inc holds approximately 95.3 million shares, which represents 8.2% of total issued capital, and UBS Nominees Pty Ltd holds approximately 67.1 million shares, which represents 5.8% of total issued capital.

Prior to 31 December 2002, WMC issued options to eligible employees under an employee option plan. Eligible employees were invited to apply for the grant of unlisted WMC Options at a cost to employees of \$0.01 per option. The options were not exercisable until 12 months after

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allotment, and lapse after five years. At 30 November 2004, the following options were on issue:

### WMC - Details of Options

<b>Options over Ordinary Shares (000s)</b>	<b>Expiry date</b>	<b>Exercise price Per share (\$)</b>
349	20-Dec-04	3.90
1,100	17-Dec-05	3.48
2,339	30-Nov-06	4.33
3,250	23-Dec-07	4.34

*Source:WMC.*

**Table of Contents****3.6.2 Share Price Performance**

The share price performance and trading volume of WMC shares since 2003 is set out below:

**WMC - Share Trading History**

<b>Period</b>	<b>Share Price (\$)</b>			<b>Average Monthly Volume</b>	<b>Average Monthly Transactions</b>
	<b>High</b>	<b>Low</b>	<b>Close</b>	<b>(000 s)</b>	
2003	5.65	3.26	5.63	115,141	11,929
2004	7.39	4.33	7.14	211,231	19,973
<b>Quarter ended:</b>					
December 2003	5.65	4.31	5.63	121,681	15,137
March 2004	5.98	4.65	5.12	144,858	17,022
June 2004	5.28	4.33	4.92	193,645	16,926
September 2004	5.45	4.77	5.36	181,485	18,508
<b>Month ended:</b>					
January 2004	5.98	5.03	5.22	139,629	16,186
February 2004	5.60	5.11	5.23	104,148	12,639
March 2004	5.35	4.65	5.12	190,798	22,240
April 2004	5.28	4.61	4.79	150,731	15,383
May 2004	4.93	4.33	4.57	226,973	18,061
June 2004	5.03	4.44	4.92	203,232	17,335
July 2004	5.38	4.93	5.20	171,656	18,104
August 2004	5.25	4.78	4.92	189,264	19,368
September 2004	5.45	4.77	5.36	182,335	18,051
October 2004	7.10	4.86	6.75	371,668	32,057
November 2004	7.39	6.69	7.21	393,103	30,278

Source: DFS IRESS.

Since the demerger in late 2002, average monthly share trading volumes for WMC have steadily increased, from around 85 million shares in early 2003 to over 200 million shares by the middle of 2004. Volumes jumped in October and November 2004 following the announcement of Xstrata's approach to WMC and the subsequent takeover offer.

WMC's share price and weekly trading volume history is shown below:

Source: DFS IRESS.

WMC has traded in the range \$3.26 - 7.32 since the demerger in November 2002.

Following approval of the demerger, WMC's share price increased, falling back slightly in the first half of 2003 on concerns in relation to Olympic Dam. Over the second half of 2003, the share price increased, reflecting an improvement in nickel and copper prices. WMC generally traded at

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around \$5.00 for 2004, until the announcement of the approach by Xstrata. Since the announcement, the WMC share price has increased to above \$7.00.

Since the demerger, WMC has generally performed in line with the S&P/ASX 200 Resources Index, although it lagged the index from May to October 2004. Following the offer from Xstrata, WMC's share price increased dramatically:

*Source: DFS IRESS.*

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**4 Profile of Nickel Business Unit**

**4.1 Overview**

WMC's Nickel Business Unit (NBU) is a large integrated nickel business with mining, concentrating, smelting and refining operations in Western Australia. WMC is the world's third largest nickel producer and the largest in Australia. WMC produced approximately 8% of the world's nickel in 2003 at a cash cost in the second quartile of nickel cash operating costs.

WMC's nickel operations consist of ore treatment facilities at Kambalda (south of Kalgoorlie), mining and milling operations at Mount Keith and Leinster in the North-Eastern Goldfields, a nickel smelter in Kalgoorlie and a refinery at Kwinana, near Perth.

WMC purchases nickel ore from a variety of mines (generally previously WMC owned) for processing through the treatment plant and drying facilities at Kambalda. Kambalda concentrate is railed to the nickel smelter located at Kalgoorlie. At Mount Keith, ore is mined in a large open pit operation. Mount Keith concentrate is transported by road to Leinster for drying. The Leinster Nickel Operation consists of underground and open pit mines, treatment plant and drying facilities. The blended Mount Keith and Leinster concentrate is railed to the smelter. Small quantities of concentrate are exported. At the smelter, concentrate is processed to produce nickel matte. A proportion of the nickel matte is exported, with the bulk processed at the refinery located at Kwinana. At the refinery, nickel matte is processed to produce high purity nickel briquettes, nickel powder, and other intermediate products.

WMC's nickel concentrate, matte and metal production is exported to Asia, Europe and North America. Nickel produced by WMC is principally used in making stainless steels. The remainder is used in specialty applications such as automotive parts and domestic appliances.

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A flowchart providing an overview of the Nickel Business Unit operations is set out below:

WMC's nickel operations commenced in 1967 with the production of nickel concentrate following the discovery of significant nickel ore reserves at Kambalda. In 1970 a refinery with an annual production capacity of 15,000 tonnes of refined nickel metal was built at Kwinana to process dried nickel concentrate railed from Kambalda. In 1972, WMC's nickel smelter at Kalgoorlie commenced production with a design capacity to treat 200,000 tonnes of nickel concentrate per annum, converting concentrate into nickel matte. During the next 15 years, the refinery was operated on a blend of matte and concentrate. It was converted in the mid 1980s to process solely nickel matte.

Between 1988 and 1989, the Leinster nickel operations were re-established when WMC acquired 100% of the Agnew nickel mine from Western Selcast Pty Ltd and Mount Isa Mines Limited. The last 50% of the Mount Keith deposit was acquired in 1993 and the mine was officially commissioned in January 1995. The refinery at Kwinana has undergone progressive debottlenecking and has an annual production capacity of 70,000 tonnes of refined nickel metal.

Since 1999 WMC has progressively sold all its mines at Kambalda and entered into long term nickel purchase agreements with the purchasers. The agreements provide for the supply to and processing of ore at the Kambalda concentrator and the purchase of the resultant concentrate by WMC for blending as smelter feed.

**Table of Contents****4.2 Reserves and Resources**

WMC's Nickel Business Unit is based on a large sulphide nickel resource base. Ore Reserves as at 31 December 2003 are summarised below:

**WMC Nickel Ore Reserves at 31 December 2003**

Location	Type	Reserves					
		Proved		Probable		Total	
		Ore (mt)	Grade (Ni%)	Ore (mt)	Grade (Ni%)	Ore (mt)	Grade (Ni%)
Kambalda*	u/g			0.1	3.3	0.1	3.3
Leinster	u/g	7.5	1.8	11.1	1.9	18.5	1.8
	o/c			0.6	1.7	0.6	1.7
Mount Keith	s/p	0.2	1.9			0.2	1.9
	o/c	195.0	0.56	86.0	0.57	281.0	0.56
<b>Total</b>	s/p	27.2	0.49			27.2	0.49
		<b>229.9</b>	<b>0.59</b>	<b>97.7</b>	<b>0.73</b>	<b>327.6</b>	<b>0.63</b>

Source: WMC.

Notes: u/g = underground, o/c = open-cut and s/p = stockpile.

\* Kambalda ore reserve is quoted on a pre-sale basis

Mineral Resources as at 31 December 2003 are summarised below:

**WMC Nickel Mineral Resources at 31 December 2003**

Location	Type	Resources							
		Measured		Indicated		Inferred		Total	
		Resource (mt)	Grade (Ni%)	Resource (mt)	Grade (Ni%)	Resource (mt)	Grade (Ni%)	Resource (mt)	Grade (Ni%)
Kambalda*	u/g	0.2	3.6	2.3	2.4			2.5	2.5
Leinster	u/g	14.0	2.2	14.2	2.6	7.6	2.0	35.9	2.3
	o/c sulphide	4.5	1.7	69.1	0.5	83.0	0.5	156.2	0.6



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	s/p	2.2	0.9					2.2	0.9
	s/p								
	oxidised	4.5	1.7					4.5	1.7
Mount Keith	o/c	205.0	0.55	145.0	0.56	108.0	0.5	457.0	0.55
	s/p	27.2	0.49					27.2	0.49
	s/p								
	oxidised	11.1	0.57			9.5	1.2	20.6	0.85
Yakabindie	o/c	108.0	0.58	132.0	0.58	50.0	0.57	289.0	0.58
<b>Total</b>		<b>376.7</b>	<b>0.65</b>	<b>362.6</b>	<b>0.66</b>	<b>258.2</b>	<b>0.58</b>	<b>997.5</b>	<b>0.65</b>

Source: WMC.

Notes: u/g = underground, o/c = open-cut and s/p = stockpile.

*The measured and indicated Mineral Resources are inclusive of those mineral resources modified to produce the Ore Reserves.*

*\* Kambalda mineral resources are quoted on a pre-sale basis*

In 2004, there was a reinterpretation of Mount Keith's resource base using modified geostatistical parameters. As a result, a reduction in resource tonnages as at 31 December 2004 is anticipated. As this resource reduction is at the margins of the ore body it is not anticipated that there will be any significant associated reduction in reserves.

The Leinster and Mount Keith deposits are located in the Agnew-Wiluna Greenstone Belt in the Eastern Goldfields Province of Western Australia. The Agnew-Wiluna belt extends over 200 km, ranges in width from 5 km to 25 km and hosts a number of nickel sulphide deposits.

The Leinster nickel deposits are located close to the eastern margin of the Agnew-Wiluna Greenstone Belt. The main nickel mineralisation at Leinster is divided into four separate geological domains called the Main Disseminated Domain, the F1-F2 Shoots, the 1A/1B/1C Shoots, and the Progress Shoot (collectively, the Perseverance operations). Along strike to the north are the Rocky's Reward and Harmony resources. The 11 Mile Well deposit is approximately six km to the south of Perseverance. In addition, WMC plans to treat ore mined from the Cliffs deposit (approximately 96 km north of Leinster) through the Leinster plant.

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The Mount Keith deposit is a large tonnage, low grade disseminated nickel sulphide deposit located in the northern part of the Agnew-Wiluna Greenstone Belt. Nickel mineralisation extends for about 2 km along strike and has been delineated in drilling to +500m below surface.

WMC acquired the mineral tenements containing the Yakabindie deposit from North Limited for \$25m in February 2001. A further payment of \$15 million is due on WMC's gaining approval to mine. The leases contain 289 million tonnes at 0.58% nickel within two large near-surface ore bodies, and lie approximately 26 kilometres south of WMC's Mount Keith operations.

This does not include the contiguous extension of the ore body to the north of Yakabindie called North Six Mile which is already owned by WMC. This contains an inferred resource of 26.5 Mt at 0.65% nickel for total contained nickel of 172 kt.

In addition, WMC has a number of nickel prospects in Western Australia, including Collurabbie and West Musgrave. These are described in more detail in Section 8.1 of this report.

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### **4.3 Kambalda**

Kambalda is located 56 km south of Kalgoorlie in Western Australia. The Kambalda operations and town are governed by the *Nickel Refinery (Western Mining Corporation Limited) Agreement Act 1968*.

High-grade nickel sulphide ore from a number of mines in the region owned by third parties is treated by WMC pursuant to long term agreements. Ore is milled and dried at Kambalda to produce nickel concentrate containing approximately 13.5% nickel. All resulting concentrate is purchased by WMC. Concentrate is transported by rail to the Kalgoorlie nickel smelter for conversion to nickel matte.

The mill at Kambalda has a capacity of 1.5 mtpa and the dryer has a capacity of 440 ktpa although neither is currently operating at capacity. Kambalda's operational life and production volumes are dependent on nickel prices, with current high nickel prices supporting production from what might otherwise be marginal ore bodies for some of the mines. WMC is expecting production of approximately 25-40 ktpa of nickel contained in concentrate for the next four years, after which production is expected to rapidly decline. Kambalda concentrate has a high ratio of iron to magnesia (Fe:MgO), which is important for the operation of the Kalgoorlie smelter.

Power is generated from a third party operated 35MW gas turbine using gas transmitted through the Goldfields Gas Pipeline. Water is supplied through the Goldfields Water Scheme.

### **4.4 Leinster**

Leinster is approximately 375 km north of Kalgoorlie in Western Australia. The Leinster operations and town are governed by the *Nickel (Agnew) Agreement Act 1974 (WA)*.

High and low-grade nickel sulphide ore is mined using both underground and open pit methods. Ore is milled and dried at Leinster to produce nickel concentrate containing approximately 11-13% nickel. Concentrate is transported by road and rail to the Kalgoorlie nickel smelter for conversion to nickel matte. Leinster's current forecast operational life is approximately 13 years, based on annual mining and treatment of an average of around 2.3 mt of ore, for production of approximately 40-50,000 tonnes per annum of nickel in concentrate.

Nickel was discovered at Leinster in 1971. The Agnew nickel mine commenced production in May 1978 and was owned and operated as a 60/40 joint venture between Western Selcast Pty Ltd and Mount Isa Mines Limited. The Agnew mine operated until August 1986 when the project ceased operation primarily due to low nickel prices and was placed on care and maintenance.

In December 1988, WMC purchased the Agnew operations to establish its Leinster nickel operations. In January 1989, WMC commenced rehabilitation of the Leinster nickel concentrator and the Perseverance mine, and commenced open cut mining at Perseverance. WMC diamond drilling extended the known reserve at Rocky's Reward 2km to the north and ore treatment recommenced in May 1989. Rocky's Reward underground mine was closed in the last quarter of 2000 and historically produced more than half of Leinster's nickel.

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The majority of Leinster production currently comes from the Perseverance underground mine. The remainder comes from the Harmony open pit, which is expected to be completed during the second quarter of 2005. Further open pit ore is being sourced from the 11 Mile Well Mine with production expected to be completed by the end of 2005. The concentrate produced at Leinster has a medium Fe:MgO ratio of between 7.0 and 9.0, which facilitates the operation of the Kalgoorlie smelter.

Around 85% of Leinster's future production is expected to come from the Perseverance underground mine. The mine extends from the surface to the 11 level via a 1,162m vertical shaft and decline. The majority of reserves (approximately 19.4 million tonnes @ 1.9% Ni) are located between the 6 and 10 levels. Mining in the main disseminated domain of the Perseverance ore body is conducted by sub-level caving. The 1A, F1-F2 and Progress shoots are mined progressively ahead of the cave, by long-hole open stoping (for the 1A and F1-F2 shoots) and modified caving methods for the Progress shoots. While these shoots provide relatively little ore, they are generally of higher grade than the main ore body, which typically grades around 2.0% Ni.

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A crusher is located between the shaft and the sublevel cave on level 6. As the mining of the sublevel cave progresses downwards, the ground conditions in the area of the crusher are deteriorating. WMC is completing work on a replacement ore handling system including recommissioning shaft hoisting from the 11 level with the associated crushers and skip loading facilities. Levels 11-14 have been extensively drilled in recent years and are estimated to contain approximately 9.5 million tonnes of indicated and inferred resources (not included in current reserves), underpinning the longer term future of the mine. Ground conditions in the mine become more challenging and mining costs are expected to increase with depth.

A schematic of the Perseverance underground mine is set out below:

The Leinster mill is currently operating at rates of around 2.8 million tonnes of ore per year with an anticipated maximum capacity of approximately 3 million tonnes per annum. The current concentrator circuit is a conventional crush-grind flotation circuit. It includes primary crushing, SAG-ball milling, flotation and flash drying. The dryer has a capacity of 680,000 tonnes per annum and treats Leinster and Mount Keith concentrate. Recent nickel recoveries at the mill have averaged approximately 86%. Production for the year ending 31 December 2004 is expected to be around 44,000 tonnes of nickel in concentrate, by comparison with production of 41,800 tonnes of nickel in concentrate for the year ended 31 December 2003.

The on-site workforce is approximately 530. Part of the workforce lives in the township of Leinster, which is located 15 km from the Perseverance mine site, and the remainder fly in from Perth. Power is generated from a third party operated 35 MW gas turbine using gas transmitted through the Goldfields Gas Pipeline. Water is provided from local borefields.

### **4.5 Mount Keith**

Mount Keith is located approximately 460 km north of Kalgoorlie and 96 km north of Leinster in Western Australia. The Mount Keith deposit is a large low-grade disseminated nickel sulphide reserve with a grade of 0.55% nickel and is mined by an open-cut. Production of nickel in concentrate is expected to be approximately 42,900 tonnes for the year ending 31 December 2004

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compared to 42,600 tonnes for the year ended 31 December 2005, reflecting slightly lower recoveries due to ore type in Stage F. Mount Keith's current forecast operational life is 22 years.

WMC acquired a 50% interest in Mount Keith in 1991 and commenced a study into the feasibility of developing the deposit in joint venture with the Outokumpu Group of Finland. WMC acquired Outokumpu's 50% joint venture interest in the project in February 1993 and began construction to develop the deposit in March 1993. The Mount Keith operation was officially commissioned in January 1995.

Mining at Mount Keith is by open cut method and the operation includes a mill and ancillary facilities. Currently the open pit is approximately 350m deep. The final pit dimensions are expected to be approximately 550m in depth, 2.3km in length and 1.0km in width. The concentrator flowsheet design incorporates grinding, desliming, flotation, thickening, filtration and tailings disposal and uses the latest technology in mineral processing equipment, process control and in-stream analysis. Mining is undertaken by a contractor based on a conventional drill, blast, load and haul operation using trucks and shovels. Low grade material is trucked to designated stockpiles, while ore is trucked to the run-of-mine blended stockpile. Ore is currently being mined from the F cut-back, in the northern part of the ore body. Future mining will be from stages G to J, which are part of the same pit shell and take the open pit to its ultimate depth of approximately 550 metres.

The treatment plant has been continually improved in recent years. Mill throughput has increased from 10.4 mtpa ore in 1997 to 11.2 mtpa ore in 2004, with planned throughput for 2005 of approximately 11.4 Mtpa. Since 1999 a total of approximately \$30 million has been spent on 19 separate programmes aimed at enhancing mill recoveries, resulting in an increase in recoveries of around 10%.

The concentrate produced at Mount Keith has a low Fe:MgO ratio of 2.5-3.5 and is blended with concentrate from Kambalda and Leinster to provide a satisfactory feed to the smelter. During 2002 WMC successfully implemented the Concentrate Quality Improvement Programme (CQIP), which involved the installation of an additional circuit to treat 50% of Mount Keith concentrates by regrinding, flotation and gravity separation, to improve the Fe:MgO ratio and grade. The circuit is forecast to be able to increase concentrate Fe:MgO ratio by a factor of 1.7 for a recovery penalty of approximately 2.1%. Given the current strong production of high Fe:MgO ratio ore from Kambalda, ore is not currently being treated through the CQIP circuit. However, the successful operation of the circuit has given WMC confidence that the NBU will continue to be able to deliver blended concentrate of an appropriate Fe:MgO ratio to the smelter once Kambalda operations have ceased.

The plant is currently treating run-of-mine (ROM) ore, which averages 0.58% Ni, and achieving recoveries around 68%. However, the pit shell also contains substantial quantities of ore that is economically less attractive, which is currently being stockpiled for later treatment. This ore consists of low Ni grade ore, low sulphur/Ni ratio ore (which displays poor flotation performance) and high talc ore (which is often of good grade but also demonstrates poor recoveries within the current milling circuit). Low grade stockpiles currently total 10.3 Mt at 0.43% Ni. High talc stockpiles total 13.2 Mt at 0.52% Ni. These stockpiles are expected to continue accumulating at a combined rate of at least 10,000 tonnes of contained nickel per annum over the life of mine. In addition, it is expected that the Yakabindie ore body will also contain significant quantities of these ore types.

The original expectation was that stockpiles of these ore types would be treated at the end of the life of the mining operations. Due to the low recoveries from treatment of these ore types (around 50%) and the extended period before their treatment, the stockpiles would contribute very little economic value in a present value sense. WMC is currently investigating an alternative approach to treating these ore types, which would involve the operation of Yakabindie and Mount Keith on an integrated basis.

Both ROM and low grade/high talc ore from Yakabindie would be transported to Mount Keith (potentially by conveyor). Yakabindie and Mount Keith mining would be scheduled on an integrated basis, to optimise ore delivery and smelter feed. Low grade/high talc ore would be treated

through a new, differently configured grinding/flotation circuit, with the resultant concentrate leached in a low pressure ( LPL ) plant to recover an intermediate nickel product.

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WMC expects that concentrate nickel recoveries would improve to around 70%, substantially improving the economic attractiveness of the low grade/high talc ore. WMC is at the feasibility/pre-feasibility study stage of examining the options for the future treatment of low grade/high talc ores from Mount Keith and Yakabindie. Preliminary estimates are that total capital costs could be of the order of \$600 million.

A long term contract under which WMC sells up to 14,000 tpa of Mount Keith nickel in concentrate to OMG will expire in the first quarter of 2005. Thereafter, all Mount Keith concentrate will be transported by road to Leinster for drying and blending with other concentrates, which are then delivered to the Kalgoorlie nickel smelter for further processing.

The Mount Keith operations include a large tailings storage facility that has been designed for the life of the ultimate pit. Process water for the concentrator is pumped from a borefield 30 km south west of the operation. Smaller amounts of sub-potable and potable water are obtained from other bore fields. Water recovery from operations is about 30%.

Electricity is generated by a third party operated 35 MW gas turbine, using gas transmitted through the Goldfields Gas Pipeline. Backup energy is provided by five 10 MW diesel generator sets and Leinster and Mount Keith are interconnected by an overland line for emergency backup.

Mount Keith operates on a 365 day fly-in fly-out continuous roster from Perth. There is a village of single room accommodation units with a wide range of support facilities.

### **4.6 Kalgoorlie Smelter**

The Kalgoorlie nickel smelter is located 15 km south of Kalgoorlie in Western Australia. The smelter is governed by the *Nickel Refinery (Western Mining Corporation Limited) Agreement Act 1968*.

The smelter receives supplies of concentrate from the Kambalda, Leinster and Mount Keith operations.

The smelter commenced operation in 1972 with a design capacity of 200,000 tpa concentrate or 30,000 tpa nickel in matte. Subsequent upgrades to the smelter have increased the design capacity to the current 750,000 tpa concentrate or 110,000 tpa nickel in matte. The smelter supplies nickel matte to WMC's nickel refinery at Kwinana and also supplies nickel matte under sales contracts to overseas nickel refiners.

The smelter uses a flash furnace and is based on a modified flash smelting process developed by Outokumpu. The flash smelting process uses oxidation of part of the sulphur and iron in the nickel concentrate to provide heat for the process. The flash furnace smelts sulphide concentrates with sand flux to concentrate the valuable minerals of nickel, copper, cobalt and precious metals into a sulphide matte. Part of the flash furnace is dedicated to the recovery of nickel from the slag produced in the process. Impurities are combined with silica sand to form a waste slag. The waste slag is disposed of on a tailings lease immediately adjacent to the smelter. Low-grade nickel matte from the flash furnace is further smelted in three converter units. High grade nickel matte (approximately 74% Ni) is exported to custom refiners and a lower grade matte (approximately 68% Ni) is delivered to WMC's refinery. From 2005, the smelter will move to production of a one-matte product at a nickel grade of approximately 68% for both external and internal customers. Nickel recoveries are approximately 96%.



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The smelter has operated in campaigns varying in length between 20 months and 12 years. During normal smelting operations, the furnace requires relining of its interior approximately every 10 years. In January 1999, the operations were stopped for 63 days due to a furnace leak. The furnace hearth was rebuilt at a cost of approximately \$22 million. WMC is planning to build a new furnace, which will replace the current furnace around 2008/9.

The smelter includes an acid plant. The acid plant was constructed to capture approximately 90% of the SO<sub>2</sub> emissions and was commissioned in July 1996 at a cost of A\$170m. Since the acid plant was installed the smelter has operated with little impact from shutdowns due to SO<sub>2</sub> emissions. The sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) produced has a 98.5% concentration and is stored on-site in two 10,000 tonne tanks before being transported in specially designed rail and road tankers.

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Total annual sulphuric acid production is approximately 530,000 tonnes. The sulphuric acid is sold to users in Western Australia, principally to the Cawse and Murrin Murrin nickel laterite plants of OMG Cawse Pty Ltd and Minara Resources Ltd. Some of the acid is used by Mount Keith and the Kwinana refinery. Any residual acid is sold in other markets through Coogee Chemicals.

The principal operating constraint for the smelter is the Fe:MgO in the concentrate blend supplied to the smelter. This parameter determines the melting point and properties of the slag produced in the flash furnace. At lower Fe:MgO ratios, the magnesia content of the furnace slag increases, the slag melting point temperature increases and higher operating temperatures are required to maintain slag fluidity. If the Fe:MgO ratio is not kept within control limits, furnace operations can be severely compromised and result in costly delays and repairs to the smelter. The smelter is operated to ensure that the Fe:MgO ratio does not fall below 4.7. Due to variations in the feed the smelter is operated at a higher Fe:MgO ratio, with a current target of at least 5.3. Lime is added (if required) to a level of up to 9% in the flash furnace slag, to assist in maintaining slag fluidity.

WMC employs a three-pronged strategy to manage the Fe:MgO constraint, consisting of upgrading concentrate Fe:MgO ratios using CQIP, blending of concentrates and lowering the variation in the Fe:MgO ratio in the concentrate. Blending of Mount Keith, Leinster, and Kambalda concentrates has significantly reduced the degree of variation of the ratio. In addition, WMC is progressing programmes to further improve rejection of MgO at individual mine sites, including expanding the CQIP programme at Mount Keith. WMC believes that, following the introduction of the new furnace around 2008, it may be possible to lower the target minimum Fe:MgO ratio to around 4.7.

The smelter site is 15 km south of the Kalgoorlie/Boulder town boundary. The work force is mainly located in the nearby town. Water is supplied through the Goldfields Water scheme. Power is generated by a 2 x 10 MW facility on site and by a 40 MW gas turbine, also on site but operated by a third party. Natural gas is transmitted through the Goldfields Gas Pipeline and diesel liquid fuel shipped through the port of Esperance. Gas is taken under a long term contract. Sand flux is mined from a resource at Mt Burgess, in the vicinity of Coolgardie and then trucked to the smelter site. An on site air separation plant supplies oxygen for enrichment of the process air.

The smelter is expected to process 715,000 tonnes of concentrate for 97,700 tonnes of nickel in matte for the year ending 31 December 2004, compared to 711,100 tonnes of concentrate for 99,200 tonnes of nickel in matte for the year ended 31 December 2003.

A portion of the matte produced (around 31,000 tonnes for 2005) is sold to third party refiners (principally Jinchuan). The balance is transported by rail to WMC's nickel refinery at Kwinana.

### **4.7 Kwinana Refinery**

The Kwinana nickel refinery is situated 30 km south of Perth in Western Australia. The refinery is governed by the *Nickel Refinery (Western Mining Corporation Limited) Agreement Act 1968*.

The refinery uses a modified Sherritt Gordon ammonia leach process to convert nickel matte from the Kalgoorlie smelter into London Metals Exchange (LME) grade nickel briquettes and nickel powder. The refinery has a capacity of approximately 70,000 tonnes per annum of nickel metal with nickel recoveries of approximately 98%, with a further 1% reporting to a cobalt-nickel sulphide product.

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The refinery also produces a number of intermediate products including copper sulphide, cobalt-nickel sulphide and ammonium sulphate. The cobalt-nickel sulphide is treated by a third-party processor that separates the nickel and cobalt into metal. WMC receives a credit for the nickel and has the cobalt metal returned for subsequent sale.

Since 1994 WMC has increased the capacity of the refinery from 42,000 tpa of nickel to 70,000 tpa through capital works and continued optimisation. Operating costs have been progressively reduced by increasing process intensity, improving process control and targeted de-bottlenecking. Production capacity is reduced by approximately 4,000tpa in shutdown years. The next shutdown is scheduled for 2007.

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The refinery is expected to treat 93,500 tonnes of matte to produce 62,300 tonnes of refined nickel for the year ending 31 December 2004, by comparison with the treatment of 92,000 tonnes of matte for 61,400 tonnes of refined nickel for the year ended 31 December 2003.

Electric power, natural gas, nitrogen, ammonia and water are provided by external parties. Steam, hydrogen, carbon dioxide, hydrogen sulphide, compressed air, cooling water and demineralized water are produced on site.

Recovery of contaminated ground water from beneath the decommissioned tailings facility at Baldvis is necessary as a result of past seepage of process solutions into the groundwater. Recovered ground water is treated by a reverse osmosis plant to produce replacement scheme water and an ammonium sulphate solution, which is treated in the refinery circuit to recover the ammonium sulphate.

**4.8 Operating and Financial Performance**

The operating performance of WMC's Nickel Business Unit is summarised as follows:

**Nickel Business Unit Operating Performance**

	Year ended 31 December						
	2000	2001	2002	2003	2004F	2005F	
<b>Mining &amp; Milling</b>							
<b>Kambalda</b>							
Ore milled	(000t)	540	602	688.5	804.7	958.7	1,305.8
Nickel grade	(%)	3.84	3.37	3.79	3.58	3.09	2.82
Recovery	(%)	92.8	91.5	90.0	90.0	90.8	90.0
Nickel-in-concentrate	(000t)	19.4	18.6	23.2	25.9	28.0	33.1
<b>Leinster</b>							
Ore milled	(000t)	2,642	2,324	2,571	2,489	2,709	2,780
Nickel grade	(%)	1.92	2.04	1.99	2.02	1.89	1.83
Recovery	(%)	80.4	80.2	78.0	83.1	86.2	84.3
Nickel-in-concentrate	(000t)	40.7	38.0	40.0	41.8	44.0	42.9
<b>Mount Keith</b>							
Ore milled	(000t)	10,685	10,920	11,055	11,200	11,150	11,409
Nickel grade	(%)	0.63	0.62	0.58	0.63	0.56	0.56
Recovery	(%)	71.0	70.2	67.6	71.1	68.1	65.1
Nickel-in-concentrate	(000t)	47.5	47.9	43.2	50.0	42.9	41.8
<b>Total nickel-in-concentrate</b>	<b>( 000t)</b>	<b>107.7</b>	<b>104.5</b>	<b>106.4</b>	<b>117.7</b>	<b>114.9</b>	<b>117.9</b>
<b>Kalgoorlie Smelter</b>							
Concentrate treated	(000t)	737.2	704.3	640.5	711.1	715.1	729.9
Nickel grade	(%)	14.3	14.2	14.9	14.6	14.3	15.3
Recovery	(%)	97.8	96.5	96.8	95.8	95.8	96.4
Matte produced	(000t)	148.1	140.4	134.4	147.7	141.2	164.6
<b>Nickel-in-matte produced</b>	<b>(000t)</b>	<b>103.0</b>	<b>96.6</b>	<b>91.6</b>	<b>99.2</b>	<b>97.7</b>	<b>107.5</b>
<b>Kwinana Refinery</b>							

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Matte treated	(000t)	94.0	94.2	100.7	92.0	93.5	102.5
Nickel grade	(%)	66.9	66.5	65.5	67.2	68.0	67.3
Recovery	(%)	97.5	97.2	97.9	98.0	98.0	97.9
<b>Refined nickel produced</b>	<b>(000t)</b>	<b>60.5</b>	<b>61.3</b>	<b>65.1</b>	<b>61.4</b>	<b>62.3</b>	<b>67.5</b>
<b>Operating Costs and Capital Expenditure</b>							
Cash costs (net of credits)	(A\$/lb Ni)	1.65	1.81	2.13	2.24	2.09	2.39
Capital expenditure	(A\$m)	156	228	192	219	285	404

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The following table summarises the historical financial performance of the NBU:

**NBU Financial Performance**

	Year ended 31 December					
	2000	2001	2002	2003	2004F	2005F
Ni Sales (000t)	120.4	109.5	104.6	112.3	108.6	113.0
Ni Price (US\$/lb)	3.92	2.69	3.07	4.37	6.25	6.25
A\$:US\$ exchange rate	0.59	0.52	0.54	0.65	0.74	0.74
Ni Price (A\$/lb)	6.64	5.17	5.69	6.70	8.45	8.45
Sales (\$m)	1,862	1,342	1,374	1,822	2,155	2,294
EBITDA (\$m)	1,035	511	459	673	977	950
EBIT (\$m)	825	301	250	430	788	740

Note: EBIT and EBITDA before hedging and after corporate allocations

The Nickel Business Unit achieved record profits in 2000, reflecting a high average nickel price for the year, the benefits of a depreciating A\$ and business improvements. EBITDA fell in the 2001 and 2002 financial years due largely to lower revenues, as a result of lower nickel prices, and higher operating costs. Following a year of improved nickel prices and earnings in 2003, the Nickel Business Unit is forecast to generate very strong earnings for both 2004 and 2005, reflecting very high nickel prices.

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### 5 Profile of Olympic Dam

#### 5.1 Overview

WMC's Olympic Dam copper/uranium/gold/silver mine is a world class operation. The deposit is the fourth largest remaining copper resource, the fourth largest remaining gold resource and the largest uranium resource in the world. WMC is currently the 17<sup>th</sup> largest copper producer and 3<sup>rd</sup> largest uranium producer globally. The mine is the largest underground mine in Australia and employs approximately 1,670 staff (including contractors). Projected production for the 2004 financial year is approximately 224,000 tonnes of copper and 4,400 tonnes of U<sub>3</sub>O<sub>8</sub>, based on the mining and treatment of approximately 8.8 million tonnes of ore. Given a current proved and probable measured reserve of 730 million tonnes, and a total resource base of more than 3.8 billion tonnes, Olympic Dam has the potential to support a very long life mining operation at production rates substantially greater than current rates.

The Olympic Dam operations consist of an underground mine, mineral processing plant, smelter, and refinery, associated infrastructure and the mine town of Roxby Downs, approximately 16 km south of the mine. Located approximately 570 km north-west of Adelaide in South Australia, the Olympic Dam deposit was discovered by WMC in 1975 following drilling near a small stock water dam known as Olympic Dam .

*Map showing location of Olympic Dam in South Australia.*

Following joint development by WMC (51%) and BP (49%), production commenced in 1988 at an annual rate of 1.3 million tonnes per annum (mtpa) of ore producing approximately 45,000 tpa of copper and 1,200 tpa of uranium oxide. WMC acquired the BP interest in 1993 for \$315 million.

Expansion programmes in 1992 and 1995, involving the construction of a second shaft, the installation of a new grinding mill and the introduction of an electric furnace in the smelter, resulted in an increase in production to 3.1 mtpa of ore. In 1996 a further major expansion to 9.2 mtpa of ore producing approximately 200,000 tpa of copper and 4,500 tpa of uranium oxide was announced. The expansion involved the installation of an automated underground electric rail haulage system, a new underground crusher, a third mine shaft, a new autogenous mill, a new smelter and expansions to the hydrometallurgical plant and refinery. The expansion was completed in 1999 at a cost of \$1.94 billion.

During 2003, WMC completed an optimisation project to increase its production capacity to 10.5 mtpa of ore. Attainment of this production capacity has been constrained by mining issues that arose from regional instability in the FN area of the mine and mill utilisation issues.

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A plan has been developed to further increase production to 12.3 mtpa by 2010 through debottlenecking of the existing plant. Specific projects include: recommissioning and upgrading of the Robinson shaft to increase ore hoisting capacity; extension of the rail level; improving recoveries of copper from 92% to 97%, uranium from 74% to 84% and gold from 60% to 80%; increasing milling circuit utilisation and rate through incremental capital expenditure and improving the capability of the smelter.

A fire at the copper and uranium solvent extraction circuits in October 2001 constrained production of both copper and uranium oxide. The rebuilt solvent extraction plant was commissioned in April 2004. The fire resulted in a \$72 million charge for the write off of assets and a further \$98 million charge due to reduced production in 2002 and 2003. The rebuild cost and costs of lost production were partially covered by insurance, and on 9 December 2004 WMC announced it had settled the solvent extraction plant claim with all proceeds expected to be received before 31 December 2004.

In 2003, a review of the smelting operations identified that deterioration in excess of expectations in the furnace roof and sidewall refractory, and in adjacent taphole cooling jackets, would require increased maintenance and WMC accordingly advanced plans to partially reline the Olympic Dam furnace. The shutdown was completed and the smelter returned to capacity over a period of 50 days. The cost of shutdown was within the \$127 million budget. Operations were subsequently interrupted due to a failure of a heat exchanger in the acid plant. The combined production loss was approximately 18,000 tonnes of copper and 340 tonnes of uranium oxide.

The operations at Olympic Dam are regulated by the *Roxby Downs (Indenture Ratification) Act 1982* ( *Indenture* ), which was ratified by the South Australian Parliament in 1982 and amended in 1996. The original Indenture applied to the development of an operation that would produce up to 150,000 tpa of copper, together with associated products. The amended Indenture allows the operation to produce up to 350,000 tpa of copper, together with associated products.

Copper sales are the major source of revenue for Olympic Dam with uranium also being a major contributor. Gold and silver are also sold. WMC sells uranium oxide concentrates under long term contracts with major international power utilities. For the 2003 financial year, sales of uranium and precious metals contributed approximately 26% and 8% respectively of total revenue.

## **5.2 Reserves and Resources**

The Olympic Dam deposit is situated in the Stuart Shelf geological province of South Australia. The deposit is hosted by a large granitic haematitic breccia complex, the Olympic Dam Breccia Complex. It has a broad north-westerly trend, and is characterised by a complex array of faults and veins of variable orientation.

*WMC Olympic Dam Extended Mine Layout.*



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Two major ore types may be distinguished: copper/uranium ore (which also contains gold and silver mineralisation) and gold ore, which generally has low levels of copper and uranium mineralisation. The copper/uranium mineralisation is contained in more than 150 discrete zones. Copper is present as bornite/chalcocite mineralisation, grading over 2% Cu, which represents approximately 35% of the total resource tonnage, and as chalcopyrite mineralisation, grading around 1% Cu, which represents approximately 65% of the resource tonnage. The ratio of contained copper to sulphur of the chalcopyrite ore is significantly lower than for the bornite/chalcocite ore. This copper to sulphur (Cu:S) ratio has implications for the long term treatment process employed at Olympic Dam.

Mineral resources are estimated on the basis of a block model, with block values calculated using assumptions regarding long run exchange rates and prices for copper, uranium, gold and silver. The cut-off block value for resources is \$30/t. Within the mineral resource, ore reserves for Sub-Level Open Stopping (SLOS) mining are determined using an elevated block value cut-off of \$70/t for Proved Reserves and \$60/t for Probable Reserves. An 85% tonnage reduction factor is applied in the estimation of the tonnes of Probable Reserves.

The following table summarises mineral resources and ore reserves:

**Olympic Dam Ore Reserves & Resources**

	<b>Tonnes (Mt)</b>	<b>Copper Cu (%)</b>	<b>Uranium Oxide U<sub>3</sub>O<sub>8</sub> (kg/t)</b>	<b>Gold Au (g/t)</b>
<b>Reserves</b>				
Proved	115	2.1	0.6	0.6
Probable	615	1.5	0.5	0.5
<b>Total Reserves</b>	<b>730</b>	<b>1.6</b>	<b>0.5</b>	<b>0.5</b>
<b>Resources</b>				
Measured	650	1.5	0.5	0.5
Indicated	1,420	1.1	0.4	0.5
Inferred	1,740	1.0	0.3	0.5
<b>Total Resources</b>	<b>3,810</b>	<b>1.1</b>	<b>0.4</b>	<b>0.5</b>

Source: WMC

Note: Resources are as at 31 October 2004 using the following price assumptions A\$1.42/lb for copper, A\$30/lb for uranium and A\$500/oz for gold.

Note: Reserves are as at 31 December 2003 using the following price assumption: A\$1.42/lb for copper, A\$23.33/lb for uranium and A\$500/oz for gold.

Despite mining depletion, Olympic Dam reserves have remained relatively consistent in recent years:

**Movements in Olympic Dam Reserve**

	31 December					
	1998	1999	2000	2001	2002	2003
Ore (Mt)	560.0	605.0	707.0	717	710.0	730.0
Cu (%)	2.0%	1.8%	1.7%	1.7%	1.6%	1.6%
U <sub>3</sub> O <sub>8</sub> (kg/tonne)	0.6%	0.5	0.5	0.5	0.5	0.5
Gold (g/t)	0.7	0.5	0.5	0.6	0.5	0.5
<b>Contained Cu (Mt)</b>	<b>11.2</b>	<b>10.9</b>	<b>12.0</b>	<b>12.2</b>	<b>11.4</b>	<b>11.7</b>

Olympic Dam has extensive reserves. In addition, it is reasonable to assume that at least a portion of the inferred resources could be converted to reserves following more detailed drilling. Based on these factors and the historical resource to reserve conversion rate, AMC has estimated that Olympic Dam resources could ultimately be sufficient to support a mine life in excess of 70 years based on SLOS mining. If significantly lower cost mining methods were introduced (such as block caving or open pit mining), then Olympic Dam could potentially sustain much higher production rates than currently contemplated for a very long mine life.

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### **5.3 Mining**

WMC is currently mining the northern end of the Olympic Dam deposit. Underground access is by way of two shafts and a service decline, and there are currently 25 surface ventilation raises. A third shaft (Robinson Shaft) is not currently in use. Mining is by way of sub-level open stoping. Load haul dump units transport ore from stope drawpoints to the orepass system, which feeds ore to haulage trains through remote-controlled chutes. The automated trains discharge ore into an underground crusher, and the crushed ore is delivered by conveyor to the Clarke shaft for hoisting to the surface. The Whenan shaft provides additional crushing and hoisting capacity.

Short term mine planning and scheduling are driven by ventilation considerations, because of the uranium content of the ore, and by the Cu:S ratio required for the smelter. Currently, the ore is mined selectively to ensure delivery to the smelter of blended ore with a Cu:S ratio average of 1.4 or greater. In addition, mine planning aims to deliver consistent uranium grades of around 0.6-0.7kg/t. Approximately 20-22 stopes are mined at any one time. Stope voids are backfilled on completion with cemented aggregate fill ( CAF ) and waste and quarried rock. A dolomite quarry adjacent to the mine provides crushed aggregate for CAF and rockfill. Approximately 100,000 tpa of Portland cement and 200,000 tpa of power station fly-ash are consumed with the crushed aggregate in CAF. Backfill is a major mining cost, representing approximately 25% of total projected mining costs.

### **5.4 Processing**

The Olympic Dam treatment facilities are large and complex. Following grinding of the crushed ore, the resultant slurry of ore and water is treated by flotation circuit to produce a copper concentrate grading around 45% Cu, which also contains a small amount of uranium. The copper concentrate is processed by leaching to extract the uranium and smelting to extract the copper. The tailings from the flotation circuit contain the majority of the uranium mineralisation, together with a small amount of copper. The uranium rich tailings from the flotation circuit are leached to remove the uranium and some of the remaining copper. The liquor from the concentrate and tailings leaching operations are separated into copper and uranium solutions by solvent extraction.

The following diagram illustrates the treatment of the copper concentrate:

In concentrate leaching the copper concentrate is passed through a six tank leaching circuit, where, under hot, acidic conditions, uranium and some iron and copper are dissolved. This increases the copper concentrate grade to approximately 45-47% Cu. The copper concentrate is dewatered and dried before smelting in an Outokumpu flash furnace. The furnace produces blister copper (approximately 99% copper) an iron silicate slag containing about 24% copper, and the sulphur in the concentrate as sulphur dioxide gas. Flash furnace slag is periodically tapped and laundered to

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an electric slag cleaning furnace. The slag cleaning furnace produces further blister copper and low grade copper slag assaying approximately 4% Cu. This electric furnace slag is cooled and then processed by grinding and flotation to recover the copper in slag. The slag concentrate is directly blended with the concentrates from the ore for smelting. Blister copper from both the flash furnace and the electric furnace is discharged to anode furnaces for casting into anodes, which are electro-refined into copper cathode sheets. WMC sells its A grade electro-refined cathode under the LME licensed brand of OLYDA. Gold and silver are refined to bullion from slimes produced in the electro-refining of the copper cathodes and collected in the electro-refining cells.

The following diagram illustrates the treatment of the uranium rich flotation tails to produce uranium and copper:

The flotation tailings are leached in a series of five leach tanks. Uranium and some copper are dissolved under hot, acidic conditions. The resultant leach liquor, rich in uranium and copper, is processed through a solvent extraction circuit to extract the copper. The copper solution is piped to the electro-winning tank house to produce copper cathodes.

The copper-denuded liquor is passed to the uranium plant, where uranium is extracted in a solvent extraction plant to produce ammonium diuranate (yellow-cake). The ammonium diuranate is then calcined to produce uranium oxide concentrate ready for despatch.

In the absence of a major expansion the capital expenditure planned to be undertaken in the smelter is expected to enable the smelter to remain as a direct to blister smelter for the life of the current mining plan.

Water is supplied from two borefields, respectively 106km and 200km north of the mine, situated in the Great Artesian Basin. Olympic Dam's special water licence provides for up to 42 ML/day of water consumption and current consumption is approximately 32 ML/day.

Energy is a major cost for Olympic Dam, with approximately \$60 million per annum spent on electricity, LPG, distillate and fuel oil. Power for Olympic Dam is supplied via a 275kV power line from Adelaide, with power supplied currently under contract until July 2006 by TXU and transmitted by Electranet.

WMC is considering the possibility of on-site electricity generation and the replacement of other fuel sources using natural gas delivered from the Highlands Gas Project, PNG, which would require the installation of a gas pipeline from Moomba to Olympic Dam. WMC's intention, if gas

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supply is to be preferred for electricity generation at Olympic Dam, is to develop the pipeline and gas-fired power station on a build, own and operate basis.

### **5.5 Proposed Expansion**

In May 2004, WMC announced it intended to spend a further \$48 million over less than two years in a pre-feasibility study of the expansion of Olympic Dam to incorporate the resources located in the southern region of the deposit. A combined WMC/contractor team has been appointed to undertake the study, which is due to be completed in early 2006. It is expected by WMC, on the basis of work carried out to date, that an expansion of copper production to around 500,000 tpa is achievable. This would be based upon production either from open pit mining of the southern region (combined with the existing underground operation in the north) or from an integrated block caving operation in the southern region in conjunction with the current underground mine. The selection of mining method is due to be made in early 2005.

The pre-feasibility study includes approximately 72 kilometres of surface drilling, an assessment of mining and processing methods, environmental investigation and baseline studies, and an evaluation of likely infrastructure and energy requirements. Since commencement of the study, drilling has identified significant intersections in the south eastern region of the deposit. Based on these results, the study's drilling program has been expanded and additional funds have been allocated to the study. It is now anticipated that over 200 kilometres of surface drilling will be conducted as part of the pre-feasibility study in order to issue a Probable Reserve at the conclusion of the study.

WMC expects to identify a single life of mine plan for the entire Olympic Dam resource during 2005. WMC is continuing to investigate a range of technical options at this stage. However, initial work on preferred mining methods and drill results to date indicate an open cut mining operation in the southern region of the deposit, combined with the existing underground operations in the northern region, warrants more detailed investigation. The most likely processing option at this stage is two-stage smelting, which is expected to be required to address an anticipated reduction in the Cu:S ratio in the southern region.

Other critical issues to be addressed during the pre-feasibility study include the availability of sufficient power, water and road/rail infrastructure to support an expanded mine operation. Power consumption under the expansion case is expected to increase from a current average load of approximately 100MW to in the order of 370MW, and natural gas is considered by WMC to be a viable option to help meet these increased energy requirements (WMC has an option for 12-30 PJ per annum from the Highlands Gas Project, which announced the commencement of front end engineering design in October 2004). Preliminary work undertaken by WMC indicates that replacement of liquid fuels with natural gas could result in annual pre-tax savings of \$12-24 million per annum in the existing operations and \$12-44 million per annum in the expanded operations. In addition, gas could be used to generate electricity at Olympic Dam to meet the anticipated power requirements. Requests for proposals have been issued to potential energy providers. Water requirements are expected to increase by an additional 70 MI/d for the expanded operations. A number of options, including expansion of the water supply from the Great Artesian Basin and coastal or local water desalination are under consideration by WMC.

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Surface drilling is underway for the purpose of resource definition, rock mass characterisation and exploration in the southern area. Since the beginning of 2004, over 60 kilometres of drilling has been completed, with results indicating both extensions and continuity of mineralisation in the southern region of the deposit:

**Olympic Dam Development Study Indicative Results**

<b>Hole</b>	<b>Mineralised intersection (m)</b>	<b>Depth below surface (m)</b>	<b>Cu (%)</b>	<b>U<sub>3</sub>O<sub>8</sub> (kg/t)</b>	<b>Au (g/t)</b>
RD1407	419	331	1.41	0.37	0.73
RD1399	458	392	1.20	0.50	0.60
RD1615	451	349	1.33	0.32	0.65
RD1617	186	376	1.27	0.44	0.40
RD1619	314	479	1.56	0.46	0.93
RD1620	149	362	2.71	0.69	0.85
RD1623	431	369	1.66	0.48	0.70
RD1630	191	341	1.13	0.33	1.07

**5.6 Operating and Financial Performance**

The following table summarises the operating performance of Olympic Dam in recent years:

**Olympic Dam Operating Performance**

	<b>Year ended 31 December</b>					
	<b>2000</b>	<b>2001</b>	<b>2002 Proforma</b>	<b>2003</b>	<b>2004 (forecast)</b>	<b>2005 (forecast)</b>
Ore treated (Mt)	8.90	9.34	8.88	8.39	8.84	9.30
<b>Grades</b>						
Cu (%)	2.5	2.5	2.6	2.4	2.3	2.2
U <sub>3</sub> O <sub>8</sub> (kg/t)	0.73	0.72	0.69	0.63	0.63	0.60
Au (g/t)	0.53	0.59	0.53	0.47	0.45	0.49
Ag (g/t)	5	4	4	5	5	4
<b>Production</b>						
Cu (tonnes)	200,423	200,523	178,120	160,080	224,000	226,000
U <sub>3</sub> O <sub>8</sub> (tonnes)	4,539	4,379	2,891	3,203	4,400	4,700
Au (ounces)	69,967	113,400	64,293	86,117	87,600	115,300
Ag (ounces)	625,100	912,900	643,900	601,000	868,000	861,000
<b>Cash Cost (net of credits) (A\$/lb)</b>		<b>0.35</b>	<b>0.58</b>	<b>0.68</b>	<b>0.77</b>	<b>0.79</b>

*Note: Cash cost per pound of copper production calculated allowing for uranium, gold and silver credits.*

The following table summarises the historical profit and loss of the Olympic Dam operation:

**Olympic Dam Financial Performance**

	Year ended to 31 December					
	2000	2001	2002 Proforma	2003	2004 (forecast)	2005 (forecast)
Cu Sales (tonnes)	203,200	200,800	186,100	174,500	231,300	228,500
Cu Price (US\$/lb)	0.82	0.72	0.71	0.81	1.29	1.29
US\$:A\$ exchange rate	0.58	0.52	0.54	0.65	0.74	0.74
Sales (A\$m)	895	913	765	696	1,200	1,196
EBITDA (A\$m)	435	333	283	98	410	425
EBIT (A\$m)	272	151	28	(120)	184	213

*Note: EBIT and EBITDA before hedging.*

Olympic Dam earnings for the year 2000 reflected the ramp up of production to more than 200,000 tonnes per annum, a stronger copper price and a fall in the A\$:US\$ exchange rate. The fire at the solvent extraction plant in October 2001 and a decline in copper prices contributed to lower earnings for the year ended 31 December 2001. EBITDA fell approximately 25% to \$333 million on sales of over \$900 million.

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Pro forma revenue decreased in 2002, reflecting lower sales as a result of reduced production and lower Australian dollar prices. The 2002 pro forma revenue includes \$90 million of insurance claims for lost production and sales in relation to the fire in the solvent extraction plant.

In 2002, an optimisation project was completed to increase production rates to 10.5 mtpa of ore. However, the rebuild of the copper and uranium solvent extraction plants, the relining of the smelter furnace and a failure of a heat exchanger in the acid plant contributed to reduced production of 160,080 tonnes in 2003. This reduced volume led to a significant decline in EBIT to \$(120) million. Revenue declined as a result of lower copper sales, weak Australian dollar prices for copper, and lower realized Australian dollar uranium prices. Cash operating costs were 6 per cent higher reflecting increases in both mining and administration/legal costs. To meet contractual commitments WMC purchased and borrowed uranium during 2003 to meet delivery obligations.

The forecast sales for the 2004 year include WMC production of 220,000 tonnes, supplemented by approximately 11,000 tonnes of purchases to meet contractual commitments and restock the copper delivery pipeline.



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### 6 Profile of WMC Fertilizers

#### 6.1 Overview

The operations of WMC Fertilizers consist of:

the Queensland Fertilizer Operation ( QFO ), an ammonium phosphate manufacturing facility and associated distribution and marketing operations; and

a one-third interest in Hi-Fert (in joint venture with Elders and Landmark), which distributes and markets fertilizer products in eastern Australia.

QFO produces and markets two high analysis fertilizer products, diammonium phosphate (DAP) and monoammonium phosphate (MAP). DAP contains 18% nitrogen and 46% phosphate by weight. MAP contains 10% nitrogen and 50% phosphate by weight. QFO is in the process of transitioning its MAP product to contain 11% nitrogen and 52% phosphate (11:52). Both products are produced in bulk granular form, with granules of a diameter of between 2 mm and 4 mm. QFO has recently successfully completed testing a sulphur impregnated form of MAP known as MAP-S, which has 8% sulphur.

At the time that the plant was designed in the late 1990s it was expected that DAP would be the main product and that at name plate capacity the plant would produce 875,000 tonnes of DAP and 100,000 tonnes of MAP per annum. However, based on expected market requirements and the high level of iron oxide in the phosphate resource, WMC's current operating strategy is to produce approximately 50% MAP (including MAP-S) and 50% DAP products. WMC have made numerous modifications and improvements to the plant over the past year under a debottlenecking program. Approximately \$18 million will be spent over the next two years on the program (including the MAP-S program). The current operating strategy is to increase total production to 1.1 million tonnes by 2008.

The QFO operations consist of a sulphuric acid plant at Mount Isa, the mining operation and fertilizer plant at Phosphate Hill and storage and port facilities in Townsville. Phosphate Hill is approximately 160 km south-south-east of Mount Isa in north west Queensland. The plant is highly vertically integrated. The total number of employees (including contractors) of QFO is approximately 400. Because of the remote location of Phosphate Hill, staff work on a fly-in, fly-out roster from Townsville.

The following map shows the location of QFO operations:

Source: WMC

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Projected production for the year to 31 December 2004 is approximately 892,000 tonnes, comprising approximately 656,000 tonnes of DAP, 207,000 tonnes of MAP and 29,000 tonnes of MAP-S. This represents approximately 81% of the target production capacity of 1.1 million tonnes. Projected production in 2004 is 4% lower than 2003 production of 922,000 tonnes. The fall was primarily due to interruptions to acid supply in the first half of 2004. For the six months to 31 December 2004, the plant is expected to produce approximately 480,000 tonnes (or 960,000 tonnes on an annualised basis).

The Phosphate Hill deposit was discovered by Broken Hill South Pty Ltd ( BH South ) in 1960. In 1975 BH South established a phosphate rock mine at the QFO site. BH South spent approximately \$70 million on project development, including a beneficiation plant, rail access and port facilities. BH South closed the operation in 1978 due to production difficulties, the removal of the Australian superphosphate bounty and its failure to secure long term contracts. WMC acquired BH South 's interest in the project in 1980 and resumed operations at Phosphate Hill but ceased production for economic reasons in 1983.

During the 1990 's a number of events occurred that increased the attractiveness of the project. In particular, through the Queensland government 's initiatives to support infrastructure development, WMC secured commercial arrangements for the supply of natural gas, sulphuric acid and rail transport to the project site. In 1996 WMC 's board granted approval for QFO to proceed.

The plant was constructed on a lump-sum turnkey basis and was completed in late 1999 for a cost of \$800 million (including the acid plant at Mount Isa). The plant was handed over to WMC in late October 2000 after delays during the commissioning period. This was approximately 12 months later than originally planned. Parts of the plant were operated separately until February 2001. A number of problems were identified during this period, including a build up of DAP in the pipework in the granulation plant that caused blockages.

The finished product is distributed in Australia by Incitec Pivot, Hi-Fert (WMC 33.3%), Summitt and Impact and internationally under a marketing agreement with Cargill. WMC 's strategy is to increase domestic sales where it has a competitive advantage over imported products as a result of lower freight costs (and thus enjoy optimal margins) and the ability to respond to seasonal demand by using QFO 's storage and logistics facilities.

QFO benefits from the following advantages:

- low cost of phosphate rock due to the nature of the mining operations (open cut mine with the ore body close to the surface), the short haulage routes from the mine to the processing plant and the simple beneficiation process;

- low cost sulphur, which is partly sourced from the metallurgical gases from the Xstrata Mount Isa copper smelter;

- on-site production of ammonia, produced using natural gas purchased under long term contract arrangements; and

- a price advantage within Australia and the Asian region as a result of lower shipping costs.

The current capitalised value of the QFO project net of depreciation and amortisation is approximately \$512 million.

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Hi-Fert procures, markets and distributes all major fertilizers into Eastern Australia. Founded in 1984, Hi-Fert currently distributes approximately 600,000 tonnes of fertilizer per annum. It is the second largest distributor in Eastern Australia with approximately 18% market share (behind Incitec Pivot Limited with approximately 71%). Hi-Fert has storage and distribution facilities strategically positioned in New South Wales, Victoria and South Australia with capacity of approximately 370,000 tonnes.

On 9 December 2004, WMC announced that it had sold 66.66% of Hi-Fert to a joint venture company owned by Landmark (an AWB company) and Elders, resulting in WMC, Landmark and Elders each holding a one-third interest in Hi-Fert. The purchase price was based on net asset value of approximately \$100 million. This transaction is expected to significantly enhance Hi-Fert's capability and market position in the East Coast fertilizer market. Hi-Fert has the ability to

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increase throughput to in excess of 1 million tonnes per annum without the need for any significant capital expenditure.

Hi-Fert distributes its product through an established network of approximately 206 independent retailers and corporate retailers. Hi-Fert owns patented coating technology that it uses to provide value added products including zinc and sulfur coated products.

**6.2 Reserves and Resources**

The Phosphate Hill deposit is hosted within the Duchess embayment in northwest Queensland. The ore body occurs within the Monastery Creek Phosphorite Member. Locally the deposit is found in a gently folded seam.

The phosphate material at Phosphate Hill occurs as apatite (calcium phosphate) and the main impurities are quartz, alumina and iron oxide. The entire resource has high grades of phosphate, measured as  $P_2O_5$ , but the extent of the economic reserves is constrained by high concentrations of iron oxide ( $Fe_2O_3$ ).

The reserves have been determined using an average ore feed grade of 2.0% iron oxide. The quality of the DAP is affected when there is greater than 1.6% iron oxide in the ore. Excess iron oxide levels can result in a reduction in the ratio of nitrogen to phosphorous in the DAP to below specification levels (depending on the grade of the phosphate). However, because MAP has lower nitrogen content than DAP, QFO has been able to produce to specification with an iron oxide grade of up to 2.3%.

Based on the current plan to increase production of MAP to approximately 50% of total production, WMC consider it is appropriate that the ore reserves are based on an average grade of 2.0% iron oxide.

The following table summarises mineral resources and ore reserves at 31 December 2003:

**Mineral Resources and Ore Reserves December 2003**

Mineral Resources	Tonnes	$P_2O_5$	$Fe_2O_3$	Ore Reserves	Tonnes	$P_2O_5$	$Fe_2O_3$
	(M)	(%)	(%)		(M)	(%)	(%)
<b>Measured</b>	68.8	25.3	2.1	<b>Proved</b>	31.6	24.2	2.2
<b>Indicated</b>	26.5	22.9	2.2	<b>Probable</b>	58.3	24.3	2.0
<b>Inferred</b>	40.6	20.1	2.7				
<b>Total</b>	<b>136.0</b>	<b>23.2</b>	<b>2.3</b>	<b>Total</b>	<b>89.9</b>	<b>24.3</b>	<b>2.1</b>

Source: WMC.

During 2004, WMC tested tonnage reconciliations between the mine and the plant. The reconciliations indicated that the ore density had been overestimated by approximately 9%. AMC has considered this and recommended that the ore reserves and resources used for valuation purposes be reduced accordingly.

There are other phosphate deposits on WMC leases, in particular at Ardmore and Rimmer Hill. However, estimates of resources by previous tenement holders have not been verified by WMC and are only at a preliminary stage of evaluation. The potential reserves at this stage are relatively small and have not been included for valuation purposes. There is some prospect that reserves will increase as more drilling is completed.

### **6.3 Mining**

QFO mines approximately 2.2 million tonnes per annum of phosphate ore, which is expected to increase to approximately 2.5-2.6 million tonnes per annum by 2008 as fertilizer production increases. QFO is currently using a mining contractor. There are currently five pits in the mining area: Galah, Brolga, Jabiru, Magpie and Corella. The mine pits are relatively simple and shallow and wall stability is good. Overburden is disposed of at nearby mine waste dumps or in-pit. It is proposed to move to mostly in-pit waste disposal as mining progresses.

The overburden material is mostly shale and alluvium and varies in thickness from nil to 100m, averaging approximately 35m. The extraction of the phosphate ore and mining operations is by

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excavator trucks without drilling or blasting. The main mining activities involve contract hauling and loading using 3m to 5m benches and small-scale mining equipment. It is proposed to increase the benches to 9m. The mining fleet includes six 50 tonne haul trucks, two 100 tonne excavators, two front end loaders and ancillary fleet.

Significant de-watering is required to access the ore body, with approximately half the ore body under the current water table. During 2004 QFO accelerated the rate of de-watering with the installation of two bores to extract water and discharge in a local creek. To date this has been successful in reducing the level of the water table at planned rates.

QFO was selectively mining the ore to maintain an average feed grade of 1.8% iron oxide when it was only producing DAP. Reserves are based on an average feed grade of 2.0% iron oxide and this is the average grade that is expected to be processed because of the plan to produce approximately 50% of the fertilizer as MAP. Any continuation of selective mining would ultimately result in a reduction in economic reserves.

### **6.4 Processing**

The DAP/MAP plant at the QFO is the first of its kind in Australia and for WMC. It is one of a few plants worldwide that is fully integrated with mining operations and the production of ammonia from natural gas. The nameplate capacity of the plant is 975,000 tonnes. However, WMC has reviewed its operating strategy and believes that by producing a greater proportion of MAP, which requires less ammonia, it can increase its operating capacity to 1,100,000 tonnes per annum.

The main feedstocks for the process are phosphate ore, sulphuric acid and ammonia:

phosphate ore is mined on site. Phosphate rock is fed from the run-of-mine ( ROM ) stockpiles into the beneficiation plant where it is crushed and clay minerals are removed. The ore is then ground into fine particles in a ball mill and thickened to produce a phosphate rock slurry;

sulphuric acid is sourced from the QFO s sulphuric acid plant located in Mount Isa and purchased from Korea Zinc s refinery in Townsville. The QFO s sulphuric acid plant uses waste gases from Xstrata s Mount Isa copper smelter. If there is a shortfall in gas from the smelter, externally purchased sulphur is burned at the acid plant. It is uncertain whether waste gases from the Xstrata smelter will be available after 2020 due to the expected decline in Xstrata s current stated reserves and resources. Sulphuric acid is transported by rail to Phosphate Hill from Mount Isa and Townsville;

all the QFO s ammonia requirements are produced on site in its ammonia plant. Hydrogen is extracted from natural gas sourced from the Cooper Basin and transported to Phosphate Hill via AGL s Carpentaria gas pipeline.

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The following diagram shows the production process at QFO:

Phosphate rock slurry is processed with sulphuric acid to first produce phosphoric acid. For every tonne of ore approximately one tonne of gypsum is formed as a waste product in this process. Because of the remote location of the project, this gypsum does not have any economic value and is disposed of in stockpiles located on site.

The phosphoric acid is then reacted with ammonia to form an ammonium phosphate slurry, which is subsequently granulated to form MAP or DAP prills. The MAP/DAP is screened to 2 mm to 4 mm in diameter and any oversized or undersized product is recycled. The DAP/MAP is lightly oiled to minimize dust and the final product is railed to Townsville where it is stored and dispatched.

The cost of phosphate rock to QFO is low by world standards due to the nature of the mining operations (open cut mine with the ore body close to the surface), the short haulage routes from the mine to the processing plant and the simple beneficiation process.

QFO obtains its water supply from an aquifer which has estimated capacity of approximately 120 gigalitres. At expected long term rates of 4 gigalitres per annum this is sufficient to meet demand for more than 20 years. QFO will need to consider longer term water supply arrangements beyond this period.

The main infrastructure on site includes an accommodation village and airstrip. Power is supplied on site by a gas turbine and water from mine borefields.

The QFO Townsville Port Facility comprises a 90,000 tonne fertilizer facility and 10,000 tonne sulphur storage facility. The land is leased under long term arrangements from the Townsville Port Authority.

## **6.5 Marketing**

QFO has relationships and contracts for the sale of DAP and MAP in Australia and has had a contract to sell DAP in international markets. The key markets are Eastern Australia and South East Asia. In Australia, QFO sells product to Incitec Pivot, Hi-Fert, Impact and Summitt. Sales to Hi-Fert are on an arms length basis and are handled in a similar way to sales to other distributors. Hi-Fert will be the exclusive distributor of MAP-S in Eastern Australia. Export sales have been through a marketing agreement with Cargill Inc., which expires at the end of 2004.

**Table of Contents****QFO Product Sales ( 000 tonnes)**

<b>Year ended 31 December</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
					<b>(forecast)</b>	<b>(forecast)</b>
Third Parties	158	537	606	689	631	652
Hi-Fert	89	134	294	205	320	320
<b>Total</b>	<b>247</b>	<b>671</b>	<b>899</b>	<b>894</b>	<b>951</b>	<b>972</b>

Source: WMC

QFO's DAP and MAP are branded AussieGold™ a reference to QFO being the only domestic producer and the product's light colour, which distinguishes it from imported DAP and MAP.

QFO's strategy is to maximize domestic sales where it has a freight cost advantage over imports. Export sales are used as a balancing item for seasonal fluctuations. Because of the differential between freight costs from North America (the main exporter of DAP) and from Townsville, QFO also has a comparative advantage supplying product into the South East Asian markets. WMC's relative price advantage increases as shipping costs increase. Freight rates are currently high as a result of strong regional freight demand.

Ammonium phosphates have been the fastest growing fertilizer in the world over the past 20 years because of increased use in cropping and substitution for superphosphates.

Source: IFA

The Australian market for DAP and MAP is currently more than 1.5 million tones per annum, with MAP growing strongly and DAP steady.



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Source: WMC

The DAP price (FOB Florida) was relatively stable in a range of approximately US\$190-210 per tonne from 1996 to 1998. From 1999 to 2003 the price declined substantially and DAP traded at levels as low as US\$130-140 per tonne. During 2004 there has been a strong recovery in the price of DAP with it recently trading at levels of US\$230-235 per tonne.

Source: WMC

The higher prices in 2004 have resulted from:

higher oil and gas prices, impacting the cost of production and freight;

rationalisation of production capacity in North America over the past couple of years (for example in December 2004 Mosaic announced the temporary closure of its Green Bay plant with a capacity of 1.25 million tonnes); and

relatively strong demand for fertilizers.

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WMC consider it reasonable to assume that there will be a premium to the long term DAP price of approximately US\$5 per tonne for MAP (11:52) and US\$13 per tonne for MAP-S.

**6.6 Operating and Financial Performance**

QFO has significantly improved its performance from 2000 to 2004.

**QFO Operating and Financial Performance**

Year ended 31 December	2000	2001	2002	2003	2004 (forecast)	2005 (forecast)
<b>Operating Statistics</b>						
Ore mined (mt)	1.1	1.9	2.0	2.3	2.1	2.3
DAP produced (kt)	326	651	718	760	656	593
MAP produced (kt)		58	103	162	207	217
MAP-S produced (kt)					29	168
Total production (kt)	326	709	821	922	892	978
% of nameplate (975kt)	33%	73%	84%	95%	91%	100%
<b>Realised Prices</b>						
DAP average price (US\$/t)	154	146	157	179	221	221
A\$/US\$ average rate	0.58	0.52	0.54	0.65	0.74	0.74
<b>Financial Performance</b>						
Sales (A\$m)	72.2	206.4	276.1	260.7	331.0	344.0
EBITDA (A\$m)	(22.5)	2.4	(2.1)	3.4	38.9	55.6
EBIT (A\$m)	(47.0)	(61.3)	(42.0)	(36.0)	(6.9)	8.2
Capital expenditure (A\$m)	93.3	42.3	48.1	38.1	16.9	32.9
<b>Operating Costs</b>						
Cash costs (A\$/tonne)	272	266	244	233	235	231

Source: WMC

Earnings in 2001 were affected by low production rates and historically low DAP prices in the period. In addition, cost performance in 2001 was impacted by the extended shutdown of the plant to resolve a number of production issues. The performance of the QFO improved in 2002 notwithstanding some shortage of sulphuric acid. Performance continued to improve in 2003 with production of more than 900,000 tonnes and some improvement in DAP prices. Production for the year to 31 December 2004 is expected to fall to approximately 892,000 tonnes as a result of sulphuric acid supply issues. However, strong DAP prices have resulted in a significant improvement in earnings with EBITDA forecast to increase to almost \$40 million.

WMC is expecting to increase production to almost 980kt in 2005 and significantly increase the production of MAP-S. Fertilizer prices are expected to remain buoyant resulting in EBITDA of approximately \$55 million.

**6.7 Hi-Fert**

Hi-Fert operates a fertilizer marketing and distribution business in New South Wales, Victoria and South Australia, marketing 21 base fertilizers and 13 coated fertilizers. Hi-Fert has dispatch facilities in Newcastle, Geelong, Portland, Adelaide, Kadina and Port Lincoln. Hi-Fert operates blending plants at the points of dispatch so that that fertilizer mixes can be produced to meet specific customer requirements.

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Hi-Fert's financial performance is summarized below:

**Hi-Fert Financial Performance (100% basis)**

	Year ended 31 December				
	2000	2001	2002	2003	2004 (forecast)
Sales (A\$m)	186.0	221.5	248.3	217.8	283.0
EBITDA (A\$m)	(3.4)	3.7	18.1	9.0	4.1
EBIT (A\$m)	(5.7)	1.4	14.5	4.7	1.3

The Hi-Fert full year 2004 forecast profit represents November year to date actual results and estimated performance for December. From 1<sup>st</sup> December 2004 WMC restructured its ownership of Hi-Fert, retaining one third, and selling one third each to Futuris and AWB.

Hi-Fert's margins in 2000 were affected by heavy competition and discounting. An increase in sales and a reduction in operating costs through workforce reduction and restructuring resulted in a significant improvement in profitability in 2001. Very strong earnings were achieved in 2002 as a result of improved prices and very strong margins associated with well timed stock purchases. Earnings in 2003 and forecast earnings for 2004 have been impacted by increased competition, particularly in the pastoral market.

Following the sale of two thirds of Hi-Fert to Landmark and Elders, WMC expects a significant improvement in Hi-Fert's performance, with the potential to grow market share and earnings. Based on current expected sales for 2005, WMC management considers Hi-Fert has the potential to increase EBIT to approximately \$20 million.

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### **7 Profile of Corridor Sands**

#### **7.1 Overview**

The Corridor Sands minerals sands project is located approximately 180 km north of Maputo, the capital of Mozambique, approximately 60 km inland from the coast. The project is owned 100% by WMC, through its wholly owned subsidiary Corridor Sands Limitada ( CSL ).

The project envisages an integrated mining, concentration and smelting operation to produce titanium dioxide slag. The size and quality of the resource base at Corridor Sands provides an attractive base for a project.

The following map shows the location of the Corridor Sands project:

*Source: WMC.*

In November 2000, WMC paid Southern Mining Corporation Limited an option fee of US\$15 million, for the right to carry out a bankable feasibility study in respect of the project. This study was completed in July 2002, at a total cost of US\$11.9 million. Following the completion of the bankable feasibility study, WMC decided to acquire CSL, the owner of the project. In December 2002, WMC completed the acquisition of 100% of CSL.

Although WMC currently owns 100% of the project, the Industrial Development Corporation of South Africa Limited ( IDC ) has recently exercised an option to acquire a 10% interest in the project, at an exercise price of US\$10 million, plus US\$1 million in costs. Payment by IDC had been delayed due to a requirement to gain approval by the Reserve Bank of South Africa. This approval has now been given and arrangements are being put in place to complete the transaction.

#### **7.2 Overview of the Mineral Sands Industry**

Mineral sands is a term used to refer to deposits of heavy minerals such as ilmenite, zircon, rutile, leucoxene and monazite. Mineral sands deposits also contain lighter minerals such as quartz and feldspar. Mineral sands deposits are usually located in strands along old coastal regions where weathering and erosion have separated the heavier minerals from the lighter minerals and have formed concentrated ore bodies. The main mineral sands mining countries are Australia, South Africa, the United States, Canada and India.

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The mineral sands industry is oriented towards the mining of titanium based minerals (ilmenite, rutile and leucoxene) to produce titanium dioxide (TiO<sub>2</sub>) feedstocks. TiO<sub>2</sub> feedstocks are used to produce pigments, titanium metal, welding fluxes and other specialised products.

The processing routes and technologies for the production of TiO<sub>2</sub> feedstocks and pigment are illustrated below:

Titanium feedstocks are predominantly used to produce TiO<sub>2</sub> pigments. Over 90% of ilmenite production and over 50% of rutile production is used for the production of pigments, resulting in approximately 93% of total titanium dioxide feedstocks being used in pigment production. Titanium dioxide pigments are used in paints and coatings, plastics, paper, inks, fibres and food and cosmetics to provide brightness, whiteness and opacity. Titanium dioxide pigments are produced via two alternative methods: the sulphate and the chloride processes. The sulphate process uses sulphuric acid as a liberating agent and the chloride process uses chlorine as the liberating agent. In recent years, the industry has moved away from the sulphate process towards the chloride process.

Ilmenite, rutile and leucoxene are either used directly as titanium dioxide feedstocks or are upgraded to produce manufactured feedstocks of slag and synthetic rutile. Titanium slags are produced by smelting ilmenite in electric arc furnaces at high temperatures. Synthetic rutile is produced by pyrometallurgical and chemical upgrading of ilmenite.

The processing of mineral sands is based on the physical properties of the contained minerals. Heavier minerals are separated by washing away lighter materials such as silica. Magnetic separation is used to separate ilmenite, which is magnetic, from the non-magnetic rutile with high strength magnets. Rutile is separated from zircon by using the electrical conducting properties of zircon and rutile. Zircon is a non-conductor.

Zircon is a significant co-product of titanium feedstocks. Zircon is principally used as an opacifier in the ceramics industry and in foundries, refractory bricks and furnaces. Zircon is also used in television sets and in a number of other applications.

Iron is also a significant by-product in the production of titanium slag. Low manganese pig iron ( LMPI ), produced as a by-product in the smelting process is used in the production of ductile iron. Ductile iron is used in the automotive industry, iron pipes and in general engineering.

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The major world titanium dioxide feedstock producers are set out in the following table:

**Titanium Dioxide Feedstock Producers**

<b>Producer</b>	<b>Ownership</b>	<b>Location</b>	<b>Principal Products</b>
Richards Bay Minerals	50% Rio Tinto	South Africa	Chloride Slag
	50% BHP Billiton		Sulphate Slag
Iluka		Australia	Rutile Ilmenite, Rutile
QIT	100% Rio Tinto	Canada	Synthetic Rutile
Cable Sands (WA) Pty Ltd and RZM Pty Ltd	100% Nissho Iwai	Australia	UGS, Sulphate Slag Rutile, Ilmenite
Titania	100% Kronos Inc	Norway	Sulphate ilmenite
Indian Rare Earths Ltd	100% Govt. of India	India	Ilmenite
Tiwest	50% Tigor	Australia	Ilmenite, Rutile
Tigor SA Project	50% Kerr-McGee		Synthetic Rutile
Du Pont (E.I) de Nemours ( Dupont )	Tigor, Kumba	South Africa USA	Chloride Slag Ilmenite, Rutile
Tinfos		Norway	Sulphate Slag
Namakwa Sands Limited	100% Anglo American	South Africa	Chloride Slag
			Sulphate Slag
Consolidated Rutile Ltd	43% Iluka	Australia	Rutile Rutile and Ilmenite

**7.3 Marketing**

The sale of titanium feedstocks is predominantly contract based. Given the substantial capital costs associated with the Corridor Sands project, it is essential that substantial quantities of production are contracted to justify the economics of the project.

The demand/supply balance for feedstock varies as between chloride and sulphate slag. The Corridor Sands project contemplates producing more than 80% of titanium dioxide slag for the chloride process and less than 20% for the sulphate process.

The total pigment market is currently growing at around 3% per annum. Despite the focus of the Chinese market on sulphate feedstocks, demand for chloride feedstocks is expected to grow at a greater rate in the medium term.

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In recent months supply of chloride slag has been impacted by production problems at two major slag producers. In the medium term, a growing deficit in the chloride slag market is expected. The following chart illustrates the feedstock demand and supply balance out to 2012:

*Source: TZMI.*

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The proposed timing of the Corridor Sands expansion is designed to coincide with the deficit in high grade chloride feedstock supply that is anticipated from 2010, as set out below:

**Corridor Sands Proposed Project Timeline**

2005	Project Financing and EPCM Contractor tender and award
2005 - 2008	29 month Phase 1 design & construction
Mid 2008	Smelter commissioning
Late 2008	Delivery of first product
2008 - 2018	Progressive expansions to 1Mtpa slag

Source: WMC.

**7.4 Reserves and Resources**

The Corridor Sands project is held under a single exploration licence, although the mineral sands occur in a number of potentially minable parallel strand lines. Work to date has been directed towards one of these (named Deposit 1), which consists of two higher grade zones, called the East and West block.

Drilling and resource estimation to date has been primarily within the West Block. The West Block is expected to support more than the first 25 years of mine life at full production. However sufficient drilling has been completed over the East Block to establish a measured and indicated resource in respect of the East Block. The following tables set out the current estimation of the Corridor Sands ore reserves and mineral resources:

**Corridor Sands Ore Reserves**

	<b>Million Tonnes Ore</b>	<b>Grade Ilmenite (%)</b>
Proved	685	4.8
Probable	122	3.7
<b>Total Ore Reserves</b>	<b>807</b>	<b>4.7</b>

Source: WMC.

## Corridor Sands Mineral Resources

	Million Tonnes Ore	Grade Total Heavy Minerals (%)
Measured	1,593	8.2
Indicated	1,079	6.2
Inferred	13,290	4.9
<b>Total Mineral Resources</b>	<b>16,592</b>	<b>5.3</b>

Source: WMC.

### 7.5 Feasibility Studies

The bankable feasibility study completed by WMC in July 2002 contemplates the mining of high-grade mineralisation in the initial years, declining after a three or four year period towards an average grade. The proposed operation involves truck and shovel mining and ore treatment, by conventional mineral sands industry methods, to extract rutile and zircon and produce an ilmenite concentrate. The concentrate will be roasted and then smelted to produce titanium slag. The bankable feasibility study planned to export titanium slag using existing rail facilities and the existing Matola port, but also reviewed the option of a dedicated export facility at the coast near the project.

Since completion of the study, a number of changes have been made to the proposed operations. The dedicated export facility has been engineered to a bankable level and has become the preferred project option. Products will be transported by road to Chongoene, where a 1km long jetty will be established. This avoids the need to transport product across a floodplain.

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The bankable feasibility envisaged a project which gradually increases from three furnaces to eight furnaces, expanding slag production rates from 375,000 tonnes per annum to 1.0 million tonnes per annum. This expansion is expected to occur between 2011 and 2019. The impact of the expansion is summarised below:

**Corridor Sands Impact of Expansion**

	First Phase	Second Phase
Number of furnaces	3	5 additional furnaces
Commencing	2008	Gradually from 2011 to 2019
Total Capital Cost	US\$500 million	US\$300 million
Chloride Slag production	300,000 tonnes per annum	800,000 tonnes per annum
Sulphate Slag production	75,000 tonnes per annum	200,000 tonnes per annum

*Source: WMC.*

The size and quality of the resource provide an attractive base for a project. However, major issues for the project include the magnitude of the capital requirement, the project's location in Mozambique and uncertainty as to whether the market could absorb the quantity of slag contemplated. In addition, the bankable feasibility study contemplated different Rand/USD exchange rates, inflation rates and commodity prices to those currently experienced, each of which will potentially impact on the design and economic feasibility of the project.

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### **8 Other Assets**

#### **8.1 Exploration**

The Exploration Group budget for 2004 was approximately \$29 million and its expenditure for 2005 is forecast at approximately \$31 million. This supports a world-wide exploration effort focused on nickel sulphide and copper-gold deposits. In addition, the Exploration Group is responsible for near mine exploration, with a current focus on Western Australia nickel operations.

The major exploration focuses are the West Musgrave (Australia), Collurabbie (Australia) and Jinchuan (China) nickel-sulphide projects. Other key programs include regional nickel sulphide exploration in Western Australia, Africa and North America and copper-gold exploration in North and South America.

The West Musgrave project area of approximately 3,400km<sup>2</sup> is located near the border of Western Australia and South Australia, around 800 km north east of Leonora. A large mineralised system has been identified at the Nebo-Babel prospects over a strike length of 5.5 km. A mineralisation inventory (not yet classified as a JORC compliant resource) has been defined of 392 Mt at 0.3% nickel, 0.3% copper, 0.18 g/t platinum group elements with some cobalt and some gold. WMC is continuing its exploration programme in the West Musgrave project area.

The Collurabbie Project is located approximately 180km north east of Mount Keith. At the Olympia prospect, WMC has earned a 70% interest in a joint venture with Falcon Resources. Drilling has been carried out over an 8km strike and has recorded nickel, copper and platinum group anomalies along the entire length. The best results from drilling to date include:

12.9m at 1.3% Ni, 1.0% Cu, 2.6 g/t PGE;

5.8m at 3.0% Ni, 2.0% Cu, 5.3 g/t PGE.

WMC consider the Collurabbie area has the potential to become a new nickel province.

WMC has entered into a contributing joint venture with the Jinchuan Group over a number of areas in the Gansu Province and western Inner Mongolia, China. These areas are generally close to the existing nickel mining and smelting operation at Jinchuan. The key exploration targets are nickel-copper-PGE deposits.

#### **8.2 Yeelirrie**

WMC discovered the Yeelirrie uranium deposit in Western Australia in the 1970s. It built a research plant to assess process options in Kalgoorlie in 1980 and completed a feasibility study in 1982.

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The deposit is governed by the *Uranium (Yeelirrie) Agreement Act 1978* (WA) but development did not proceed because of the introduction by the then Commonwealth Government of the three-mine policy in 1983. Although this policy no longer applies, the current Western Australian Government has a policy of no uranium mining in Western Australia.

Approximately \$35m has been spent on the project to date.

In recent times with an improved demand for uranium, the project has been re-assessed. There has been no update of the 1982 resource which was 35 Mt at 1.5 kg per tonne  $U_3O_8$  at a cut-off grade of 0.05%  $U_3O_8$ .

Feasibility work has been updated and the economic estimates are based on a 22-year mine life with a production of 2,500 tpa  $U_3O_8$  in the first 12 years then 1,750 tpa.

### 8.3 Other

WMC has a number of other assets:

WMC has a non-current receivable relating to a structured financing arranged in 1997. Principal and interest payments are receivable quarterly until 2007 and WMC is currently reviewing the potential to extend the financing until 2011;

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WMC has acquired and developed a range of intellectual property in relation to, principally, geoscience, mining and minerals processing. The most significant of these is the intellectual property in (i) recovery of metal values from fine disseminated sulphide ores (ii) a low pressure acid leach nickel sulphide processing technology and (iii) a deep penetrating EM technology for exploration; and

WMC has a 97.3% interest in the Adwest Limited Partnership venture capital fund and a 14.2% interest in the Rothschild e-Fund Australia;

WMC has small investments in a number of listed companies with current market value of around \$18 million.

**Table of Contents****9 Valuation of WMC Limited****9.1 Summary**

Grant Samuel has valued WMC in the range \$7.17-8.24 per share as summarised below:

**WMC Limited Valuation Summary**

	Valuation (US\$million)		Valuation (A\$million)	
	Low	High	Low	High
Olympic Dam	3,700	4,100	4,868	5,395
Nickel Business Unit	2,400	2,700	3,158	3,553
Queensland Fertilizer Operation	350	380	461	500
			<b>8,487</b>	<b>9,448</b>
Exploration and development projects			385	590
Other assets and liabilities			100	130
Corporate overheads			(150)	(100)
<b>Total enterprise value</b>			<b>8,822</b>	<b>10,068</b>
Other receivables			106	126
Net debt			(514)	(514)
<b>Value of net assets</b>			<b>8,414</b>	<b>9,680</b>
Shares on issue (millions)			1,171	1,171
<b>Net value per share</b>			<b>7.18</b>	<b>8.26</b>
<b>Net value per share diluted for options</b>			<b>7.17</b>	<b>8.24</b>

WMC has been valued by aggregating the estimated fair market value of WMC's businesses and other assets and deducting net borrowings. Net borrowings are based on WMC's net debt and estimated cash position as at 31 December 2004. The valuation is appropriate for the acquisition of WMC as a whole.

The principal approach to valuing WMC's major assets was by discounted cash flow analysis. A number of different scenarios were developed for each asset. The production rates and operating and capital costs assumed in each scenario were reviewed in detail by independent technical specialists, AMC. The discounted cash flow models project cash flows from 1 January 2005 onwards. Cash flows for Olympic Dam, WMC's nickel assets and the QFO fertilizer business were projected in US dollar terms.

Projected ungeared cash flows were discounted to a present value using nominal discount rates of 8.5-9.5% for Olympic Dam and WMC's nickel assets and 8-9% for QFO. Net present values were determined for each scenario across a range of commodity prices and discount rates. Values denominated in US dollars were converted to Australian dollars at a spot exchange rate of A\$1.00=US\$0.76.

AMC valued WMC's exploration interests and interests in developing projects.

The multiples of earnings implied by the valuation of WMC are compared with the earnings multiples for large diversified resources companies in the following table:

**WMC Valuation Implied Earnings Multiples**

	EBITDA		EBITA	
	Multiples		Multiples	
	2004F	2005F	2004F	2005F
<b>WMC Valuation - Low</b>	<b>6.5</b>	<b>6.6</b>	<b>10.1</b>	<b>10.3</b>
<b>- High</b>	<b>7.5</b>	<b>7.5</b>	<b>11.5</b>	<b>11.8</b>
BHP Billiton	7.2	6.8	8.7	8.2
Rio Tinto	11.1	7.8	15.4	9.7
Anglo American	7.6	7.0	10.7	10.0
Xstrata	6.4	5.7	8.9	7.8
CVRD	7.9	6.0	8.2	6.8



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The multiples for the comparable companies are based on share market prices: they do not incorporate a premium for control. The multiple analysis needs to be assessed with some caution. Comparisons between WMC and the large diversified resources companies are difficult because of differences in asset mixes and growth opportunities. Moreover, the earnings forecasts for WMC and the comparable companies (upon which the multiple analysis is based) do not necessarily incorporate identical assumptions regarding commodity prices and exchange rates. Overall, however, Grant Samuel believes that the multiple analysis supports the valuation of WMC in the range \$7.17-8.24 per share.

### **9.2 Methodology**

The value of WMC has been assessed by aggregating the estimated market value of its businesses and other assets, deducting external borrowings and adjusting for the mark to market value of WMC's hedge portfolio. The value of each of the major businesses has been estimated on the basis of fair market value as a going concern, defined as the maximum price that could be realised in an open market over a reasonable period of time assuming that potential buyers have full information. Other assets have been valued on the basis of estimated net realisable value.

There are four primary methodologies commonly used for valuing businesses and assets:

- i) capitalisation of earnings or cash flows,
- ii) discounting projected cash flows,
- iii) industry rules of thumb, and
- iv) estimation of the aggregate proceeds from an orderly realisation of assets.

Each of these valuation methodologies has application in different circumstances. The primary factor in determining which methodology is appropriate is the actual practice adopted by purchasers of the type of businesses and assets involved.

Grant Samuel's primary approach to estimating the value of the WMC's major businesses has involved the calculation of net present values by discounting expected cash flows. Cash flows are discounted using a discount rate that reflects the risk associated with the cash flows. Discounting of projected cash flows has a strong theoretical basis and is particularly appropriate for valuing mining and resource based projects with depleting ore reserves and varying production levels and capital requirements. It is the primary method of valuation in the mining and resources industries.

Operating and financial models for each of the key assets were prepared by WMC on the basis of business plans for each business. On the basis of these models, Grant Samuel and AMC jointly developed a number of scenarios for the future development of each of the key assets. The production rates, operating and capital costs and other key technical assumptions for each scenario were reviewed and amended, as appropriate, by AMC. Net present values for each business were calculated on an ungeared after-tax basis as at 31 December 2004. The net present values take into account projected tax depreciation based on the tax written down value of WMC's asset base and the benefit of group tax losses that have been allocated to individual operating businesses having regard to expected earnings contributions.

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Alternative valuation methodologies have been considered as secondary evidence of value. In particular, in some instances the estimates of value have been reviewed in terms of earnings multiples. These alternative approaches to valuation are useful in reviewing the results of a discounted cash flow valuation since the discounted cash flow valuation is typically sensitive to relatively small changes in the assumptions adopted in relation to a range of variables.

The values determined for WMC are appropriate for the acquisition of the company as a whole and accordingly incorporate a premium for control. A value determined on this basis would usually exceed the value implied by the price at which shares trade on the stock exchange in the absence of a takeover offer. Sharemarket trading typically represents transactions in small parcels of shares ( portfolio interests ). Portfolio interests are normally priced at a discount to underlying value to reflect the lack of control and lack of access to cash flow and taxable income.

**Table of Contents****9.3 Key Assumptions**

The general pricing and exchange rate assumptions adopted in the discounted cash flow valuation analysis for WMC are summarised in the following table:

**General Assumptions and Commodity Price Scenarios**

		Year ending 31 December					
		2005	2006	2007	2008	2009	
<b>Exchange rates</b>							
A\$1.00=US\$		0.75	0.74	0.73	0.72	0.71	
<b>Metals prices (real)</b>							
Copper	LME (US\$/lb)	High	1.30	1.20	1.10	1.05	1.05
		Low	1.20	1.10	1.00	0.95	0.95
Nickel	LME (US\$/lb)	High	5.70	5.30	4.60	4.00	4.00
		Low	5.50	5.10	4.40	3.80	3.80
Uranium -	(US\$/lb)	High	22	22	22	22	22
		Low	20	20	20	20	20
Diammonium phosphate	(US\$/tonne)	High	221	210	210	210	210
		Low	200	190	190	190	190
Gold	(US\$/oz)	Spot	440	440	440	440	440

*Note: LME represents London Metal Exchange. Diammonium phosphate prices are quoted FOB Tampa, Florida.*

Exchange rate assumptions reflect forward rates in the capital markets at the time this report was prepared, with the A\$ declining against the US\$. US inflation rates have been assumed to remain constant at 2.5% per annum. Market expectations are for Australian inflation rates of 2.5%. However, Grant Samuel has assumed that costs at WMC's mining operations will increase at faster rates, reflecting the depreciation of the A\$ against the US\$.

Grant Samuel's long run price assumptions for nickel and copper are at the high end of the range of expectations of market commentators and analysts (at least in US\$ terms). Grant Samuel's long run assumptions reflect:

the recent and substantial fall in the US\$, which has had the effect of increasing the relative prices (in US\$ terms) of a wide range of commodities, currencies and other internationally traded assets; and

a judgement that continued strong growth in the Chinese economy will underpin commodity demand in the medium and longer term.

On the other hand, Grant Samuel's commodity price assumptions in A\$ terms are modest by comparison with recent realised A\$ commodity prices, as set out in the following table:

**Comparison of Assumed and Historical A\$ Commodity Prices**

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>Grant Samuel Long Term (mid-point)</u>
Copper (A\$/lb)	1.41	1.38	1.31	1.25	1.74	1.32
Nickel (A\$/lb)	6.64	5.17	5.69	6.72	8.44	5.13

Grant Samuel's exchange rate and commodity price assumptions are interdependent. In Grant Samuel's view, it would not be appropriate to significantly revise either exchange rate or commodity price assumptions on an individual basis and any analysis based on such an individual revision may be misleading.

It should be noted that the value of WMC could vary, perhaps significantly, with changes in exchange rates or changes in commodity price expectations, potentially resulting from factors such as shifts in global growth expectations, revised economic policy settings in major economies or changed attitudes to international security issues.

**Table of Contents****9.3.1 Nickel**

Grant Samuel has assumed a long term nickel price of US\$3.80 4.00 for valuation purposes. Short term prices have been assumed having regard to this long term price assumption and to nickel forward and futures prices. The nickel prices adopted for valuation purposes are:

**Nickel price assumptions (US\$ real)**

<b><u>Year ended 31 December</u></b>	<b><u>2005</u></b>	<b><u>2006</u></b>	<b><u>2007</u></b>	<b><u>2008</u></b>	<b><u>Long term</u></b>
High	5.70	5.30	4.60	4.00	4.00
Low	5.50	5.10	4.40	3.80	3.80

The nickel price assumptions reflect, in part, a judgement that continued strong nickel prices will be necessary to support the new nickel projects (principally laterite projects) that will be required to replace existing production and satisfy demand growth.

The nickel price assumption compared to long term nickel prices in US\$ terms is shown below:

*Source: Bloomberg*

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The nickel price assumption of \$3.80 - 4.00 reflects in part a significant weakening of the US\$ against other major currencies. The charts below show the nickel price in nominal and real Japanese yen, Australian dollar and Euro terms:

*Source: Bloomberg*

*Source: Bloomberg*

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*Source: Bloomberg*

Grant Samuel's long term nickel price assumption in real A\$ terms is below the historical real A\$ nickel price for most of the period reviewed.

The nickel forwards and futures market is consistent with the short term assumptions adopted for valuation purposes:

*Source: Bloomberg*

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Growth in global consumption of nickel is underpinned by strong demand in China (where primary nickel consumption is expected to grow at a rate of approximately 10% per annum in the period to 2010, and account for approximately half of the total world growth in nickel consumption over the next five years):

Further detail on the nickel industry is set out in Appendix 3.

**9.3.2 Copper**

Grant Samuel has assumed a long term copper price of US\$0.95-1.05 for valuation purposes. Prices are assumed to remain constant in real terms from 2008 onwards. Short term prices have been estimated having regard to the long term price assumption and to copper forward and futures prices.

Copper cathodes from Olympic Dam are marketed under the brand name OLYDA. Annual contracts for OLYDA are generally agreed at a modest premium to the LME price, reflecting the security of supply. The 2005 premium assumption of US\$0.06 per lb reflects the contracts that WMC has recently concluded (this represents a significant increase on the 2004 premium of approximately US\$0.04 per pound and the 2003 premium of approximately US\$0.02 per lb). The copper prices adopted for valuation purposes are:

**Copper Price Assumptions**

<u>Year ended 31 December</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>Long term</u>
<b>Average price per lb (LME) (US\$ real)</b>					
High	1.30	1.20	1.10	1.05	1.05
Low	1.20	1.10	1.00	0.95	0.95
<b>OLYDA premium per lb (US\$ real)</b>	0.06	0.04	0.03	0.03	0.02
<b>Total price assumed (A\$ real)</b>					
High	1.79	1.63	1.49	1.42	1.41
Low	1.66	1.50	1.36	1.39	1.28



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The price assumption compared to long term copper prices in US\$ terms is shown below:

*Source: Bloomberg*

The copper price assumption of US\$0.95-1.05 reflects in part a significant weakening of the US\$ against other major currencies. The charts below show the nickel price in nominal and real Japanese yen, Australian dollar and Euro terms:

*Source: Bloomberg*

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*Source: Bloomberg*

*Source: Bloomberg*

Grant Samuel's copper price assumptions (in A\$ terms) are at the low end of real A\$ copper prices since 1986.

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The copper forwards and futures market is consistent with the short term assumptions adopted for valuation purposes:

*Source: Bloomberg*

In 2003 and 2004, copper consumption exceeded production and stocks were drawn down. Price increases reflected continued strong demand from China and the disruption of mine supplies from the Grasberg mine in Indonesia. Between 1997 and 2003, global copper consumption increased at a rate of 3.3% per annum, although growth excluding China was only 1.3%. China's infrastructure development is underpinning growth in demand, and in 2002 China surpassed the United States as the world's largest copper consumer. Chinese copper consumption is estimated to grow at approximately 10% in 2005 and 7% in 2006 and 2007. The chart below illustrates actual and forecast copper consumption:

*Source: WMC.*

Further information on the copper industry is set out in Appendix 3.

**Table of Contents****9.3.3 Uranium**

Grant Samuel has assumed a long term uranium price of US\$20.22/lb for valuation purposes. The uranium prices actually realised by WMC in the period to 2009 will be based on contract arrangements for in excess of 85% of WMC's production over that period. The contract prices are much lower than current spot prices, reflecting the significantly lower uranium price levels when the contracts were agreed, and pricing mechanisms that take little account of spot prices. WMC has requested that Grant Samuel not disclose the contract prices for reasons of commercial sensitivity.

The uranium spot prices adopted for valuation purposes are:

**Uranium price assumptions (US\$ real)**

<b>Year ended 31 December</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Long term</b>
<b>Spot price (real US\$/lb)</b>					
High	22	22	22	22	22
Low	20	20	20	20	20

Grant Samuel's modelling is based on WMC's contracted uranium prices for volumes contracted through to 2009 and spot prices for the remaining production. The long term price assumption compared to historical uranium prices in US\$ terms is shown below:

*Source: Bloomberg, WMC*

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The price assumption compares with price forecasts from various industry commentators as follows:

*Source: WMC*

The forecast shortfall in uranium supply as a result of reducing secondary supplies of uranium has received significant attention recently. The Olympic Dam expansion has the potential to fill much of this expected shortfall (removing the need for higher cost producers to commence production and thus constraining price growth to some extent). The chart below shows the expected shortfall and Olympic Dam's ability as a low cost producer to meet requirements:

*Source: WMC*

Over time, additional exploration is likely to lead to additional production that is not currently factored into scheduled production estimates. However, there is a significant lead time before production commences. On the demand side, growth is expected to be modest (approximately 1-2% per annum) but consumption should be relatively stable as nuclear power producers have no alternatives other than to moderate uranium usage to some extent through greater enrichment of the tails assay (which would require expansion of current enrichment capacity).

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Additional information on the uranium industry is set out in Appendix 3.

### **9.4 Olympic Dam**

WMC's Olympic Dam operations have been valued in the range US\$3.7 – 4.1 billion.

Olympic Dam is a world class operation with low production costs, a very long mine life and resources sufficient to support a major expansion in production volumes. The valuation reflects both the value of the current operations and the potential to exploit the resource base of approximately 3.8 billion tonnes through a substantial expansion.

The valuation is based on a discounted cash flow analysis of two principal scenarios for the long term development of Olympic Dam. The scenarios present alternative production plans for the Olympic Dam resource:

Scenario A is based on long term production at an average rate of 235,000 tpa of copper (reaching a rate as high as 265,000 tpa in 2012) and 6,400 tpa of uranium. This scenario reflects WMC's current operational plan for Olympic Dam, which assumes that Olympic Dam will be able to maintain production at levels marginally greater than nameplate capacity through incremental expansion and debottlenecking. This scenario is based on an optimisation of the current underground operations in the northern region of the ore body and expansion of underground mining methods to the southern region (with pre-development in this region commencing in 2006); and

Scenario B is based on long term production at an average rate of 455,000 tpa of copper from 2010 (reaching a rate as high as 520,000 tpa in 2012) and 13,800 tpa of uranium, based on the continuation of underground mining in the north (reducing to 5.0 mtpa of ore by 2010) and development of an open pit mining operation in the southern region of the ore body. The mining of the open pit commences in 2010 in this scenario and reaches a mining rate of 40.0 ktpa of ore by 2013. This scenario broadly reflects work undertaken by WMC to date on a prefeasibility study as well as AMC's judgements as to estimates of grade, mining and processing rates and capital and operating costs.

Scenario A is generally consistent with the current operations at Olympic Dam, while Scenario B reflects the early stage analysis in the pre-feasibility study, and is based on broad estimates of capital and operating costs.

The DCF analysis was based on cash flow models prepared by Grant Samuel with production and cost scenarios developed for valuation purposes by AMC. AMC's scenarios were derived from models prepared by WMC, which were reviewed and amended by AMC as appropriate. The models forecast cash flows for a 30 year period in Scenario A and a 33 year period in Scenario B. Terminal values were calculated for each scenario to reflect the value that would be realised after the forecast period (a further 40 years of operations in the case of Scenario A and 30 years in the case of Scenario B, based upon advice from AMC as to the likely remaining mine life). The cash flow models project nominal ungeared cash flows from 1 January 2005 and incorporate the benefit of \$230 million of WMC's tax losses. Cash flows were projected in US dollar terms. Projected A\$ cash flows (operating and capital costs) were translated to US\$ at rates approximating A\$: US\$ forward rates. Present values were calculated for each of the scenarios for a range of copper prices, uranium prices, discount rates, and cost inflation assumptions.

Grant Samuel's valuation range is based on the results of the DCF analysis and sensitivity analysis summarised in this section. The valuation range reflects:

the additional value realisable through an expansion of Olympic Dam as contemplated in Scenario B. AMC considers that an expansion is likely at Olympic Dam, given the size of the resource. Scenario B assumes that the capital expenditure required to upgrade the treatment plant and mine to a capacity of 500,000 tpa will be \$5 billion. This assumption is based on a very preliminary estimate and AMC has advised that the capital costs could be in the order of \$4.3 to \$6.3 billion. Calculated net present values are highly sensitive to changes in assumptions, particularly regarding commodity prices, exchange rates and inflation. An increase of 10% in operating costs reduces the NPVs calculated for Scenario B by over US\$900 million, and a delay of five years in the commencement of the expansion would have a

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negative impact of approximately US\$190 million on the NPV. Given these uncertainties, in Grant Samuel's view it is not appropriate to include the incremental NPV of Scenario B in full in the valuation of Olympic Dam;

the importance of uranium production to the economics of Olympic Dam. Uranium production currently contributes approximately 20% of Olympic Dam's overall revenue stream. The recent sharp rise in the uranium price (the full impact of which will not be reflected in Olympic Dam's profitability until current uranium supply contracts expire in 2009) has focussed attention on this resource. While political and environmental concerns regarding nuclear power production create some uncertainty as to the security of the uranium revenue stream in the long term, a growing focus on greenhouse gas reduction could ultimately favour nuclear power generation. In the medium term, uranium demand is expected to be relatively stable as nuclear power continues to make up a significant part of the energy mix in many countries. Nuclear power producers have no alternative other than to continue to consume uranium (although they can moderate uranium consumption to some extent by using a lower tails assay in enrichment, dependent on the availability of sufficient enrichment capacity). In addition, the cost of uranium makes up only a small part of the total cost of electricity generated from nuclear power plants, meaning that uranium demand should be relatively insensitive to uranium prices. Even if political pressure does lead to changes in the energy mix in particular countries or regions in the longer term, there is a significant lead time to develop alternative sources of energy capable of replacing nuclear power generation to any meaningful extent; and

the option value inherent in the Olympic Dam project, which is accentuated by the extremely long project life. Management's ability to change production rates, operating strategies and other aspects of the project means that significant positive and negative movements in the copper or uranium prices over the life of the project would have disproportionately positive impacts on the value of Olympic Dam. Olympic Dam may be able to take advantage of future technological improvements or other developments to mine and treat mineralisation that is not currently economic. Given the very long project life, even after the contemplated expansion of production to around 500,000 tpa, it is reasonable to expect further project expansions in the future.

The following table summarises projected production and costs for each of the two scenarios:

**Olympic Dam Key Operating Assumptions**

<b>Year ended 31 December</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010-2030</b>
<b>Scenario A</b>						
Copper (000 tonnes)	226.5	218.7	237.1	228.1	203.7	5,027.8
Uranium (000 tonnes)	4.8	5.4	5.9	6.3	6.1	139.3
Cash cost of production (USc/lb) (real)	0.46	0.39	0.24	0.22	0.26	0.18
Capital expenditure (A\$ millions) (real)	170.1	211.8	178.9	216.2	307.5	1,713.9
<b>Scenario B</b>						
Copper (000 tonnes)	226.5	218.7	237.1	228.1	203.7	9,571.5
Uranium (000 tonnes)	4.8	5.4	5.9	6.3	6.1	289.8
Cash cost of production (USc/lb) (real)	0.46	0.39	0.24	0.28	0.36	0.13
Capital expenditure (A\$ millions) (real)	191.1	235.4	202.5	1,852.0	2,367.9	4,388.5

*Note: Cash cost per pound of copper production calculated allowing for uranium, gold and silver credits.*



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Scenario A assumes an increase in production from an estimated 224,000 tonnes of copper for the year ended 31 December 2004 to over 265,000tpa by 2012, after which copper production stabilises at around 230,000tpa:

The most recent optimisation project at Olympic Dam led to an increase in the plant's nameplate capacity to 235,000 tpa of copper, and the plant has been operating at these levels in recent months. Scenario A assumes that production will ultimately reach a maximum rate of 265,000 tpa, and AMC has advised that it is reasonable to expect the plant to operate at this higher capacity with the investment of additional capital in the order of \$110 million over 5 years. Over the period to 2030, ore grades decline from approximately 2.2% Cu to 1.9% Cu, and the mining rate increases from 9.3 million tpa to 12.3 million tpa.

It is assumed that the current flowchart is retained and, in particular, that two stage smelting is not needed to address the issue of a declining Cu:S ratio. While the Cu:S ratio is below the design parameters of the smelter, WMC expects that it will be able to find suitable ore for single stage smelting for at least another 20 years. Scenario A assumes a major smelter reline in 2009 at a cost of \$110 million, and that the Robinson Shaft is recommissioned. The scenario also assumes annual savings of \$50 million in real terms from 2007. These cost savings relate primarily to optimisation of the backfill system (backfill currently comprises approximately 30% of the total mining cost at Olympic Dam), supply chain cost reductions, maintenance improvements and reductions in diesel consumption. In each case, there are projects in progress targeted at achieving these projected cost savings, and AMC considers it reasonable to include these for valuation purposes. An estimate of capital expenditure required to achieve these savings has been included in the production and cost scenario developed by AMC. Scenario A assumes approximately 400 Mt of ore is mined over the forecast period to 2034, compared with reserves of 730 Mt. Mining operations are assumed to continue until 2075. The value of production from 2035 to 2075 is captured in a terminal value, calculated as at the end of 2034. The terminal value assumes that cash profitability will remain constant in nominal terms (and therefore decline in real terms) to reflect, among other things, increased operating costs and a potential decline in grades. Cash profitability has been modelled on the basis of the average cash flow for the 15 years ending 2034.

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The chart below indicates the cash flow profile for Scenario A using mid point prices:

From 2010 onwards, free cash flow is generally in the order of US\$250-300 million in real terms, reflecting increased production volumes and the re-pricing of Olympic Dam's uranium production. Uranium is currently sold from Olympic Dam under long term contracts that reflect historically low spot prices. These contracts account for almost all of Olympic Dam's uranium production through to 2009. The impact of the price assumption of US\$20 - 22/lb only becomes significant from 2010 onwards, as illustrated below:

Scenario B has been developed to reflect the value that could be realised through a significant expansion of the Olympic Dam mining operations. The scenario assumes an open pit mining operation in the southern area of the ore body and the continuation of the current underground mining in the northern area of the ore body. The scenario reflects pre-feasibility stage work. The pre-feasibility study is approximately 30% complete and both WMC and AMC has advised that, at this stage, open pit and block caving mining methods remain potentially viable, together with a range of processing options. WMC's intention is to select a preferred mining and processing method by late 2005. For valuation purposes, an open pit operation was adopted as this is

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considered by WMC to be the more likely option. Scenario B incorporates \$50 million of expenditure in 2005 to complete the pre-feasibility study and \$75 million in each of 2006 and 2007 to complete the feasibility study.

Scenario B assumes that production will reach 500,000 tpa of copper by 2012, based on mining 40.0 mtpa of ore. The copper production profile is shown below:

Scenario B assumes that capital expenditure of \$5 billion is incurred over the period 2005-2010 on developing the open pit and expanding the processing plant (including the addition of a two stage smelter). The projected ore in the pit is 7,700 million tonnes at an average grade of 1.1% copper, 0.4 kg/t uranium, 0.6 g/t gold and 2.4 g/t silver. Operations are assumed to continue until 2067, with the value of the last 30 years of operations captured in a terminal value calculated at the end of 2037. The terminal value assumes that cash profitability will remain constant in nominal terms (and therefore decline in real terms) to reflect, among other things, increased operating costs and a potential decline in grades. Cash profitability has been modelled on the basis of the average cash flow of the 15 years ending 2037.

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The following chart shows the cash flow profile for Scenario B using mid point prices:

From 2011 onwards, the expanded Olympic Dam generates annual free cash flows in the range US\$500-600 million in real terms.

WMC's 2005 budget allocates \$40 million of corporate overhead to Olympic Dam, together with budgeted cost recoveries (for services provided to the Olympic Dam operation on a chargeable basis) of \$17 million. Grant Samuel has estimated that approximately \$25 million of these allocations and recoveries could be saved by a potential acquirer and accordingly has assumed total allocations and recoveries of \$32 million for valuation purposes.

A US inflation rate of 2.5% has been adopted for valuation purposes, consistent with the difference in yields on long term US government treasury bonds and inflation indexed bonds. Capital and operating costs are assumed to increase in A\$ terms at a rate greater than US\$ inflation, reflecting Grant Samuel's assumption of a long term decline in the A\$ against the US\$ and the consequent impact on the A\$ cost of US\$ inputs.

The following table summarises the results of a discounted cash flow analysis for the two scenarios, based on A\$ cost inflation of 3.5%:

**Olympic Dam NPV Analysis (US\$ million)**

Scenarios	Discount Rate	Copper and Uranium Price Scenario		
		Low	Mid	High
		Copper US\$0.95/lb Uranium US\$20/lb	Copper US\$1.00/lb Uranium US\$21/lb	Copper US\$1.05/lb Uranium US\$22/lb
Scenario A	8.5%	3,408	3,823	4,238
	9.0%	3,160	3,546	3,932
	9.5%	2,940	3,301	3,662
Scenario B	8.5%	3,917	4,664	5,411
	9.0%	3,478	4,170	4,861
	9.5%	3,092	3,735	4,377

*Note: Mid prices represent an average of high and low prices.*

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The long life of the Olympic Dam mine makes the calculated DCF values particularly sensitive to inflation assumptions. The table below indicates the impact of reducing the A\$ cost inflation assumption to 3.0%:

**Olympic Dam NPV Analysis (US\$ million)**

Scenarios	Discount Rate	Copper and Uranium Price Scenario		
		Low	Mid	High
		Copper US\$0.95/lb Uranium US\$20/lb	Copper US\$1.00/lb Uranium US\$21/lb	Copper US\$1.05/lb Uranium US\$22/lb
Scenario A	8.5%	3,771	4,186	4,601
	9.0%	3,488	3,875	4,261
	9.5%	3,239	3,600	3,961
Scenario B	8.5%	4,715	5,462	6,209
	9.0%	4,201	4,893	5,584
	9.5%	3,750	4,392	5,034

*Note: Mid prices represent an average of high and low prices.*

The following diagram illustrates the sensitivity of the calculated DCF value to a range of valuation assumptions. The analysis is based on Scenario A, and assumes the mid-point commodity price scenario, a discount rate of 9.0% and cost inflation of 3.5%.

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The following chart illustrates the sensitivity analysis for Scenario B, based upon the same assumptions as above:

The valuation range of US\$3.7 - 4.1 billion represents high multiples of earnings:

**Trading Multiple Comparisons**

	<u>2003</u>	<u>2004F</u>	<u>2005F</u>
<b>EBITDA multiple (times)</b>			
Copper - weighted average	13.1	6.3	5.1
Uranium Cameco	29.4	12.8	10.2
<b>Olympic Dam</b>			
<b>High</b>	<b>55.0</b>	<b>13.2</b>	<b>12.7</b>
<b>Low</b>	<b>49.7</b>	<b>11.9</b>	<b>11.5</b>
<b>EBIT multiple (times)</b>			
Copper - weighted average	29.8	7.7	6.3
Uranium Cameco	68.7	20.2	14.4
<b>Olympic Dam</b>			
<b>High</b>	<b>na</b>	<b>29.2</b>	<b>25.3</b>
<b>Low</b>	<b>na</b>	<b>26.3</b>	<b>22.9</b>

Similarly, the production multiples implied by the valuation range are high:

**Production multiple comparisons**

<b>Historical production multiple (US\$/ 000 tonnes of copper)</b>	
Comparable Companies	
Simple average	9.2
Weighted average	9.2
<b>Olympic Dam (US\$/ 000 tonnes of copper)</b>	
<b>High</b>	<b>18.3</b>
<b>Low</b>	<b>16.3</b>

However, in Grant Samuel's view the multiples are reasonable:

Olympic Dam has a significantly longer mine life than each of the comparable companies (based on current reserves), with AMC estimating production in excess of 70 years in Scenario A and 60 years in Scenario B;

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uranium is a major contributor to revenues at Olympic Dam, and as old contracts expire and new contracts are entered into reflecting current spot market prices, this contribution will increase significantly (from current levels of approximately 20% to in excess of 30% by 2010). Increased uranium revenue will result in a significant increase in EBITDA. In Scenario A,

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Olympic Dam is projected to generate EBITDA of between US\$400 and US\$500 million in real terms from 2010 to 2030, of which approximately US\$85 million is expected to come from the increased uranium price, before allowing for increases in production;

the valuation range reflects the significant expansion potential at Olympic Dam. In Scenario B, Olympic Dam is projected to generate EBITDA of US\$900 million in real terms in 2010 following the expansion, and an average EBITDA in real terms of approximately US\$930 million over the period from 2010 to 2030;

the multiples for comparable copper producers are based on share market trading prices and do not incorporate a premium for control;

there has been a significant market rerating of uranium companies recently, with Cameco's share price increasing by 61% since the beginning of 2004 and 221% since the beginning of 2003. The share price of Energy Resources of Australia (68.4% owned by Rio Tinto), owner of the Ranger mine in the Northern Territory, has increased 93% since the beginning of 2004 and 283% since the beginning of 2003. Paladin Resources, an Australian listed company with one uranium project at feasibility study stage in Namibia and another project in Malawi being considered for a feasibility study in 2005, has seen its share price increase to around 50c from 2c at the beginning of 2002 and 5c at the beginning of 2003.

The overall valuation of WMC is fundamentally dependent on the value ascribed to Olympic Dam. Olympic Dam is a unique asset within the international resources sector. Despite the substantial scale of its current operations, it is essentially still at an early stage of its development. Its vast resource and very long mine life mean that there are a number of future development options for the project, some of which are not yet contemplated. Its value will be significantly affected by developments in the uranium market, which appears to be in a state of transformation. Accordingly, estimates of the value of Olympic Dam are inevitably imprecise.

Grant Samuel's valuation of Olympic Dam in the range US\$3.7 – 4.1 billion is substantially higher than the values attributed to Olympic Dam by market analysts. Differences in valuation can reflect a number of factors, including assumptions regarding mine life, production volumes, commodity prices, exchange rates, expansion potential and discount rates. The sensitivity analysis set out above demonstrates that relatively small changes in assumptions can have a significant impact on calculated net present values. Grant Samuel's review suggests that some of the differences between analysts' valuations of WMC and Grant Samuel's valuation reflect differing assumptions regarding mine life, expansion potential, and discount rates. In this regard:

the inclusion of a terminal value assumption to reflect AMC's views as to likely mine life contributes approximately US\$450 million to the NPV in Scenario A and US\$700 million in Scenario B, based on mid-point prices, a 9% discount rate and 3.5% cost inflation;

the expansion as modelled in Scenario B, based on mid-point commodity price assumptions, has an incremental DCF value of approximately US\$600 million; and

a 1% increase in the discount rate would reduce calculated DCF values by approximately US\$475 million in Scenario A and approximately US\$820 million in Scenario B.

## **9.5 Nickel Business Unit**

WMC's Nickel Business Unit has been valued in the range US\$2.4-2.7 billion.



The valuation reflects the value of current operations, the potential to delineate additional reserves at Leinster, Mount Keith and Yakabindie, and the real option value inherent in the Nickel Business Unit's operating life of more than 20 years. The valuation is based on discounted cash flow analysis, analysis of earnings multiples and consideration of other valuation benchmarks.

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The multiples implied by the valuation, together with the multiples at which comparable nickel companies are trading, are summarised in the following table:

**Nickel Business Unit Valuation Earnings Analysis**

	EBITDA			EBITA		
	2003	2004F	2005F	2003	2004F	2005F
<b>Nickel Business Unit</b>						
<b>Low Valuation</b>	<b>4.7</b>	<b>3.2</b>	<b>3.3</b>	<b>7.4</b>	<b>4.0</b>	<b>4.3</b>
<b>High Valuation</b>	<b>5.3</b>	<b>3.6</b>	<b>3.7</b>	<b>8.3</b>	<b>4.5</b>	<b>4.8</b>
Inco Ltd	18.6	5.2	3.8	49.7	6.1	4.3
Noranda Inc.	13.0	5.7	5.4	42.5	7.2	7.9
Falconbridge Ltd	10.0	5.0	3.9	18.1	5.6	6.4
Eramet	8.6	3.5	3.4	17.4	4.6	4.5
Norilsk NIC-MMC	6.2	3.8	3.9	8.2	4.7	5.0
Outokumpu OYJ	14.0	8.3	7.6	61.8	13.3	11.9
Minara Resources	5.5	3.4	3.9	7.6	4.1	5.0
Lionore Mining	7.5	na	na	10.2	na	na
Jubilee Mines NL	2.8	4.1	7.2	3.1	4.9	10.0

The multiples for the Nickel Business Unit reflect estimated full underlying value, while the multiples for the comparable companies reflect the value of portfolio interests: they do not include any premium for control.

Both the valuation of WMC's Nickel Business unit and the share price of comparable nickel companies imply relatively low multiples of forecast 2004 and 2005 earnings, reflecting a market expectation that nickel prices and earnings are likely to fall in the medium term. A number of the comparable companies have significant non-nickel businesses, which may explain the higher multiples at which they are trading. The multiples implied by the valuation of the Nickel Business Unit are modest by comparison with the multiples at which Inco and Minara (both relatively pure nickel companies) are trading. In the case of Inco this may reflect Inco's substantial growth prospects, with major developments committed for the Voisey's Bay and Goro projects. Overall, Grant Samuel believes the multiple analysis supports the valuation range for the Nickel Business Unit of \$2.4-2.7 billion (and arguably could support a higher valuation range).

For the purpose of discounted cash flow analysis Grant Samuel has developed cash flow models for two cases for the long term development of the Nickel Business Unit. Expected production volumes and operating and capital costs were assessed for each of these scenarios by AMC:

Scenario A is based on the existing operations of the Nickel Business Unit. It reflects AMC's judgement as to what can be reasonably expected to occur within the current business plan and given the Nickel Business Unit's current resource base. It assumes a significant extension of mine life at Leinster through mining the Perseverance resources below the current reserve base (ie. from 11 Level down to 14 Level), and an integrated development of Mount Keith and Yakabindie. Lower grade ore from Mount Keith and Yakabindie is treated through a new plant and low pressure leach circuit, to produce a mixed sulphide product (MSP) for sale to third parties. Operations continue until 2024; and

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Scenario B incorporates additional production from Leinster (based on finding new satellite resources in the area) and an extension of the mine lives of both Mount Keith and Yakabindie. Low grade ore is treated at Mount Keith to produce an hydroxide product (rather than the MSP for Scenario A), which is transported to the Kwinana Nickel Refinery for refining into nickel. The refinery s capacity is expanded to 100,000 tonnes of nickel per annum.

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The following table summarises the key operating parameters for Scenario A:

**NBU Scenario A Key Operating Assumptions**

Item	Units	2005	2006	2007	2008	Remaining	Total
						Life	/Average
						2009 - end	
<b>Kambalda</b>							
Ore mined & purchased	000t Ni	36.0	30.5	41.2	27.7	17.5	153.0
Ore processed	000t Ni	36.6	30.8	41.2	27.7	19.4	155.7
Nickel recovery	%	90.0	91.0	89.9	89.8	91.0	90.3
Concentrates output	000t Ni	32.9	28.1	37.1	24.8	17.6	140.6
Capital expenditure	A\$m	4.0	3.3	3.3	1.8	0.4	12.9
Cash costs (C1)	US\$/lb Ni	0.33	0.35	0.28	0.35	0.46	0.34
<b>Leinster</b>							
Ore mined	000t Ni	51.7	44.0	52.7	55.9	422.4	626.7
Ore processed	000t Ni	50.9	46.5	53.4	55.7	423.6	630.1
Nickel recovery	%	84.3	86.5	88.1	88.7	88.2	87.8
Concentrates output	000t Ni	42.9	40.2	47.0	49.4	373.5	553.1
Capital expenditure	A\$m	89.3	51.9	43.8	53.2	367.9	606.1
Cash costs (C1)	US\$/lb Ni	1.80	1.59	1.42	1.38	1.61	1.59
<b>Mount Keith</b>							
Ore mined	000t Ni	75.8	72.0	81.8	121.4	1,084.6	1,435.6
Ore processed	000t Ni	64.3	64.3	51.5	58.7	1,526.8	1,765.5
Nickel recovery	%	65.1	63.5	68.8	71.3	68.7	68.5
Concentrates output	000t Ni	41.8	40.8	35.5	41.8	1,049.1	1,209.0
Capital expenditure	A\$m	190.3	375.2	504.0	261.8	1,535.2	2,866.6
Cash costs (C1)	US\$/lb Ni	1.20	1.17	1.30	1.83	1.58	1.55
<b>Yakabindie</b>							
Ore mined	000t Ni					1,097.2	1,097.2
Capital expenditure	A\$m					1,506.2	1,506.2
Cash costs (C1)	US\$/lb Ni					0.13	0.13
<b>Smelter</b>							
Concentrate processed	000t Ni	110.4	110.1	115.6	115.8	1,411.7	1,863.5
Nickel recovery	%	96.4	96.4	96.4	96.4	98.8	98.2
Matte output	000t Ni	106.5	106.1	111.5	111.6	1,394.1	1,829.8
Capital expenditure	A\$m	40.3	21.0	60.8	195.7	161.9	479.6
Cash costs (C1)	US\$/lb Ni	0.30	0.30	0.24	0.24	0.29	0.28
<b>Refinery</b>							
Matte processed	000t Ni	68.6	71.5	67.7	81.6	1,132.7	1,422.1
Nickel recovery	%	97.9	97.9	98.0	98.0	98.2	98.1
Nickel metal output	000t Ni	67.1	70.0	66.4	80.0	1,111.8	1,395.3
Capital expenditure	A\$m	31.6	33.0	89.2	15.6	174.4	343.8
Cash costs (C1)	US\$/lb Ni	0.32	0.32	0.33	0.28	0.31	0.31
<b>Totals</b>							
Cash costs (C1) (before credits)	US\$/lb Ni	1.84	1.77	1.64	1.89	2.22	2.11
Cash costs (C1) (after credits)	US\$/lb Ni	1.63	1.57	1.47	1.74	2.15	2.02
Capital expenditure	A\$m	369.2	508.0	728.6	549.1	3,670.0	5,824.9

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*Note: Cash costs are based on direct cash production costs (C1 costs) and are expressed in terms of nickel metal. Cash costs have been converted to US\$ at a spot exchange rate of A\$1.00 = US\$0.76.*

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### *Scenario A*

The key assumptions and judgements upon which Scenario A is based are summarized as follows:

#### *Kambalda*

It is assumed that the treatment of ore for third parties and purchases of the resultant concentrate continues in significant volumes (30,000-40,000 tonnes of nickel in ore) for the period 2005-2007. Thereafter, as the various mines providing ore are progressively exhausted, third party ore treatment and concentrate purchase rapidly decline, ceasing in 2010. Total concentrate production to 2010 is 141,000 tonnes of nickel-in-concentrate.

#### *Leinster*

Leinster production is assumed to continue until 2018, based principally on the Perseverance underground mine. Total production from Perseverance is 28 million tonnes at 1.85% Ni, for 519,000 tonnes of contained nickel. Mining costs below the 11 Level have been factored up by 50% to take into account the expected deterioration of ground conditions and other difficulties associated with mining at depth. Mining from Perseverance is supplemented by modest production from the Harmony and 11 Mile Well open pits, and a further 3.4 million tonnes at 2.90% Ni from Cliffs and other underground resources. Annual nickel-in-concentrate production generally varies between 40,000 and 60,000 tonnes before commencing to decline in 2012, with total concentrate production for the life of the operations of 550,000 tonnes of nickel-in-concentrate.

Total capital expenditure over the life of the operation is approximately \$600 million, including mine development and sustaining capital.

#### *Mount Keith and Yakabindie*

Mount Keith and Yakabindie are developed on an integrated basis. Mining and processing of Mount Keith and Yakabindie ore is scheduled to take into account declines in concentrate sourced from Kambalda and (ultimately) Leinster, to ensure that the smelter at Kalgoorlie continues to operate at capacity.

Total material movements in the Mount Keith pit are expected to double to 40Mbcm by 2007, with an expansion of the mining fleet in 2005 and 2006. Waste stripping will be accelerated for the G and H cutbacks, with ore production from the G, H and I/J stages growing to reach a maximum of 26.0 mtpa. Mining at Yakabindie commences in 2010, at rates varying between 12 and 18Mtpa. A total of 196Mt ore of 0.56% Ni is mined over the life of the Yakabindie mine.

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The treatment plant at Mount Keith is significantly expanded. The CQIP gravity separation capacity is doubled in 2005, to allow the Fe:MgO upgrading of greater quantities of ore. A new concentrator for low grade ore, together with a low pressure leach circuit, commences operation at Mount Keith in 2008, treating approximately 7 million tonnes of ore per annum. The treatment plant for ROM ore is expanded with effect from 2010 by the installation of a new 7.5Mtpa concentrator module, to increase ore treatment capacity to 19Mtpa. From 2011 onwards significant quantities of ore are treated through the CQIP gravity circuit, to improve grade and the Fe:MgO ratio.

Mount Keith mining ceases in 2018, but the treatment plant is fed by ore from Yakabindie and low grade stockpiles until 2023. Nickel-in-concentrate output averages 70,000-80,000 tonnes for the period 2010-2022, for total production over the life of the operation of 1.2 million tonnes of nickel-in-concentrate. In addition, mixed sulphide product (MSP) production commences from the low pressure leach circuit in 2008, reaching a steady state by 2010 of around 40,000 tonnes of MSP containing 25,000 tonnes of nickel. Total production over the life of the operation is approximately 450,000 tonnes of nickel-in-MSP. Almost all concentrate produced is transported to the Kalgoorlie smelter for conversion to matte, with only very small amounts of concentrate sold to satisfy contractual obligations and on the spot market.

Total capital expenditure over the life of the operation is approximately A\$4.4 billion, including waste stripping of around A\$3.1 billion. Major capital expenditure items are the new treatment

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plant and low pressure leach circuit, with an estimated cost of approximately \$600 million, and the new 7.5 mtpa concentrator module, to increase ROM ore treatment capacity to 19 mtpa, at a cost of around \$330 million.

### *Smelter*

Smelter production is assumed to increase from 106,000 tonnes of nickel-in-matte in 2005 to a maximum of 126,000 tonnes of nickel-in-matte in 2011, before declining. Total nickel-in-matte production between 2005 and 2023 is 1.83 million tonnes. Of this, 410,000 tonnes are sold to third parties and the balance is transported to the Kwinana refinery. The current operating furnace is scheduled to be rebuilt in 2009. Instead, WMC is planning to replace the current furnace with a new furnace in 2008, at a total cost of approximately \$285 million. Avoiding a furnace rebuild will reduce the smelter downtime from 70 days to 14 days. The new furnace will be able to operate at a higher temperature than the current furnace, allowing a reduction in the minimum Fe:MgO ratio. The smelter is assumed to operate at an average Fe:MgO constraint of 5.3 to 2014 and 4.7 thereafter.

### *Refinery*

The refinery is assumed to operate at an initial capacity of 70,000 tpa, increasing to 80,000 tpa by 2008 through the installation of an additional leach circuit and reduction autoclave at a total capital cost of \$57 million. Production is maintained at this level subject to shut downs for maintenance, at a cost of approximately A\$20 million and 4,000 tonnes of Ni production, every three years.

### ***Scenario B***

Scenario B is based on increased production, through exploration success, improved plant performance and capacity upgrades.

Additional production is assumed from Leinster, Mount Keith and Yakabindie. At Leinster, two million tonnes of additional ore are mined from new satellite ore bodies, allowing the production of an additional 50,000 tonnes of nickel-in-concentrate over the life of the mine. At Mount Keith, mining of additional material below the floor and to the north of the current planned ultimate pit shell increases mine life by five years. Additional material is mined below the current proposed Yakabindie pit outline, to extend mine life by two years. As a result the Mount Keith ROM ore plant continues to operate at capacity until 2024, producing a total of 1.34 million tonnes of nickel-in-concentrate.

The LPL plant is configured to produce a hydroxide product rather than the mixed sulphide product assumed in Scenario A. As a result, the capital cost of the LPL plant is reduced by \$70 million. Total smelter nickel-in-matte production is 1.98 million tonnes. The capacity of the Kwinana refinery is upgraded to 100,000 tonnes of nickel per annum at an estimated capital cost of \$156 million, to allow the treatment of the hydroxide product from Mount Keith.



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The following chart shows projected nickel in concentrate production for Scenario A:

Concentrate production from Mt Keith increases in 2008 as the low grade ore concentrator commences production of concentrate for the low pressure leach plant. Concentrate production peaks in 2010 with the commencement of mining at Yakabindie and the expansion of the Mount Keith treatment plant to a capacity of 19 mtpa of ore.

The following chart shows projected nickel in concentrate production for Scenario B:

The conversion of further resources to reserves at Mount Keith and Yakabindie means that the Mount Keith treatment plant operates at full capacity until 2023.

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The following charts show projected production of exported nickel in concentrate, nickel in matte, nickel in mixed sulphide, and refined nickel metal for each of the cases:

Total nickel production peaks in 2010 with the commencement of mining at Yakabindie and then declines as first Leinster and then Mount Keith produce at progressively lower levels.

Nickel metal production averages close to 100,000 tonnes per annum after 2008, following expansion of the smelter to allow it to treat hydroxide from the LPL plant at Mount Keith.

WMC's 2005 budget allocates approximately \$41 million of corporate overhead to the Nickel Business Unit. Grant Samuel has estimated that approximately A\$33 million of these allocations and recoveries could be saved by a potential acquirer. In addition, WMC incurs costs in its Perth office to support the Nickel Business Unit of around \$60 million. Grant Samuel has assumed that an acquirer of the business could save approximately \$25 million of these costs.

A US inflation rate of 2.5% has been adopted for valuation purposes, consistent with the difference in yields on long term US government treasury bonds and inflation indexed bonds. Capital and operating costs are assumed to increase in A\$ terms at a rate greater than US\$ inflation, reflecting Grant Samuel's assumption of a long term decline in the A\$ against the US\$

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and the consequent impact on the A\$ cost of US\$ inputs. Grant Samuel has calculated net present values assuming operating and capital cost inflation in the range 3.0-3.5%.

Net present values have been calculated for each of the scenarios for a range of nickel prices and discount rates. They incorporate the benefit of \$830 million of WMC's tax losses and timing benefits. The calculated net present values, assuming operating and capital cost inflation of 3.5%, are summarised as follows:

**Nickel Business Unit - NPV Analysis (US\$ million)**

Scenario	Discount Rate	Prices		
		Low Ni = US\$3.80	Mid Ni = US\$3.90	High Ni = US\$4.00
Scenario A	8.5%	1,978	2,155	2,332
	9.0%	1,892	2,062	2,232
	9.5%	1,811	1,975	2,139
Scenario B	8.5%	2,390	2,583	2,777
	9.0%	2,288	2,474	2,661
	9.5%	2,192	2,373	2,551

The following diagram illustrates the sensitivity of calculated value to a range of valuation assumptions. The base case for the sensitivity analysis is Scenario A, assuming a nickel price of US\$3.90/lb and a discount rate of 9.0%.

The long life and substantial volumes of production for the integrated Mount Keith and Yakabindie operations result in value being most sensitive to mining costs and recoveries for Mount Keith/Yakabindie.

Grant Samuel's valuation of the Nickel Business Unit in the range US\$2.4-2.7 billion is at the high end of the calculated net present values. The valuation range takes into account both the NPV analysis and the following:

the supply of nickel is already relatively concentrated, with the top five nickel producers accounting for approximately 48% of world primary supply. There are few opportunities for existing participants to meaningfully expand the scale of their businesses through acquisition, or for new entrants to acquire a nickel business of substantial scale. In this context, potential acquirers of the Nickel Business Unit may be willing to attribute strategic value to the business to reflect its leading position within the industry;

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NPV results from DCF analysis are highly sensitive to assumptions regarding commodity prices, exchange rates, discount rates and other factors. Given this sensitivity, analysis of earnings provides useful evidence as to value. The earnings multiples implied by the valuation range of \$2.4-2.7 billion are clearly reasonable. Arguably, the multiples support a higher valuation for the Nickel Business Unit;

the real option value inherent in the long operational life of the Nickel Business Unit is not captured in the DCF analysis;

the real option value is in part provided by the Nickel Business Unit's smelter and refinery operations, which have the potential to deliver substantial value in addition to that generated by the Nickel Business Unit's resource base;

for both Scenarios A and B used in the DCF analysis, the smelter is not operating at full capacity from 2012 onwards. Additional discoveries (eg the successful development of a significant resource at Collurabbie) or purchases of concentrate have the potential to add considerable value through utilising the spare capacity. For example, the annual purchase and treatment of 18,000 tonnes of nickel-in-concentrate from 2012 to 2024 on commercial terms would increase net present values by more than US\$200 million;

no terminal value has been assumed in the NPV analysis, although in Scenario B there is residual ore to be treated from Yakabindie. If the Nickel Business Unit was able to sustain operations for an additional five years (through exploration success or otherwise), additional net present value of approximately US\$150-200 million would be generated; and

analysis of value based on production benchmarks needs to be treated with caution, because the analysis does not take into account key value drivers such as operating costs, development opportunities and operational life. However, implied value per unit of nickel production does provide some additional evidence as to value. The following table compares the value per tonne of annual production implied by the valuation of the Nickel Business Unit with the value per tonne of annual production implied by various nickel companies and projects:

**Production Multiple Comparisons**

	<b>Historical production ( '000 tonnes of nickel)</b>	<b>Historical production multiple (US\$/ '000 tonnes of nickel)</b>
<b>Nickel Business Unit - Low Valuation</b>	<b>94</b>	<b>25.5</b>
<b>- High Valuation</b>	<b>94</b>	<b>28.7</b>
Inco	187	41.5
Norilsk Nickel	239	45.3
Minara Resources	17	49.3
Lionore Mining	17	59.8
Jubilee Mines	12	46.3
<i>Simple Average</i>		48.4
<i>Weighted Average</i>		44.5

The higher multiples for the comparables may reflect particular growth opportunities or non-nickel income streams. For example, Inco is committed to the major Voisey's Bay and Goro projects. Norilsk generates significant revenue from copper and platinum group metal sales. Lionore has significant nickel growth opportunities in both Australian and Botswana and the Thunderbox gold mine.

Inco's Goro project provides some additional evidence as to value. Goro is expected to have a capital cost of around US\$1.9 billion, for annual production of 60,000 tonnes of nickel. This represents a capital cost of approximately US\$32 per tonne of annual production capacity.

In Grant Samuel's view the value per tonne of production implied by the valuation of the Nickel Business Unit is clearly reasonable, having regard to the evidence on comparable companies.

The valuation of the Nickel Business Unit does not take into account WMC's nickel exploration properties, which have been separately valued by AMC.

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**9.6 Fertilizers**

WMC's 100% interest in QFO has been valued in the range of US\$350-380 million, equating to a value of A\$461-500 million at an exchange rate of A\$1.00=US\$0.76.

The valuation reflects the current operations, the substantial resource base and the potential to increase production to levels above nameplate capacity. It also reflects the flexibility in the operations to vary the production of DAP, MAP and MAP-S to take advantage of market conditions. The valuation is based on a discounted cash flow analysis. WMC has prepared a financial model incorporating 30 year cash flow forecasts for QFO. The model and its major assumptions were reviewed and amended by AMC and Grant Samuel as appropriate. The model projects nominal ungeared cash flows from 1 January 2005. Expected production volumes, operating costs and capital costs were assessed for the scenario by AMC. Present values were calculated for a range of prices and discount rates.

The major assumptions used in the DCF analysis include:

long term production will be approximately 1.1 million tonnes per annum comprising approximately 530kt DAP and 570kt of MAP/MAP-S. Approximately 950kt are assumed to be sold domestically with approximately 150kt of DAP exported. From 2027 it is assumed the operation produces 100% MAP/MAP-S product, all sold domestically;

the DAP price, FOB Tampa, Florida, will fall to a long term real price of US\$200 per tonne by 2007. The DAP price was relatively stable in a range of approximately US\$190-210 per tonne from 1996 to 1998. From 1999 to 2002 the price declined substantially and DAP traded at levels of US\$130-140 per tonne, before recovering strongly in 2004 to trade at levels of US\$230-235 per tonne;

the long term MAP price will be at a US\$5 per tonne premium to the DAP price and MAP-S at a US\$10 per tonne premium, based on expected domestic market conditions;

the freight cost differential received by QFO into Australia declines in 2006 to longer term averages;

the mining and production costs and capital expenditure used in the DCF model have been reviewed by AMC and amended where appropriate;

the Mount Isa operation of Xstrata will continue to supply metallurgical gas to the WMC acid plant until 2020, but from 2014 production of metallurgical gas supply will fall by 40% as a result of the cessation of supply of concentrate from the Ernest Henry operation to Xstrata's smelter;

the long term real sulphur prices will be US\$45 per tonne (FOB Vancouver). QFO will continue to source sulphuric acid from Korea Zinc in Townsville; and

QFO expects to build up its inventories in 2005 to support increased sales to the Hi-Fert Joint Venture and additional working capital of approximately \$25 million is assumed in 2005.

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The following table summarises the production rate and production cost assumptions used in the DCF analysis:

### QFO - Key Operating Assumptions

	Year ended 31 December						
	2005	2006	2007	2008	2009	2015	2020
Ore mined (mt)	2.3	2.4	2.6	2.6	2.5	2.5	2.6
DAP (kt)	593	503	520	517	510	510	530
MAP (kt)	217	342	335	327	285	275	285
MAP-S (kt)	168	185	225	256	285	275	285
<b>Total MAP/DAP (kt)</b>	<b>978</b>	<b>1030</b>	<b>1080</b>	<b>1,100</b>	<b>1,060</b>	<b>1,060</b>	<b>1,100</b>
% nameplate capacity	100	106	111	113	109	109	113
Cash operating costs (real A\$/t)	272	259	250	253	254	261	257
Capital expenditure (real A\$/m)	32.9	52.0	18.5	12.4	38.1	44.1	14.0

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The following table summarises the results of the discounted cash flow analysis:

**QFO - NPV Analysis (US\$ million)**

Discount Rate	DAP Price Scenario		
	Low DAP	Mid DAP	High DAP
	US\$190/t	US\$200/t	US\$210/t
8.0%	251	355	457
8.5%	234	332	429
9.0%	219	312	403

The following diagram illustrates the sensitivity of the calculated value to a range of valuation assumptions. The base case for sensitivity analysis assumes long term DAP prices of US\$200 per tonne FOB Tampa, Florida and a discount rate of 8.5%.

The value of QFO is very sensitive to the cost of sulphuric acid. Sulphuric acid produced from the metallurgical gases at Mount Isa is significantly cheaper than other sources. An assumption that Mount Isa continued to supply 100% of current metallurgical gases until 2025 would increase the base case NPV by approximately US\$60 million (A\$80 million).

QFO has flexibility to adjust its product mix between DAP, MAP and MAP-S. An assumption that QFO changed to producing 100% MAP/MAP-S from 2017 and that all production was sold domestically would increase the base case NPV by approximately US\$10 million (A\$13 million).

Grant Samuel's valuation range is based on the results of the NPV analysis and sensitivity analysis summarised above. In addition, the valuation has regard to the following:

the valuation range implies multiples of 2005 Forecast EBITDA of approximately 8-9 times, which are broadly consistent with the multiples implied by the share prices of comparable listed companies;

QFO has a substantial share of the Australian market for DAP and MAP, and would be a strategic asset for a number of participants in the Australian fertilizer industry;

the plant has not yet operated consistently at nameplate capacity and has not generated any material returns on the investment by WMC, although recent performance trends are encouraging. The valuation assumes QFO will achieve long term production of 1.1 million tonnes per annum. The integrated nature of the operations increases the risk of a major failure requiring a prolonged



shutdown;

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the recent change to the ownership structure of Hi-Fert to include Elders and Landmark has the potential to significantly improve the domestic market penetration of QFO product. The revised ownership arrangements add considerable marketing strength and capability to support QFO's strategy of focussing on the domestic market and increasing MAP/MAP-S production;

although the phosphate rock is relatively low cost because of the mining method, the location of the project in central Queensland exposes the operation to significant logistical costs, both in getting key inputs to site and then transporting the product to Townsville. Cash costs are currently at approximately A\$230 per tonne (US\$175 per tonne at current exchange rates). This is relatively high having regard to long term DAP prices of around A\$265 per tonne (US\$200 per tonne). QFO's economics could be seriously affected by any material fall in fertilizer prices, especially if such a fall was not accompanied by a decline in the A\$:US\$ exchange rate, or material increases in operating costs such as the cost of sulphuric acid; and

in 2003, WMC conducted a strategic review of QFO which included discussions with a number of potential strategic partners and/or purchasers. That review did not result in any acceptable proposals being made to WMC in relation to QFO.

**9.7 Development Projects and Exploration Interests**

A total value of A\$385-590 million has been attributed to WMC's development projects and exploration interests.

**WMC - Development Projects and Exploration Interests (A\$ million)**

	<b>Low</b>	<b>High</b>
Corridor Sands	160	220
Yeelirrie	40	80
Exploration interests	185	290
<b>Total exploration interests</b>	<b>385</b>	<b>590</b>

AMC valued the Yeelirrie uranium project in the range A\$40-80 million and WMC's exploration interests in the range \$185-290 million.

Grant Samuel valued WMC's 100% interest in the Corridor Sands project in the range \$160-220 million.

The valuation has regard both to a discounted cash flow analysis and to the terms of WMC's acquisition of its interest in the project. Grant Samuel has developed a cash flow model based on a project development scenario prepared by AMC. This scenario in turn is based on the Bankable Feasibility Study for the Corridor Sands project completed by WMC in 2002. The scenario reflects updated assumptions in relation to the Rand/USD exchange rate and the effect of inflation. The scenario projects nominal ungeared cash flows for a 20 year period, with capital expenditure commencing in 2006 and production commencing in 2008. Expected production volumes, product prices, operating costs and capital costs were assessed for the scenario by AMC. Present values were calculated for two product price scenarios and a range of discount rates.

Key aspects of the DCF analysis are as follows

production is assumed to increase from 126,339 tonnes of slag in 2009, the first full year of production, to 964,500 million tonnes per annum in 2013, as the number of furnaces increases gradually from three to eight;

by comparison with the Corridor Sands feasibility study, adjustments have been made to reflect increased power and coal prices and the effect of inflation;

approximately 60% of capital costs are Rand based. Some mining and processing expenses are also Rand based. Grant Samuel has applied exchange rates approximating the USD/Rand forward exchange rates implied by the interest rate differential between the US and South Africa;

the project is subject to a royalty of 3% of revenue from the sale of heavy mineral products and a corporate tax rate of 17.5% for the first ten years of full production and 35% thereafter; and

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a terminal value has been calculated at the end of the 20 year period, reflecting the substantial resource base available for ongoing mining

Low and high case price assumptions were provided by AMC for chloride slag, slag fines to pigment producers and to the Chinese market, rutile, leucoxene, zircon, high purity pig iron and scrap iron;

The following table summarises the production and pricing assumptions used in the DCF analysis:

**Corridor Sands - Key Operating Assumptions**

	Year ended 31 December					2013 to 2017	2018 to 2027
	2008	2009	2010	2011	2012		
ROM Ore treated (Mt)	1.3	5.0	10.9	13.2	15.3	102.9	473.0
Production ( 000 t slag)		126	271	338	411	2,398	8,698
Product prices (USD)							
Chloride slag	350	350	355	355	355	355	355
Slag fines (pigment)	260	265	270	270	270	270	270
Slag fines (China)	225	230	235	235	235	235	235
Rutile	398	408	418	418	418	418	418
Leucoxene	358	368	378	378	378	378	378
Zircon	571	571	571	571	571	571	571
High purity pig iron	235	235	235	235	235	235	235
Scrap iron	120	120	120	120	120	120	120
PCP Recovery	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%
MSP Recovery	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%
Roasting Yield	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%
Slag Yield	55.3%	55.3%	55.3%	55.3%	55.3%	55.3%	55.3%
Capital Costs (A\$m)	333	132				217	112

The results of the discounted cash flow analysis are set out below:

**Corridor Sands - NPV Analysis (A\$ million)**

Discount Rate	Price Scenarios	
	Low	High
8.5%	287	443
9.0%	236	383

Calculated net present values are highly sensitive to product price assumptions.

Grant Samuel's valuation of Corridor Sands in the range \$160-220 million is a subjective assessment of current project value. Grant Samuel's valuation range is based on the results of the NPV analysis and has regard to the following:

the project is at a very early stage and a number of development risks remain;

expansion through the installation of additional furnaces at the rate projected is dependent on growth in mineral sands demand and cannot be assured;

there is a risk that rival slag producers will significantly expand production, or that new projects will commence production reducing potential sales volumes and prices;

the project's location in Mozambique exposes it to sovereign risk;

the IDC is expected to acquire a 10% interest in the project for US\$11 million; and

the project has a substantial resource base which could potentially support both a very long mine life and further expansions in production.

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The bottom end of the valuation range represents a modest premium to the value implied by the price paid by WMC for its 100% interest in the project (US\$115 million or A\$151 million at an exchange rate of A\$1.00=US\$0.76).

**9.8 Other Assets and Liabilities****9.8.1 Corporate Overheads**

WMC's corporate overheads for the 2005 financial year are expected to be around \$175 million. These overheads consist of approximately \$110 million of shared services costs, which are allocated to the business units, \$40 million of costs directly associated with individual operations and \$25 million of costs associated with the maintenance of WMC as a listed company.

Based on a review of the \$110 million of corporate costs allocated to the business units, Grant Samuel has assumed that approximately \$70 million of these costs could be saved by potential acquirers of WMC that have an existing presence in Australia. These savings have been reflected in the valuations of the individual operating businesses. Grant Samuel has assumed that of the residual head office costs of \$25 million, all but \$5-10 million would be eliminated. The cost of achieving these savings has been estimated at \$40-50 million.

The residual amount of \$5-10 million has been capitalised and added to the estimated one-off rationalisation costs to give a total capitalised corporate cost of \$100-150 million.

**9.8.2 Other Assets**

Other assets have been valued at A\$100-130 million:

**WMC - Other Assets (A\$ million)**

	<b>Low</b>	<b>High</b>
Hi-Fert	60	80
Venture capital and listed company investments	25	25
Technology	15	25
<b>Total Other Assets</b>	<b>100</b>	<b>130</b>

Grant Samuel has valued WMC's one third interest in the Hi-Fert business in the range \$60-80 million. The valuation represents high multiples of historical earnings but is consistent with estimated potential EBIT of around A\$20 million following the joint venture with Elders and Landmark.

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WMC's interests in venture capital investments and listed companies have been valued at current market values. WMC's technology interests have been valued by AMC.

### 9.8.3 Borrowings and Receivables

WMC's net borrowings for valuation purposes are summarised in the following table:

#### WMC - Net Borrowings

	<u>US\$m</u>	<u>A\$m</u>
Cash and near cash estimated at 31 December 2004		407
US borrowings	(705)	(927)
Net borrowings for valuation purposes		<u>(520)</u>

US\$ denominated debt has been converted to Australian dollars at the spot rate of A\$1.00 = US\$0.76.

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Other receivables are summarised as follows:

**WMC - Other Receivables (A\$ million)**

	<b>Low</b>	<b>High</b>
	<b>—</b>	<b>—</b>
Structured financing	90	110
Insurance refund	16	16
	<b>—</b>	<b>—</b>
<b>Total other receivables</b>	<b>106</b>	<b>126</b>
	<b>—</b>	<b>—</b>

WMC has a receivable relating to a structured financing arranged in 1997. Grant Samuel has valued the receivable in the range \$90-110 million based on discounted cashflow analysis. The other receivable of \$16 million is an estimate of an insurance payment relating to a claim by the Nickel Business Unit.



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### **10 Evaluation of the Offer**

#### **10.1 The Xstrata Offer is not Fair**

The Xstrata Offer of \$6.35 per share is below Grant Samuel's valuation range of \$7.17-8.24 per share. Accordingly the Xstrata Offer is not fair.

#### **10.2 The Xstrata Offer is not Reasonable**

A takeover offer can be reasonable, even if it is not fair, if there are circumstances that suggest that shareholders are unlikely to realize full underlying value and would be better off accepting the offer than not.

The Xstrata Offer price of \$6.35 represents a significant premium to WMC's pre-bid price. It is a 24% premium to the share price of \$5.13 immediately prior to the announcement of Xstrata's approach to WMC on 28 October 2004, and a 25% premium to the weighted average share price of \$5.06 for the three months preceding 28 October 2004.

WMC shares could trade below the Xstrata Offer price in the absence of the Xstrata Offer or some other proposal (although Grant Samuel believes that there is every prospect that a higher offer will be forthcoming, either from Xstrata or some third party). However, substantial additional information has been provided to investors since the announcement on 28 October 2004 of Xstrata's approach to WMC, in relation to issues such as the proposed Olympic Dam expansion and the strengthening of the uranium market. There appear to be reasonable grounds to expect that, even in the absence of the Xstrata Offer, WMC shares would trade at prices significantly higher than the share prices prevailing prior to the announcement of Xstrata's approach to WMC.

On the other hand, the Xstrata Offer price is well below Grant Samuel's valuation range of \$7.17-8.24 per share.

WMC shareholders should recognise that there is significant uncertainty regarding any estimate of the full underlying value of WMC. The valuation of WMC is highly sensitive to small changes in assumptions regarding future commodity prices and exchange rates. Recent years have seen significant shifts in commodity prices and exchange rates over short periods of time, which highlights the difficulty of forecasting commodity prices and exchange rates for a very long period of 50-100 years. The valuation is fundamentally dependent on the value ascribed to Olympic Dam. This unique asset is difficult to value with any precision, given the relatively early stage of its development, its vast resource base, very long life, range of potential development options and exposure to the rapidly shifting uranium market.

In this context a wide range of full underlying values could reasonably be estimated for WMC. Grant Samuel's valuation range of \$7.17-8.24 represents a 40-61% premium to the WMC share price immediately prior to the announcement of Xstrata's approach to WMC on 28 October 2004, and a 42-63% premium to the weighted average share price of \$5.06 for the three months before. Although shares normally trade at a discount to full underlying value, the differential between WMC's pre-bid share price and the valuation range is large. In Grant Samuel's view there are credible reasons to explain the differential between the price at which WMC shares were trading before the news of the Xstrata approach and the valuation range:

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notwithstanding strong operating performance over the last twelve months, serious operational issues at Olympic Dam in 2001 and 2003 and poor historical returns on capital invested in the project may have resulted in lingering scepticism on the part of analysts and investors as to the prospects for Olympic Dam;

in particular, analysts and investors may have been focused on the likely near term performance of Olympic Dam rather than the potentially significant additional value to be generated by a medium term expansion of the operation. WMC has only recently released additional information highlighting the expansion prospects for Olympic Dam;

the substantial strengthening of the uranium market in recent times, together with WMC's opportunity to materially increase its uranium sales through an expansion of Olympic Dam, mean that the Olympic Dam uranium resource is now a major source of value for WMC. However, until recently uranium was generally viewed as no more than a by-product of the Olympic Dam copper production process; and

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the valuation incorporates substantial head office cost savings that should be available to potential acquirers of WMC that have established operations in Australia. These cost savings would not have been reflected in the WMC pre-bid share price.

However, debates about the full underlying value of WMC are of only limited relevance, given WMC's recent share market trading. Since the announcement of the Xstrata Offer, WMC shares have traded in the range \$6.98-7.32. The weighted average share price over that period has been \$7.07. The fundamental issue for WMC shareholders is how to respond to the Xstrata Offer in a way which maximises the value of their shareholdings, given current share prices.

It is almost certainly the case that the recent WMC share price reflects expectations of a higher offer, from Xstrata or from some other acquirer. In Grant Samuel's view, an expectation of a higher offer, whether from Xstrata or a third party, and whether in the near future or later, is realistic. The WMC copper, uranium and nickel assets should be highly attractive to a range of potential acquirers.

Recent transactions in the resources sector have seen very high premiums paid for assets in the context of competitive processes:

**Premiums in Contested/Competitive Takeovers**

Date	Target	Acquirer	Premium		
			One day prior	One month prior	Three months prior
Nov. 2002	MIM	Xstrata	38%	45%	52%
Nov. 2001	Normandy	Newmont	107%	104%	95%
July 2000	Ashton	Rio	63%	95%	165%
June 2000	North	Rio	62%	64%	69%

Accordingly, Grant Samuel believes that shareholders have a realistic prospect of realising full underlying value. In any event, shareholders currently have the option of selling their shares on market at prices that significantly exceed the Xstrata Offer price. Since the announcement of the Xstrata Offer around 200 million WMC shares at a weighted average price of \$7.07 have traded on the ASX.

Grant Samuel has concluded that WMC shareholders would be better off not accepting the current Xstrata Offer. In Grant Samuel's view, the Xstrata Offer is neither fair nor reasonable.

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### **11 Qualifications, Declarations and Consents**

#### **11.1 Qualifications**

Grant Samuel is a specialist advisory firm providing corporate advisory services in relation to mergers and acquisitions, capital raisings, corporate restructuring, property and financial matters generally. One of Grant Samuel's activities is the preparation of corporate and business valuations and the provision of independent advice and expert's reports in connection with takeovers and capital reconstructions.

The Grant Samuel directors primarily responsible for this report are Robert Johanson BA LLM MBA and Stephen Cooper BCom(Hons) ACA CA(SA) ACMA. These directors have been principal signatories of independent expert's reports on companies in the nickel, gold, uranium, copper and fertilizer industries. They were supported by Cameron Stewart BCom LLB, Kierin Deeming BA LLB (Hons) MBA and Vanessa Bolger B.Com.

#### **11.2 Declarations**

Grant Samuel and its related entities do not have at the date of this report, and have not had within the previous two years, any shareholding in or other relationship with WMC. A number of executives of Grant Samuel hold small parcels of shares in WMC. Grant Samuel has previously been engaged by WMC's predecessor company, WMC Limited, to:

prepare an independent valuation report to assist the directors of WMC Limited to respond to an acquisition proposal from Alcoa Inc. (November 2001); and

prepare an independent expert's report in relation to the demerger of WMC Limited (October 2002).

Grant Samuel considers itself to be independent in terms of Practice Note 42 published by ASIC.

Grant Samuel will receive a fixed fee for this report. The fee is not contingent in the outcome of the Xstrata Offer. Grant Samuel will receive no other benefit for the preparation of the report. Grant Samuel does not have any pecuniary or other interest that could reasonably be regarded as capable of affecting its ability to provide an unbiased opinion in relation to the Xstrata Offer.

WMC has agreed that, to the extent permitted by law, it will indemnify Grant Samuel and its employees and officers in respect of any liability suffered or incurred as a result of or in connection with the preparation of this report. This indemnity will not apply in respect of any negligence, wilful misconduct or breach of law. WMC has also agreed to indemnify Grant Samuel and its employees and officers for time incurred and any costs in relation to any inquiry or proceeding initiated by any person. Where Grant Samuel or its employees and officers are found liable for or guilty of negligence, wilful misconduct or breach of law Grant Samuel shall reimburse such costs.

An advance draft of this report was provided to senior management and directors of WMC and its financial and legal advisors on or about 20 December 2004. Certain changes were made to the report as a result of the circulation of the draft report. There were no alterations to the approach, methodology or overall opinion as a result of circulating the draft report. Following the circulation of the draft report, WMC advised

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Grant Samuel of a US\$5 million reduction in WMC's debt. As a result, the valuation was increased by \$0.01 per share.

### **11.3 Consents**

Grant Samuel consents to the issuing of this report in the form and context in which it is to be included in the Target's Statement to be sent to WMC shareholders in relation to the Xstrata Offer. Neither the whole nor any part of this report nor any reference thereunto may be included in any other document without the prior written consent of Grant Samuel as to the form and context in which it appears.

**The accompanying letter dated 22 December 2004 forms part of this report.**

**GRANT SAMUEL & ASSOCIATES PTY LIMITED**

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**Table of Contents****Appendix 1****Selection of Discount Rate****Overview**

The following discount rates have been selected by Grant Samuel to apply to the forecast nominal ungeared after-tax cash flows for WMC's major businesses:

Nickel Business Unit	8.5-9.5%	(US dollar cash flows)
Olympic Dam	8.5-9.5%	(US dollar cash flows)
Fertilizer	8.0-9.0%	(US dollar cash flows)

The cash flows of all the WMC assets have been denominated in US dollars and discounted on the basis of rates appropriate for international capital markets. The likely acquirers of WMC's assets are international resources companies. Accordingly, WMC's assets are likely to be priced on the basis of costs of capital established in international capital markets.

Selection of the appropriate discount rate to apply to the forecast cash flows of any business enterprise is fundamentally a matter of judgement. The valuation of an asset or business involves judgements about the discount rates that may be utilised by potential acquirers of that asset. There is a body of theory that can be used to support that judgement. However, a mechanistic application of formulae derived from that theory could obscure the reality that there is no correct discount rate. Despite the growing acceptance and application of various theoretical models it is Grant Samuel's experience that many companies rely on less sophisticated approaches. Many businesses use relatively arbitrary hurdle rates which do not vary significantly from investment to investment or change significantly over time despite interest rate movements. Valuation is an estimate of what real world buyers and sellers of assets would pay and must therefore reflect criteria that will be applied in practice even if they are not theoretically correct. Grant Samuel considers the rates adopted to be reasonable discount rates that acquirers would use irrespective of the outcome or shortcomings of applying any particular theoretical model.

The discount rates that Grant Samuel has adopted are reasonable relative to the rates derived from theoretical models. The discount rates represent an estimate of the weighted average cost of capital ( WACC ) appropriate for these assets. Grant Samuel has calculated a WACC based on a weighted average of the cost of debt and the cost of equity. This is the relevant rate to apply to ungeared cash flows. There are three main elements to the determination of an appropriate WACC. These are:

cost of equity;

cost of debt; and

debt/equity mix.

The cost of equity was derived from application of the Capital Asset Pricing Model ( CAPM ) methodology. The CAPM is probably the most widely accepted and used methodology for determining the cost of equity capital. There are more sophisticated multivariate models that utilise additional risk factors but these models have not achieved any significant degree of usage or acceptance in practice. However, while the theory underlying the CAPM is rigorous the practical application is subject to considerable shortcomings and limitations and the results of applying the CAPM model should only be regarded as providing a general guide. There is a tendency to regard the rate calculated using CAPM as inviolate. To do so is to misunderstand the limitations of the model. For example:

the estimation of relevant variables (such as risk premium and beta) is subject to significant statistical error;

the model is typically based on expectations and merely uses historical data as a proxy for expectations; and

there is not unanimous agreement as to how the model should adjust for factors such as taxation. The CAPM was developed in the context of a classical tax system. Australia's system of dividend imputation has a significant impact on the measurement of net returns to investors.

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The cost of debt was determined by reference to the pricing implied by the debt markets in Australia. The cost of debt represents expected future returns required by debt providers. In determining an appropriate cost of debt over this forecast period, regard was had to debt ratings of comparable companies.

Selection of an appropriate debt/equity mix is a matter of judgement. The debt/equity mix represents an appropriate level of gearing for the operations over the forecast period. The relevant proportions of debt and equity have been determined after having regard to the financial gearing of comparable companies and the industry in general and judgements as to the appropriate level of gearing considering the nature and quality of the cash flow stream.

The following sections set out the basis for Grant Samuel's determination of the discount rates for WMC's businesses. In addition, the major issues which limit the accuracy and reliability of the estimates are discussed.

## **2 Cost of Equity Capital**

### ***The CAPM Model and its Limitations***

The CAPM provides a theoretical basis for determining a discount rate that reflects the returns required by diversified investors in equities. The rate of return required by equity investors represents the cost of equity of a company and is therefore the relevant measure for estimating a company's weighted average cost of capital. CAPM is based on the assumption that investors require a premium for investing in equities rather than in risk free investments (such as US government bonds). This premium is commonly known as the market risk premium and notionally represents the premium required to compensate for investment in the equity market in general.

The risks relating to a company or business may be divided into specific risks and systematic risks. Specific risks are risks that are specific to a particular company or business and are unrelated to movements in equity markets generally. While specific risks will result in actual returns varying from expected returns, it is assumed that diversified investors require no additional returns to compensate for specific risk, because the net effect of specific risks across a diversified portfolio will, on average, be zero. Portfolio investors can diversify away all specific risk.

However, investors cannot diversify away the systematic risk of a particular investment or business operation. Systematic risk is the risk that returns from an investment or business operation will vary with market returns in general. If returns on an investment were expected to be completely correlated with returns on the market in general, the return required on the investment would be equal to the return required from the market in general (ie the risk free rate plus the market risk premium).

CAPM postulated that the return required on investments or assets could be estimated by applying to the market risk premium a measure of systematic risk described as the beta factor. The beta for an investment reflects the covariance of the return from that investment with the return from the market as a whole. Covariance is a measure of relative volatility and correlation. The beta of an investment represents its systematic risk only. It is not a measure of the total risk of a particular investment. An investment with a beta of more than one is riskier than the market and an investment with a beta of less than one is less risky. The discount rate appropriate for an investment which involved zero systematic risk would be equal to the risk free rate.



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The formula for deriving the discount rate using CAPM is as follows:

$$Re = Rf + Beta (Rm - Rf)$$

Where:

*Re* is the discount rate for equity capital;

*Rf* is the risk free rate;

*Beta* is the beta factor;

*Rm* is the expected market return; and

*Rm-Rf* is the market risk premium

The beta for a company or business operation is normally estimated by observing the historical relationship between returns from the company or comparable companies and returns from the market in general. The

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market risk premium is estimated by reference to the actual long run premium earned on equity investments by comparison with the return on risk free investments.

The model, while simple, is based on a sophisticated and rigorous theoretical analysis. Nevertheless, application of the theory is not straightforward and the discount rate calculated should be treated as no more than a general guide. The reliability of any estimate derived from the model is limited. Some of the issues are discussed below:

### **(i) Risk-Free Rate**

Theoretically, the risk free rate used should be an estimate of the risk free rate in each future period (i.e. the one year spot rate in that year). There is no official risk free rate, but rates on government securities are typically used as an acceptable substitute. More importantly, forecast rates for each future period are not readily available. In practice, the long term Commonwealth Government Bond rate is used as a substitute in Australia and medium to long term Treasury Bond rates are used in the US. It should be recognised that the yield to maturity of a long term bond is only an average rate and where the yield curve is strongly positive (i.e. longer term rates are significantly above short term rates) the adoption of a single long term bond rate has the effect of reducing the net present value where the major positive cash flows are in the initial years. The long term bond rate is therefore only an approximation.

The ten year bond rate is a widely used and accepted benchmark as the risk free rate. Where the forecast period exceeds ten years, an issue arises as to the appropriate bond to use. While longer term bond rates are available, the ten year bond market is the deepest long term market in Australia and is a widely used and recognised benchmark. There is a very limited market for bonds of more than ten years. In the US, there are deeper markets for longer term bonds. The 30 year rate is a widely used benchmark. However, long term rates accentuate the distortions of the yield curve on cash flows in early years. In any event, a single long term bond rate matching the term of the cash flows is no more theoretically correct than using a ten year rate. More importantly the ten year rate is the standard benchmark used in practice.

Where cash flows are less than ten years in duration the opposite issue arises. An argument could be made that shorter term, and therefore lower, bond rates should be used in determining the discount rate for these assets. While Grant Samuel believes this is a legitimate argument, an adjustment may give a misleading impression of precision for the whole methodology. In any event, the impact on valuation would usually be trivial.

In practice, Grant Samuel believes acquirers would use a common rate. The ten year bond rate can generally be regarded as an acceptable standard risk free rate for medium to long term cash flows, particularly given its wide use. Currently, however, there is a significant discrepancy between the 10 year and 30 year US Treasury rate. Given the long duration of WMC's major assets, Grant Samuel has decided it is inappropriate to use simply the 10 year rate as a proxy for the risk free rate. Grant Samuel has judgmentally selected a risk free rate having regard to the current yield to maturity on both 10 year and 30 year United States Treasury Notes.

### **(ii) Risk Premium**

The risk premium ( $R_m - R_f$ ) represents the extra return that investors require to invest in equity securities as a whole over risk free investments. This is an ex-ante concept. It is the expected premium and as such it is not an observable phenomenon. The historical premium is therefore used as a proxy measure. The premium earned historically by equity investments is calculated over a time period of several years.

In the United States, it is generally believed that the premium is in the order of 5-6%. Australian studies have been more limited but indicate that the long run average premium has been in the order of 8% measured over more than 100 years of data<sup>1</sup>. The 8% figure was based on an arithmetic average. The geometric average is in the order of 6%. Even an estimate based over a very long period such as 100 years is subject to significant statistical error. Given the volatility of equity market returns it is only possible to

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<sup>1</sup> See, for example, Chapter 14 of Share Market and Portfolio Theory by Ball, Brown, Finn & Officer. Note that these premiums were measured before the introduction of dividend imputation. There is insufficient data to form a reliable view on post dividend imputation market returns.

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state that the true figure lies within a range of approximately 2%-10% at a 95% confidence level (using the geometric average).

In addition, the risk premium required by the market is not constant and changes over time. At various stages of the market cycle investors perceive that equities are more risky than at other times and will increase or decrease their expected premium. Indeed, there are arguments being put forward at the present time (particularly in the United States) that the risk premium is now much lower than it has been historically.

### **(iii) Beta Factor**

The beta factor is a measure of the expected volatility of an investment relative to the market as a whole. The expected beta factor cannot be observed. The conventional practice is to calculate a historical beta from past share price data and use it as a proxy for the future but it must be recognised that the expected beta is not necessarily the same as the historical beta. A company's relative risk does change over time. Betas for the particular subject company may be utilised. However, it is also appropriate (and may be necessary if the investment is not listed) to utilise betas for comparable companies and sector averages (particularly as these may be more reliable).

However, there are very significant measurement issues with betas which mean that only limited reliance can be placed on such statistics. Even measurement of historical betas is subject to considerable variation. There is no correct beta.

### **(iv) Debt/Equity Mix**

The measured beta factors for the listed companies are equity betas and reflect the financial leverage of the individual companies. It is therefore necessary to reflect the debt/equity mix in calculating the WACC. However, this is a highly subjective exercise.

The tax deductibility of the cost of debt also means that the higher the proportion of debt the lower the WACC, although this would be offset, at least in part, by an increase in the beta factor as leverage increases.

The debt/equity mix assumed in calculating the discount rates should be consistent with the debt/equity mix that applied during the measurement period. Typically, the debt/equity mix changes over time and there is significant diversity in the levels of leverage across companies in a sector. There is a tendency to calculate leverage at a point in time whereas the leverage should represent the average over the period the beta was measured. This can be difficult to assess with a meaningful degree of accuracy.

Alternatively, it is possible to unleverage beta factors to derive asset betas and releverage betas to reflect a more appropriate or comparable financial structure. In Grant Samuel's view this technique is subject to considerable estimation error. Deleveraging and releveraging betas exacerbates the estimation errors in the original beta calculation and gives a misleading impression as to the precision of the methodology. Leveraging and deleveraging is also often incorrectly calculated based on debt levels at a single point in time.

In addition, the actual debt and equity structures of most companies are typically relatively complex. It is necessary to simplify this for practical purposes in this kind of analysis.

Finally, it should also be noted that, for this purpose, the relevant measure of the debt/equity mix is based on market values not book values.

**(v) Specific Risk**

It can be argued that, in terms of pure CAPM theory, specific risks should be incorporated in the valuation through risk adjustments to the expected cash flows. This avoids the need to make arbitrary adjustments to discount rates, which can dramatically affect estimated values, particularly when the cash flows are of extended duration or much of the business value reflects future growth in cash flows. In addition, risk adjusting the cash flows requires a more disciplined analysis of the risks that the valuer is trying to reflect in the valuation.

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However, it is also common in practice to allow for certain classes of specific risk (particularly sovereign and other country specific risks) in a different way by adjusting the discount rates applied to projected cash flows.

### *Estimation of the Variables for WMC*

#### **(i) Risk-Free Rate**

A risk free rate of 4.4% has been selected for the US dollar denominated businesses of WMC. The risk free rate is judgmentally estimated by Grant Samuel having regard to the current yield to maturity on both 10 year and 30 year United States Treasury Notes.

#### **(ii) Risk Premium**

A risk premium of 6% has been assumed. While recognising the uncertainties attached to this estimate, Grant Samuel believes this figure is within the range of generally accepted figures for the risk premiums in Australia and the United States. Some research analysts and other valuers may use even lower premiums. Overall, Grant Samuel believes 6% to be a reasonable, if not conservative, estimate.

#### **(iii) Beta Factor**

Grant Samuel has adopted the following beta factors for the purposes of valuing the WMC businesses:

Nickel Business Unit	0.8-1.0	(US dollar cash flows)
Olympic Dam	0.8-1.0	(US dollar cash flows)
Fertilizer	0.7-0.9	(US dollar cash flows)

Grant Samuel has considered the beta factors for a wide range of natural resources companies in determining an appropriate beta for WMC's businesses. The betas have been calculated on two bases: relative to each company's home exchange index and relative to the Morgan Stanley Capital International ( MSCI ) All Country World Index, an international equities market index that is widely used as a proxy for the global stockmarket as a whole.

**Table of Contents****Beta Factors for Selected Listed Resources Companies**

Company	Equity Market Value Millions US\$m	Beta Factor			
		Bloomberg <sup>2</sup>		AGSM <sup>3</sup>	
		Home Exchange	MSCI <sup>4</sup>	OLS	Scholes-William
<b>WMC</b>				<b>1.79</b>	<b>1.55</b>
<b>Diversified Mining</b>					
BHP	70,675.8	1.17	0.60	1.38	2.02
Rio Tinto	41,265.2	0.77	0.57	0.91	1.12
Anglo American	33,042.2	1.10	1.05	na	na
CVRD	27,656.5	0.28	0.11	na	na
Xstrata	11,038.5	1.43	1.46	na	na
<i>Median</i>		<i>1.10</i>	<i>0.60</i>	<i>1.15</i>	<i>1.57</i>
<i>Weighted Average</i>		<i>0.95</i>	<i>0.65</i>	<i>0.74</i>	<i>1.03</i>
<b>Nickel</b>					
Norilsk Nickel	9,975.2	0.65	1.17	na	
Inco	6,792.4	1.32	1.27	na	1.11 <sup>1</sup>
Noranda	5,536.1	0.81	0.72	na	0.46 <sup>1</sup>
Falconbridge	4,565.6	0.91	0.80	na	0.56 <sup>1</sup>
Outokumpu	1,764.0	0.51	0.70	na	na
Eramet	1,347.9	1.05	1.60	na	na
Lionore	1,051.8	1.30	0.76	na	1.14 <sup>1</sup>
Minara	1,016.4	1.77	0.82	3.91	2.68
Jubilee	708.1	1.04	0.49	1.44	2.00
<i>Median</i>		<i>1.04</i>	<i>0.80</i>	<i>2.68</i>	<i>1.13</i>
<i>Weighted Average</i>		<i>0.93</i>	<i>1.02</i>	<i>0.15</i>	<i>0.55</i>
<b>Copper</b>					
Phelps Dodge	10,281.3	1.64	1.70	1.41 <sup>2</sup>	na
Freeport McMoRan	6,749.7	1.06	1.07	na	na
Teck Cominco	5,682.8	1.43	1.22	na	0.63 <sup>1</sup>
Grupo Mexico	4,162.6	1.30	0.87	na	na
Antofagasta	4,046.6	0.64	0.64	na	na
Southern Peru Copper	3,720.0	0.79	0.81	0.59 <sup>2</sup>	na
<i>Median</i>		<i>1.18</i>	<i>0.97</i>	<i>1.00</i>	<i>0.63</i>
<i>Weighted Average</i>		<i>1.24</i>	<i>1.18</i>	<i>1.19</i>	<i>0.63</i>
<b>Fertiliser</b>					
The Mosaic Co	8,917.7	na	na	na	na
Potash	6,462.4	0.57	0.49	na	0.10 <sup>1</sup>
Agrium	2,169.2	0.45	0.44	na	(0.13) <sup>1</sup>
Incitec Pivot	1,639.5	0.28	(0.05)	na	na
Terra Industries	705.7	0.61	0.70	0.08 <sup>2</sup>	na
<i>Median</i>		<i>0.51</i>	<i>0.47</i>	<i>0.08</i>	<i>(0.01)</i>
<i>Weighted Average</i>		<i>0.28</i>	<i>0.23</i>	<i>0.08</i>	<i>0.04</i>
<b>Uranium</b>					
Cameco	5,354.1	0.88	1.02	na	0.10

Source: AGSM, Bloomberg

*Note 1: Sourced from the Financial Post Data Group, calculated based on 60 months of monthly data.*

*Note 2: Sourced from Ibbotson.*

The betas for the diversified mining companies (with the exception of Xstrata) suggest that a beta of well below 1 could be justified. The betas for nickel companies are generally grouped around the range 0.8-1.00. The betas for copper companies (excluding Phelps Dodge, which has a high cost structure and may generate unrepresentative betas) are also generally around the range 0.8-1.0. The betas for fertilizer companies are very low.

Grant Samuel's selection of a beta in the range 0.8-1.0 to apply to the valuation of the Nickel Business Unit is consistent with the data above. In Grant Samuel's view there are reasonable grounds to argue that the beta for Olympic Dam should be lower than suggested by the data above, given that Olympic Dam is expected to have a very low cost structure in the future as uranium revenues grow, which would tend to

Betas sourced from Bloomberg are calculated over a five year period to 31 October 2001 using monthly observations.

Betas sourced from AGSM are calculated over a four year period to 30 June 2001 using monthly observations. They are calculated relative to the All Ordinates Index of the Australian Stock Exchange.

MSCI = Morgan Stanley Capital International All Countries World Index, calculated using the local currency of each company.



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reduce betas, and given the substantial gold resource within the orebody. Gold assets typically have very low betas, which in Grant Samuel's view can approach zero. On balance, however, Grant Samuel has selected a range of betas for Olympic Dam that is consistent with the evidence. Grant Samuel's selection of a beta for the fertilizer business in the range 0.7-0.9 is essentially judgemental and is significantly higher than the beta suggested by the theoretical analysis.

### **(iv) Specific Risk**

In the case of WMC's businesses, the specific risks have been incorporated in the scenarios developed for valuation purposes. Alternative scenarios have been assessed and weighted (either explicitly or implicitly).

### **(v) Cost of Equity Calculations**

Using the estimates set out above, the cost of equity capital can be calculated as follows:

Nickel	9.2-10.4%	(US dollar cash flows)
Copper	9.2-10.4%	(US dollar cash flows)
Fertilizer	8.6-9.8%	(US dollar cash flows)

## **3 Cost of Debt**

Grant Samuel has estimated a cost of debt capital of 5.4% for the purposes of valuing WMC's businesses.

This figure represents the total expected future borrowing cost over the forecast period. Grant Samuel believes that this rate is a reasonable (and possibly conservative) estimate of an average interest rate (including margin) assuming that the business had a mixture of short term and long term debt. Grant Samuel has based this estimate on current market rates.

## **4 Debt/Equity Mix**

The selection of the appropriate debt/equity ratio perhaps involves the most subjectivity. In determining an appropriate debt/equity mix, regard was had to the gearing levels of selected comparable listed Australian and international companies and the nature and quality of the cash stream from WMC's businesses.

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Gearing levels for selected listed companies in the Australian, American and European resources sector over the past six years are set out as follows:

**Gearing Levels for Selected Listed Resources Companies****Net debt/Total Capitalisation (%)**

Company	Financial year ended					
	2000	2001	2002	2003	Current/ 2004	Average
<b>Diversified Mining</b>						
BHP Billiton	18%	17%	15%	13%	9%	14%
Rio Tinto	18%	13%	36%	27%	9%	21%
Anglo American	12%	13%	30%	31%	23%	22%
CRVD	30%	32%	27%	17%	8%	23%
Xstrata			24%	33%	14%	24%
<i>Median</i>	18%	15%	27%	27%	9%	22%
<i>Weighted Average</i>	18%	17%	25%	21%	12%	19%
<b>Nickel</b>						
Norilsk Nickel	2%	9%	8%	(4%)	5%	4%
Inco	18%	18%	16%	18%	7%	15%
Noranda	41%	41%	52%	35%	30%	40%
Falconbridge	28%	28%	39%	21%	15%	26%
Outokumpu	40%	35%	64%	58%	20%	43%
Eramet	8%	10%	30%	23%	20%	18%
Lionore Mining	3%	15%	17%	4%	(4%)	7%
Minara Resources	52%	75%	16%	(10%)	(15%)	24%
Jubilee Mines	15%	9%	(12%)	(23%)	(18%)	(6%)
<i>Median</i>	18%	18%	17%	18%	7%	18%
<i>Weighted Average</i>	20%	23%	25%	15%	11%	19%
<b>Copper</b>						
Phelps Dodge	35%	40%	38%	36%		37%
Freeport Mcmoran	49%	46%	38%	18%	21%	34%
Teck Cominco	29%	37%	36%	25%	8%	27%
Grupo Mexico	47%	62%	62%	44%	89%	61%
Antofagasta	32%	29%	32%	18%	6%	23%
Southern Peru Copper	16%	18%	12%	1%	(4%)	9%
<i>Median</i>	34%	39%	37%	22%	8%	31%
<i>Weighted Average</i>	36%	40%	37%	26%	16%	33%
<b>Fertiliser</b>						
Potash	17%	19%	31%	24%	14%	21%
The Mosaic Co						
Agrium	30%	39%	28%	19%	14%	26%
Incitec Pivot						
Terra Industries	56%	57%	62%	48%		56%
<i>Median</i>	30%	39%	31%	24%	14%	26%
<i>Weighted Average</i>	22%	25%	32%	25%	13%	24%

Source: Bloomberg

Having regard to the above, Grant Samuel regards an appropriate debt/equity mix to be:

Nickel	20% debt/80% equity	(US dollar cash flows)
Copper	20% debt/80% equity	(US dollar cash flows)
Fertilizer	25% debt/75% equity	(US dollar cash flows)

These gearing levels are considered to be reasonable having regard to the comparable companies and the beta factors.

## 5 Weighted Average Cost of Capital

The formula conventionally used to calculate a WACC under a classical tax system is as follows:

$$WACC = \frac{E}{V} R_e + \frac{D}{V} R_d (1-t)$$

Where

$$\frac{E}{V} = \text{proportion of equity}$$

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- $\frac{D}{V}$  = *proportion of debt*  
 $R_e$  = *after-tax cost of equity*  
 $R_d$  = *pre-tax cost of debt*  
 $t$  = *corporate tax rate*

On the basis of the parameters outlined above and using a tax rate of 30%, WACCs can be calculated as follows:

Nickel Business Unit	8.1-9.0%	(US dollar cash flows)
Olympic Dam	8.1-9.0%	(US dollar cash flows)
Fertilizer	7.4-8.3%	(US dollar cash flows)

These theoretically calculated WACC s are considered to be lower than the discount rates that real world potential purchasers would use in assessing these assets. In addition, the betas of comparable companies set out above are relatively low compared to those historically observed. Accordingly, Grant Samuel has judgementally increased the estimated WACCs for the purpose of selecting discount rates, as follows:

Nickel Business Unit	8.5-9.5%	(US dollar cash flows)
Olympic Dam	8.5-9.5%	(US dollar cash flows)
Fertilizer	8.0-9.0%	(US dollar cash flows)

**Table of Contents****Appendix 2 Comparable Listed Company Analysis****Comparable Companies Analysis - Summary**

Market Capn (US\$m)	EBITDA Multiple			EBITA Multiple			PE Multiple (bef. amort. of g/w)			NTA Multiple		
	2003 actual	2004 forecast	2005 forecast	2003 actual	2004 forecast	2005 forecast	2003 actual	2004 forecast	2005 forecast	Geared diluted	Ung geared diluted	
<b>Diversified Resources</b>												
BHP Billiton Ltd	70,675.8	11.5	7.2	6.8	15.7	8.8	8.2	20.5	12.2	11.3	4.8	3.8
Rio Tinto Ltd	41,265.2	13.6	11.1	7.8	20.1	15.4	9.7	27.1	18.3	12.8	4.2	3.1
Anglo Amer Plc	33,042.2	10.5	7.6	7.0	14.9	10.7	10.0	19.4	13.0	11.5	2.1	1.5
CRVD	27,656.5	12.6	8.1	6.1	13.9	8.3	6.9	17.8	10.9	8.4	4.6	3.4
Xstrata Plc	11,038.5	19.9	6.5	5.8	43.9	9.0	7.9	73.2	11.8	9.4	2.1	1.8
<i>Average -simple</i>		<i>13.6</i>	<i>8.1</i>	<i>6.7</i>	<i>21.7</i>	<i>10.4</i>	<i>8.5</i>	<i>31.6</i>	<i>13.2</i>	<i>10.7</i>	<i>3.5</i>	<i>2.7</i>
<i>-weighted</i>		<i>12.5</i>	<i>8.2</i>	<i>6.9</i>	<i>18.0</i>	<i>10.5</i>	<i>8.7</i>	<i>24.5</i>	<i>13.5</i>	<i>11.1</i>	<i>4.0</i>	<i>3.1</i>
<i>Median</i>												
<b>Nickel</b>												
Norilsk Nickel	9,975.2	6.1	3.7	3.9	8.0	4.6	4.9	11.6	6.0	6.2	1.2	1.1
Inco Ltd	6,792.4	18.3	5.1	3.7	48.8	6.0	4.2	48.5	11.1	6.9	1.5	1.4
Noranda Inc	5,536.1	13.0	5.7	5.4	42.5	7.2	7.9	89.1	10.7	10.4	1.8	1.4
Falconbridge Ltd	4,565.6	9.9	4.9	3.8	18.0	5.6	6.3	23.3	6.9	9.2	1.9	1.7
Outokumpu	1,764.0	14.0	8.3	7.6	61.8	13.3	11.8	24.5	8.7	7.6	1.3	1.1
Eramet	1,347.9	8.7	3.5	3.5	17.6	4.6	4.6	26.4	6.1	7.7	1.5	1.3
Lionore Mining	1,051.8	7.4	na	na	10.0	na	na	18.0	11.7	10.5	nc	nc
Minara Resources	1,016.4	5.2	3.2	3.7	7.1	3.9	4.7	8.6	4.8	6.7	1.3	1.4
Jubilee Mines	708.1	2.9	4.2	7.5	3.2	5.1	10.4	5.7	8.9	15.9	nc	nc
<i>Average -simple</i>		<i>9.5</i>	<i>4.8</i>	<i>4.9</i>	<i>24.1</i>	<i>6.3</i>	<i>6.8</i>	<i>28.4</i>	<i>8.3</i>	<i>9.0</i>	<i>1.5</i>	<i>1.4</i>
<i>-weighted</i>		<i>10.8</i>	<i>4.6</i>	<i>4.2</i>	<i>26.9</i>	<i>5.8</i>	<i>5.8</i>	<i>35.3</i>	<i>8.3</i>	<i>8.0</i>	<i>1.4</i>	<i>1.3</i>
<i>Median</i>												
<b>Copper</b>												
Phelps Dodge	10,281.3	17.5	5.5	4.7	55.7	7.0	5.8	nm	9.7	9.1	2.7	2.5
Freeport McMoRan	6,749.7	8.3	11.0	4.6	10.7	13.0	5.2	29.1	62.9	10.3	8.9	3.2
Teck Cominco	5,682.8	15.7	6.2	5.7	32.0	7.5	7.1	nm	14.7	12.3	2.4	2.0
Grupo Mexico	4,162.6	10.8	4.0	5.1	22.3	5.1	6.6	nc	4.9	5.9	21.2	14.9
Antofagasta Plc	4,046.6	9.1	4.3	5.9	12.3	4.9	7.2	22.4	8.4	11.5	4.1	2.8
Southern Peru	3,720.0	12.4	4.6	5.5	16.6	6.2	7.0	30.8	9.2	10.2	2.6	2.8
<i>Average -simple</i>		<i>12.3</i>	<i>6.0</i>	<i>5.3</i>	<i>24.9</i>	<i>7.3</i>	<i>6.5</i>	<i>27.4</i>	<i>18.3</i>	<i>9.9</i>	<i>7.0</i>	<i>4.7</i>
<i>-weighted</i>		<i>13.1</i>	<i>6.3</i>	<i>5.1</i>	<i>29.8</i>	<i>7.7</i>	<i>6.3</i>	<i>11.6</i>	<i>20.1</i>	<i>9.9</i>	<i>6.2</i>	<i>4.1</i>
<i>Median</i>												

**Table of Contents****Comparable Companies Analysis -Summary**

Market Capn (US\$m)	EBITDA Multiple			EBITA Multiple			PE Multiple (bef. amort. of g/w)			NTA Multiple		
	2003 actual	2004 forecast	2005 forecast	2003 actual	2004 forecast	2005 forecast	2003 actual	2004 forecast	2005 forecast	Geared diluted	Ungeared diluted	
<b>Fertiliser</b>												
Potash Corp	8,917.7	59.8	17.8	15.9	nc	23.9	17.7	nc	33.3	23.8	7.1	3.9
The Mosaic Co	6,462.4	19.3	na	na	47.4	na	na	101.1	na	na	2.2	1.7
Agrium Inc	2,169.2	6.3	4.8	5.0	9.8	6.9	7.2	10.1	11.2	11.1	2.2	1.9
Incitec Pivot Lt	1,639.5	7.3	7.0	7.6	9.3	8.5	9.4	14.7	12.4	13.8	2.8	2.9
Terra Industries	705.7	5.2	na	na	10.5	na	na	17.3	22.6	15.1	2.3	1.6
<i>Average -simple</i>		19.6	9.9	9.5	19.2	13.1	11.4	35.8	19.9	15.9	3.3	2.4
<i>-weighted</i>		34.6	9.1	8.3	17.6	12.1	9.5	35.8	18.0	13.5	4.5	2.8
<i>Median</i>		7.3	4.8	5.0	9.8	6.9	7.2	14.7	12.4	13.8	2.3	1.9
<b>Uranium</b>												
Cameco	5,354.1	29.4	12.8	10.2	68.7	20.2	14.4	24.8	25.8	17.8	2.6	2.1

1. Share prices at 20 December 2004.
2. Exchange rates at 20 December 2004.

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**Appendix 3**

**Overview of Commodity Markets**

**1 Nickel**

***Primary Nickel Consumption***

Nickel is a hard metal which is used primarily in alloys to impart strength, toughness and corrosion resistance and to improve their properties at high and low temperatures. It is principally used in the manufacture of austenitic stainless steel although it is also used in low alloy steels, nickel based alloys, copper based alloys and electroplating. Historically, the nickel market has been largely influenced by changes in the stainless steel market. In 2003 stainless steel accounted for approximately 67% of total nickel demand. This percentage has increased in recent years as nickel use in stainless steel has grown faster than non-stainless steel applications.

*Source: Inco Limited*

Primary nickel is a term used to refer to nickel refined from nickel ore. Primary nickel is marketed in two broad classifications, namely Class I nickel and Class II nickel. Class I nickel is refined nickel with a purity in excess of 99% or more and is usually in the form of rondelles, cathodes, pellets and briquettes. This form of nickel is essential for applications such as electroplating and super alloys. Class II nickel is a lower grade product primarily used in stainless steel production and includes ferronickel, nickel oxide and utility nickel shot. Approximately 55% of nickel in stainless steel is primary nickel with the balance sourced from stainless steel scrap (or secondary nickel). The proportion of primary and secondary nickel consumption varies depending on the availability of scrap stainless steel, which tends to be related to levels of worldwide economic activity and changes in nickel prices.

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A summary of movements in world nickel demand since 1998 (analysed by country or region) is set out below:

*Source: WMC*

World nickel consumption totalled approximately 1.25 million tonnes in 2003. While Western Europe, USA and Japan were responsible for approximately 60% of total nickel demand, these economies are showing relatively slow rates of growth in nickel demand. By contrast, Chinese nickel demand over the period grew at a compound rate of around 25% per annum, reflecting the booming Chinese economy in recent years and rapidly growing stainless steel consumption. World nickel consumption is expected to continue to grow strongly in the medium term, undepinned by continuing growth in Chinese demand.

### ***Mined Nickel Production***

Mined nickel is a term that is used to refer to an intermediate production stage in the processing of nickel. Mined nickel is often categorised into two broad intermediate products, sulphide concentrate and laterite ore. Sulphide concentrate is a concentrated intermediate product produced by conventional flotation of a sulphide ore. Laterite ore cannot be concentrated and is treated in a single, integrated production process.

### ***Primary Nickel Production***

Primary nickel is produced from mined nickel and is categorised into two main product classes, namely Class I and Class II nickel. Primary nickel refined from sulphide concentrate accounts for the majority of Class I nickel production. Primary nickel refined from laterite ore is primarily sold in the form of ferronickel or nickel oxide sinter which are categorised as Class II nickel products, although some Class I nickel products are produced from laterite ore. Most Class II nickel is used in stainless steel production, although a proportion is sold as an intermediate product to other nickel refiners.



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World nickel production is relatively concentrated. The production of primary nickel is dominated by a relatively small number of major integrated producers with interests in mines, smelters and refineries. The six leading nickel companies account for around 50% of world refined nickel production:

**Leading Producers of Primary Nickel**

	2003 Production	
	( 000 tonnes)	%
Norilsk	234	17.8%
INCO	153	11.6%
WMC	91	6.9%
Falconbridge	85	6.5%
PT Areka Tambang	67	5.1%
Enamet	65	4.9%
<b>Top six producers</b>	<b>695</b>	<b>52.8%</b>
Other	620	47.2%
<b>Total</b>	<b>1,315</b>	<b>100.0%</b>

Source: WMC

There are a number of major greenfields projects expected to commence development in the short to medium term. The most important of these are Inco's Voisey's Bay (with annual production capacity of 50-60kt nickel), Inco's Goro (60 kt) and BHP Billiton's Ravensthorpe (40 kt).

***Nickel Processing Technologies***

The two primary sources of nickel are laterite ore and sulphide ore. Laterite deposits by nature are shallow and easily accessible for mining while sulphide deposits are generally located at depth. Most existing nickel smelters and refineries have been designed to process sulphide ore. The majority of historical nickel production has been sourced from sulphide nickel ore deposits. However, known sulphide ore deposits are diminishing and the nickel mining industry is beginning to focus on laterite ore deposits. Laterite ore deposits make up a majority of known nickel resources but only [40%] of current production. This proportion is expected to gradually increase.

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The major sulphide ore processing technologies and the major companies which are currently using or commercialising each are summarised as follows:

The major laterite ore processing technologies and the major companies currently using or commercialising each are summarised below:

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The lateritic ore profile is generally comprised of an overlying low grade limonite ore and a deeper higher grade saprolite ore. Different processing technologies are required to process each ore type. In general, a metallurgical leaching process is used to process limonite ores while a smelting process is used to process saprolite ores.

The late 1990s saw considerable optimism for the prospects of the pressure acid leach treatment technology (based on Sherritt technology) to revolutionise the nickel market. At the time, there were expectations that pressure acid leach plants could substantially lower industry operating costs. Three new pressure acid leach plants (Murrin Murrin, Cawse and Bulong) were built in Western Australia. However, they have encountered well-publicised operational and financial difficulties, and the cost advantages of pressure acid leach technology are now far less clear.

### *Nickel Prices*

Nickel prices have been highly volatile over the last twenty years and are difficult to forecast.

The London Metal Exchange Limited ( LME ) is the central price setting market for most nickel. Nickel traded on the LME is primary nickel with a minimum grade of 99.8% in the form of cathode, pellet or briquettes ( LME deliverable nickel ). LME deliverable nickel is traded through the LME on the basis of spot and 3 month, 15 month and 27 month forward contracts. The LME allows for stocks to be held at its warehouses in Rotterdam, Antwerp, New Haven, Gothenburg, Singapore, Genoa, Liverpool and Trieste. Producers of LME deliverable nickel can sell physical nickel on the LME whereas other nickel producers use LME prices as a benchmark to price their particular products.

The physical nickel market is relatively small but there is substantial trading in nickel on the LME giving rise to significant price volatility. Movements in the LME spot nickel price and official nickel stockpiles since 1988 are summarised below:

*Source: Bloomberg*

The 1980s saw nickel prices gyrate from historic lows of US\$2.00 per pound in 1986 to highs of US\$9.00 per pound in 1989. The boom in nickel prices in 1987 was associated with an unexpectedly high growth rate in stainless steel production combined with low levels of nickel stockpiles. This in turn led to a sharp increase in nickel production with mine re-openings and refinery expansions in most nickel-producing countries. Nickel prices declined steadily after 1989 due to the slowdown in primary nickel consumption and increased refinery production. Although no new refinery capacity came on stream, existing refineries became more efficient and undertook minor expansion to increase output of refined nickel.

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In the 1990-1997 period there were significant movements in nickel supply and demand although primary nickel prices traded mainly within a range of US\$2.00-\$4.00/lb:

from 1990 to 1992 nickel demand was affected by weaker world economic growth and the supply of secondary nickel scrap from the former Soviet Union increased. The decrease in nickel consumption in the former Soviet Union and Eastern Europe resulted in a substantial increase in primary nickel exports from these countries in 1992-1993. As a consequence consumption of primary nickel in the western world declined and stockpiles grew substantially;

the recovery in the world economy in 1994 resulted in substantial growth in stainless steel production and primary nickel consumption. This led to an increasing nickel price despite significant primary nickel stockpile levels. Strong buying interest from investment funds had a significant influence on nickel prices during this period;

in 1995 strong growth in primary nickel consumption continued and primary nickel stockpiles decreased significantly. However, stainless steel prices fell sharply in the second half of 1995. The impact of the subsequent reduction in stainless steel production on primary nickel demand was delayed (despite cheaper secondary nickel being available) and, as a result, primary nickel stock levels continued to fall although secondary nickel stocks were increasing; and

in 1996 stainless steel production increased strongly but stainless steel producers utilised the secondary nickel stockpile and therefore there was minimal impact on demand for primary nickel. Consequently the market for primary nickel was fairly balanced during 1996 and this continued into 1997.

During the 1998/99 period, the nickel price halved from over US\$3.50/lb to an eleven year low in nominal terms of just below US\$1.80/lb. The collapse in the nickel price reflected a number of factors:

the emergence of the Asian crisis and its affect on stainless steel demand;

increasing concerns in relation to announcements of large increases in what was expected to be low cost pressure acid leach production capacity;

a significant increase in exports during 1997 of primary nickel from the Eastern Bloc, particularly Russia; and

a large increase during 1996 and 1997 in the availability of scrap for stainless steel production.

The highly publicised technical and financial difficulties of the new Australian pressure acid leach nickel operations, together with the gradual recovery of Asian economies, resulted in a dramatic recovery in nickel prices during 1999. Uncertainty regarding the economic prospects of the major Western economies resulted in downward pressure on the nickel price during 2000, which reached a short term low shortly after the September 11 2001 terrorist attacks in the United States.

The nickel price has risen dramatically since late 2001, reflecting the impact of strong demand growth from China and other parts of Asia, constrained production, rising production costs and nickel stocks that reached record lows. Nickel has recently traded at prices representing 15 year highs.

In the short term, there are expectations of continued strong nickel prices, underpinned by continued high rates of growth in China, steady demand growth from most of the world's developed economies, low nickel stocks and limited new sources of supply.

The medium to longer term prospects for nickel prices are more difficult to forecast with any confidence. On the demand side, they depend in part on the longevity of China's current high rates of growth. On the supply side, a significant number of new projects will be required to replace declining existing production and meet growing demand. Many of the mooted projects are lateritic deposits to be treated by pressure acid leach technology. It is now generally recognised that pressure acid leach technology is unlikely to support

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extremely low cost nickel production as originally expected. In particular, pressure acid leach operations are highly capital intensive. Moreover, many of the prospective lateritic operations are in less attractive investment environments than the traditional nickel sulphide provinces of Canada and Australia. The success or otherwise of Inco's US\$1.9 billion Goro laterite project in New Caledonia may have a major impact on the market's perception of future nickel supply dynamics. In recognition of the high capital costs and investment risks associated with the large prospective laterite projects, some industry commentators argue that long term nickel incentive prices around US\$3.75-4.00 will be required to justify the new projects needed to meet future demand.

**2 Copper**

Copper is valued for its electrical and thermal conductive properties, its durability and its strength. Copper is primarily used in the building and electrical markets:

**Industrial Consumption**

	%
Building	48
Electrical	17
General engineering	16
Light engineering	8
Transport	7
Other	4

Source: LME

In 2003 and 2004, copper consumption exceeded production:

**Worldwide Copper Industry ( '000 tonnes)**

	2000	2001	2002	2003	2004
Total refined production	14,844	15,649	15,350	15,293	16,040
World consumption	15,168	14,776	14,898	15,569	16,908
Worldwide stockpile	2,521	3,394	3,846	3,570	2,703
<b>LME Cash Average USc./lb</b>	<b>82</b>	<b>72</b>	<b>71</b>	<b>81</b>	<b>128</b>

Source: WMC

Global copper production is dominated by Chilean mines, accounting for nearly 40% of total production in 2004:

**Top Ten Copper Mines by Production Capability - 2004**

<b>Mine</b>	<b>Country</b>	<b>000 tonnes Cu</b>	<b>% of Global Production</b>
Escondida	Chile	1,176	8.1
Chuquicamata	Chile	670	4.6
PT Freeport Indonesia	Indonesia	535	3.7
Collahuasi	Chile	510	3.5
El Teniente	Chile	405	2.8
Norilsk	Russia	400	2.7
Morenci	United States	379	2.6
Los Pelambres	Chile	370	2.5
Antamina	Peru	350	2.4
Radomiro Tomic	Chile	307	2.1

*Source: WMC.*

Increased demand for copper has largely been a reflection of rising consumer demand and infrastructure development in developing nations. In particular, China has been a major importer of copper during the

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past decade. Demand has also been strong in the industrialised nations, especially the USA. This reflects strong growth in the use of wire and cable for telecommunications and information technology, despite substitution in some applications by improved alloys and the introduction of generally smaller, more efficient products.

Supply issues have created uncertainty in the market over the past five years particularly in relation to the restart of idled capacity. Over the past decade, the commissioning of large copper mines using solvent extraction/electrowinning (SX/EW) metallurgical processes has resulted in additional, low cost copper production. However, supply growth from SX/EW production is forecast to be more limited going forward. The following chart shows movements in the nominal copper price and the real copper price and stockpiles since 1980:

*Source: WMC.*

The copper price in real terms has declined since the 1970s and reached historic lows in March 1999 following the Asian economic downturn. Since March 1999, the copper price has risen, which has been attributed to production cutbacks, mine closures and high levels of Chinese imports. However, there is considerable uncertainty regarding copper prices in the medium term due to uncertainty in global growth, the possibility of some idled capacity re-opening and the level of Chinese imports. Copper consumption is expected to increase between 8 and 9% in 2004, driven largely by continued growth in demand from China:

*Source: WMC.*



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**3 Uranium**

*Overview*

Uranium is a naturally occurring, very hard, heavy, silvery, radioactive metal. Natural uranium consists of two isotopes: U-238 and U-235. U-235 is the fissile isotope. When U-235 captures a neutron it splits into two parts and releases energy and further neutrons, which in turn split further uranium atoms, thus creating a chain reaction. Its capacity to release energy through this nuclear fission provides uranium with its commercial value.

Uranium ore is crushed after mining and then treated by leaching (alternatively, uranium may be produced through in situ leaching of the ore). The solution is concentrated and the uranium is precipitated as a fine yellow powder ( yellowcake ). The yellowcake is dried and calcined to become uranium oxide (U<sub>3</sub>O<sub>8</sub>). This is the form in which uranium is generally sold in world markets and the form in which all uranium is exported from Australia.

Natural uranium contains approximately 0.7% U-235. Uranium is enriched for use as a fuel in nuclear reactors. Enrichment is the process of increasing the concentration of U-235 while decreasing the concentration of U-238. The majority of nuclear power reactors use enriched uranium rather than natural uranium, mostly low enriched uranium (between 3 and 5% U-235). Uranium with in excess of 20% U-235 is referred to as highly enriched uranium ( HEU ). By way of comparison, nuclear weapons use super enriched uranium (in excess of 90% U-235).

Where enriched fuel is to be used, U<sub>3</sub>O<sub>8</sub> is first converted into uranium hexafluoride (UF<sub>6</sub>). Uranium is also sold on world markets in UF<sub>6</sub> form. UF<sub>6</sub> is then enriched by either gaseous diffusion or gas centrifuge based technologies. Gas centrifuges are the only means currently used in the United States and this process creates two streams: enriched uranium and depleted uranium tails which can themselves be re-enriched. End users order enriched uranium by specifying the quantity of uranium required and the level of enrichment desired. The enriched UF<sub>6</sub> is then fabricated into UO<sub>2</sub> powder. The powder is compressed into pellets which can be loaded into fuel assemblies for use in nuclear reactors.

The spent fuel from nuclear reactors contains de-enriched uranium and plutonium (a by-product which does not occur naturally). Spent fuel can be reprocessed and re-entered into the cycle at the conversion/enrichment stage. Alternatively, the plutonium can be used to produce Mixed Oxide Fuel ( MOX ), also used in reactors.

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***Consumption***

The only significant commercial end use for uranium is as a fuel for nuclear power plants. Uranium demand is driven largely by energy demand, which in turn reflects the growth of the economy as a whole. The United States generates approximately 30% of the world's nuclear energy. There are 438 nuclear power reactors in 31 countries with a combined capacity of 364 GW. In 2003, these reactors provided approximately 16% of the world's electricity requirements.

The growth in use of nuclear power generation was rapid in the 1970s and 1980s, with electricity production from nuclear plants expanding from 100 terrawatt hours ( Twh ) in 1970 to 2,000 Twh in 1990. However, growth in the past decade has been markedly slower. Electricity production from nuclear power plants grew to approximately 2,525 Twh by 2003. A number of factors have contributed to this slowing. These include growing concern over the safety of nuclear reactors following incidents such as Three Mile Island (1979), Chernobyl (1986) and most recently Tokaimura, Japan (1999); international moves to phase out nuclear power or place moratoriums on further development; deregulation of electricity industries around the world and the resultant increase in competition placing pressure on existing operators leading to the consolidation of a number of nuclear utilities; and existing power utilities becoming more energy efficient.

Nuclear power generation is generally expected to continue to grow, albeit slowly. With relatively long lead times for new reactors and the nature of the continuous operation of nuclear reactors, world uranium demand exhibits less volatility than other commodities and industry forecasts suggest growth in installed capacity of between 0 and 2%. Growth is expected to be strongest in the non-OECD countries (and in particular China, India and South Korea). Growth in OECD nuclear power generation is expected to be negligible or negative. This largely reflects continued political pressure in several European countries such as Sweden and Germany to reduce nuclear power generation. In the US, a Nuclear Power 2010 initiative was announced in 2002 which is designed to facilitate the development and construction of advanced reactors by the end of the decade.

*Source: International Energy Agency*

The uranium price's contribution to the overall cost of electricity produced is relatively small, so the cost of electricity generated from nuclear energy is less sensitive to the price of fuel than other generation sources. A briefing paper published in 2004 by the Uranium Information Centre in Australia estimated that a doubling of the U<sub>3</sub>O<sub>8</sub> price would increase the fuel cost by about 30% and the electricity cost by about 7%. A detailed study of energy economics in Finland in 2000 estimated that a doubling of fuel prices would

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result in the electricity cost for electricity generated from nuclear energy rising about 9%, coal 31% and gas 66%.

Growth in consumption of uranium in the medium term is projected by market observers to reflect the growth in nuclear power generation:

**Project uranium Consumption (million pounds U<sub>3</sub>O<sub>8</sub>)**

	2005	2006	2007	2008	2009	2010	2011	2012
Projected consumption	177.7	182.4	183.9	188.9	189.2	194.3	198.9	199.3

Source: World Nuclear Association

**Production**

Uranium mining for nuclear power generation commenced in the mid 1950s. Production grew rapidly in the 1970s and 1980s as a result of increased demand, expectations of strong growth and a rapid rise in the uranium price. After peaking in 1980, production steadily declined to current levels of approximately 42,000 tonnes, largely reflecting the effects of a falling uranium price.

Production is spread among a number of countries, although Canada and Australia are the largest suppliers, together accounting for 50% of world production in 2003:

**Production History (000 tonnes U<sub>3</sub>O<sub>8</sub>)**

Country	2001 Production	2002 Production	2003 Production	Share of World Production (2003) (%)
Canada	14.8	13.7	12.3	29
Australia	9.1	8.1	8.9	21
Kazakhstan	2.4	3.3	3.9	9
Niger	3.4	3.6	3.7	9
Russia	2.9	3.4	3.7	9
Namibia	2.6	2.8	2.4	6
Uzbekistan	2.3	2.2	2.1	5
United States	1.2	1.1	1.0	2
Other	4.0	4.4	4.1	10
<b>Total</b>	<b>42.9</b>	<b>42.5</b>	<b>42.2</b>	<b>100</b>

Source: Uranium Information Centre

Known recoverable resources are concentrated in a small number of countries:

**Uranium Mines by Country 2002**

	<u>000 tonnes U<sub>3</sub>O<sub>8</sub></u>	<u>%</u>
Australia	1,166	28
Kazakhstan	734	18
Canada	518	12
South Africa	351	8
Namibia	251	6
Russian Federation	180	4
Brazil	168	4
USA	120	3
Uzbekistan	110	3
Other	573	14
<b>World Total</b>	<b>4,171</b>	<b>100</b>

Source: OECD

Note: Based on resources estimated to be recoverable of a total cost of less than US\$80/kgU.

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Uranium production is dominated by relatively low cost mines in Canada and Australia:

**Largest Uranium Production Centres - 2003**

<b>Production Centre</b>	<b>Country</b>	<b>2003 Production ( 000 tonnes U<sub>3</sub>O<sub>8</sub> )</b>	<b>% of Total</b>
Key Lake/McArthur River	Canada	6.9	16.3
Ranger	Australia	5.1	12.0
Olympic Dam	Australia	3.2	7.5
McClellan Lake	Canada	2.7	6.5
Rabbit Lake	Canada	2.7	6.4
Rossing	Namibia	2.4	5.7
Akouta	Niger	2.4	5.6
Arlit	Niger	1.3	3.0
Vaal River	South Africa	0.9	2.1
Beverly	Australia	0.7	1.7
<b>Total</b>		<b>28.3</b>	<b>66.9</b>

Source: Uranium Information Centre

In Canada, there are a number of large deposits:

McArthur River, Saskatchewan - McArthur River is the world's largest high grade uranium mine, with an estimated ore grade of 25% and proved and probable reserves of 437 million pounds U<sub>3</sub>O<sub>8</sub>. McArthur River mining commenced in December 1999 and has an annual production capacity of 18 million pounds U<sub>3</sub>O<sub>8</sub>. Mining is conducted underground with milling conducted at the nearby Key Lake milling facility. McArthur River is expected to be one of the lowest cost producers in the world.

Cigar Lake, Saskatchewan - Cigar Lake is the second largest high grade uranium deposit in the world, with proven and probable reserves of 232 million pounds U<sub>3</sub>O<sub>8</sub> and an average grade of 19%. Cigar Lake is expected to commence production in 2007 as an underground mine, with construction expected to commence in early 2005. Milling will be undertaken predominantly at the nearby Rabbit Lake milling facility.

McLean Lake, Saskatchewan - In 1999, the McLean Lake mine commenced production following receipt of all governmental approvals. It produced 6 million pounds of U<sub>3</sub>O<sub>8</sub> in 2003 and expects similar production in 2004. As at December 2003, it had reserves of 41.4 million pounds U<sub>3</sub>O<sub>8</sub>.

A number of Canadian mines including Cluff Lake, Rabbit Lake and Key Lake have been exhausted or are in the process of being phased out. Both Rabbit Lake and Key Lake will continue as milling facilities after this time, supporting Cigar Lake and McArthur River mines respectively.

These mines and associated mills are owned in various proportions by the world's two largest uranium producers, Cameco Corporation (Cameco), a Canadian listed public company, and Areva:

## Canadian Mine Ownership

	<u>Cameco</u>	<u>Areva</u>	<u>Other</u>
McArthur River	69.8%	30.2%	
Cigar Lake	50.0%	37.1%	12.9%
Rabbit Lake Mill	100.0%		
Key Lake Mill	83.3%	16.7%	
McLean Lake		100.0%	

In 1984, the Australian Labour government confined production of uranium to those mines that were already in operation (Ranger, Olympic Dam and Norbilek). This policy was later amended to a "no new mines" policy. In 1996, the coalition government came to power and allowed proposals for new mines, with the Beverly Mine opening in 2000. In addition to Olympic Dam, Australian production comes from two other mines:

Ranger Mine, Northern Territory - Ranger Mine, owned by ERA, is currently the world's second largest mining and milling operation behind Key Lake mill, which processes ore from McArthur River. Ranger opened in 1981 at an annual production rate of 3,300 tonnes but has since been expanded to 5,000 tonnes U<sub>3</sub>O<sub>8</sub>; and

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Beverly Mine, South Australia Beverly standard operation is Australia's first in situ leach mine and in the first half of 2004 it produced 506 tonnes U<sub>3</sub>O<sub>8</sub>.

In contrast to the deposits referred to above the Olympic Dam deposit is the world's largest uranium deposit with proven and probable reserves of approximately 800 million pounds U<sub>3</sub>O<sub>8</sub> (December 2003) and resources of 3.4 billion pounds U<sub>3</sub>O<sub>8</sub> (October 2004).

A further mine, Honeymoon in South Australia, received government approval to proceed with development in November 2001, but is not yet operational. Its owner, Southern Cross, is seeking to develop the project at an initial capacity of 2.2 million pounds U<sub>3</sub>O<sub>8</sub>.

Australia's production and exports are shown below:

**Australian Uranium Product and Export**

	1996	1997	1998	1999	2000	2001	2002	2003
Production (tonnes U <sub>3</sub> O <sub>8</sub> )	5,866	6,473	5,799	7,055	8,973	9,194	8,083	8,930
Exports (tonnes U <sub>3</sub> O <sub>8</sub> )	5,424	6,916	5,553	7,578	8,757	9,239	7,637	9,612
Export Value (A\$/kg U <sub>3</sub> O <sub>8</sub> )	45.75	41.49	48.57	46.06	48.65	50.09	47.57	41.44
US\$/lb U <sub>3</sub> O <sub>8</sub>	16.81	13.96	13.84	13.48	12.85	11.78	11.73	12.24

Source: Briefing paper, Uranium Information Centre, October 2004.

Note: The A\$ values are from declared net FOB estimates and US\$ amounts are calculated from this.

Australia provides approximately 25% of world uranium supply from mines and uranium comprises approximately 40% of the country's energy exports in thermal terms.

Niger's uranium production comes from two mines that are effectively controlled by Cogema. Namibian production comes from the Rossing Mine operated and majority owned by Rio Tinto plc (Rio Tinto). Rossing management has announced that a comprehensive assessment of the facility's future operations is in progress. Remaining reserves at Rossing are estimated to exceed 100 million pounds U<sub>3</sub>O<sub>8</sub> but an extension of the mine life will require additional investment in the expansion of the open pit. Production declined in 2003 to 5.3 million pounds U<sub>3</sub>O<sub>8</sub> from 6.1 million pounds in 2002.

Production in the former Commonwealth of Independent States (Russia, Ukraine, Uzbekistan and Kazakhstan) has been declining over the last 5 years. These operations have come under increasing pressure as economic reform takes place. US production has declined significantly over the last decade, reflecting the impact of falling prices on these generally high cost mines. There are, however, several in situ leach mines in the USA that are expected to remain in business due to Cameco's 100% ownership (Crow Butte and Power Resources).

The industry is dominated by a small number of players, the largest of which are:

Cameco, the world's largest producer, which accounted for 7,500 tonnes of world production in 1999;

Areva, the second largest producer and major supplier to Electricite de France (70-80% of uranium requirements), operator of all French nuclear power plants;

ERA;

Rio Tinto, with its Rossing Mine in Namibia; and

WMC with its Olympic Dam Mine.

Production is forecast to increase gradually over the next 5 years:

**Production Forecast - 2005 to 2010**

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
International Nuclear	107.7	100.0	101.3	104.3	108.5	111.7	113.3

The forecast incorporates assumptions as to mine closures, production restraints at existing mines and new mines expected to come into production. Clearly, any significant price movement could lead to production changes in existing mines and the acceleration or suspension of production from new mines.



**Table of Contents****Market Outlook**

The price history of uranium can be broken into three distinct periods: the weapons procurement era (1940-1970), the inventory accumulation era (1970-1984) and inventory liquidation era (1984-present). In 1985, western uranium production fell below reactor requirements for the first time and has continued far below consumption since that time. This deficit has been met from the following sources:

**Production Deficit**

	<b>000 tonnes U<sub>3</sub>O<sub>8</sub></b>
<b>Production deficit</b>	<b>400</b>
Inventory drawdown	137-196
HEU	24
Re-enriched fuel	7
MOX	9
<b>Remaining deficit</b>	<b>164-223</b>
Estimated supply from Russia (World Nuclear Association)	177

Source: Neff, T., *Uranium Prices and Price Formation, September 2004*

The market softness in the past decade was largely attributable to substantial stockpiles of uranium or uranium equivalents. A number of non-mine sources of uranium exist:

Nuclear power utilities - Utilities have generally been reducing inventory levels (through selling inventory as well as undercontracting for their requirements) as they experience a period of increased competition in de-regulating electricity markets;

United States Enrichment Corporation ( USEC ) - USEC, a privatised US government corporation, is estimated to have had approximately 16 tonnes of super enriched uranium and has committed this stock to future delivery through to 2006;

United States Department of Energy ( DOE ) - Although the DOE has approximately 23,000 tonnes (58 million pounds) of  $U_3O_8$  it is not an active seller in the market. Pursuant to an agreement with Russia for the orderly disposal of Russian stockpiles of weapons grade uranium (also known as highly enriched uranium ( HEU ), the DOE is not to sell this stock until at least 2010 and then only in an orderly fashion;

Russian HEU - In 1999 Russia entered into an agreement with the United States and a number of uranium industry participants, including Cogema, Cameco and Nukem ( CCN consortium ), to effect the orderly disposal of Russian HEU. Under that agreement the CCN consortium was granted an option to acquire approximately 10-11,000 tonnes of de-enriched uranium each year for 15 years at a set floor price. De-enriched uranium not acquired must be stockpiled by Russia until the stockpile reaches approximately 23,000 tonnes, at which time Russia is entitled to sell the stockpile (under regulated arrangements). Sales of HEU-derived  $U_3O_8$  totalled 23.7 million pounds in 1998-2003;

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Russian and Chinese stockpiles - Stockpiles in Russia and China also exist. Sales from these stockpiles on the world market have been limited in recent times. China is considered a potential net importer of uranium in the medium to long term, reflecting expected growth in the number of nuclear reactors in China. Russia proposes to increase production after 2010 to provide for domestic requirements; and

Re-enriched depleted uranium - Re-enriched depleted uranium is largely produced in Russia, through the enrichment of tails from enrichment plants in Western countries. Russian producers are the largest supplier of this material, with capacity to supply at least 2,000 tonnes  $U_3O_8$  annually.

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The gap between production and consumption is expected to continue to be met through secondary sources for a number of years, although to a reducing extent. The graph below illustrates the expected decline in market share of secondary sourced uranium and is based on International Nuclear forecasts:

*Source: WMC.*

The chart below shows that a proportion of the production required to meet forecast demand which is now to be scheduled, illustrating the forecast extent at the supply shortfall:

*Source: WMC.*

Primary production will increasingly be the source for satisfying uranium requirements. Without new production, a significant shortfall in supply would occur as early as 2006. This shortfall will need to be met from increasing production at existing mines, new mines, the reopening of closed mines (which were uneconomic at previous prices) or new discoveries. In respect of new discoveries, expenditure on uranium exploration has historically closely tracked the uranium price, however there is a significant delay between exploration expenditure and production.

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There remains significant uncertainty regarding the supply of uranium from secondary sources. The uncertainties relate to changes in the price of uranium affecting the position of the parties to the Russian HEU arrangements, the possibility of further reductions in United States, Russian and other nuclear arsenals, releasing further stocks of HEU. Ultimately the DOE, will be able to sell its stockpile of some 23,000 tonnes which, if not done in a controlled fashion, could affect the market and changes to the US quota system, which discriminates against material from Russia, could stimulate further release of existing stockpiles.

Uranium demand is impacted by the relative cost of enrichment and uranium feedstock. A utility can theoretically reduce the amount of uranium purchased by reducing the tails assay in enrichment by reprocessing the depleted tails to recover additional uranium. However, the enrichment industry is highly concentrated and facilities are presently operating at high capacity levels and to enrich depleted tails would consume additional capacity.

Uranium is not traded on an official exchange. Spot sales occur on an over the counter basis between producers, utilities and several intermediaries. However, the spot market is highly illiquid, reflecting the fact that most uranium is sold under long term contracts. In spite of this, the spot market price is important as pricing under a significant portion of long term contracts with US utilities (which account for approximately 30% of world demand) is linked to the spot market.

The liquidation of existing stockpiles over the last decade has seen the spot price remain relatively flat other than a brief rally in 1996. This rally was the result of the bankruptcy of the industry's largest trader, NUEXCO, uncertainty as to whether the Russian/United States/CNN consortium HEU deal would be reached and concerns about a supply shortfall. The current  $U_3O_8$  spot price is in excess of \$20. This significant increase reflects a weakening of the US dollar and increased caution over the security of supply, as the market moves from liquidating its stockpiles and other secondary sources, to a production driven focus.

*Source: Bloomberg, WMC.*

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Contract prices are often linked to a reported price indicator, with one of the most common indicators published by Euratom. This indicator reports the price of contracted and spot deliveries to European consumers. The long term contract price is less sensitive to movements in the spot price due to pricing mechanisms which have a fixed component:

*Source: Euratom*

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**WMC RESOURCES LIMITED**

**SPECIALIST S TECHNICAL REPORT**

**AMC 204084**

**21 December 2004**

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21 December 2004

The Directors

Grant Samuel & Associates Pty Ltd

Level 6

1 Collins Street

MELBOURNE Victoria 3000

Dear Sirs

**WMC RESOURCES LIMITED - SPECIALIST S TECHNICAL REPORT**

Xstrata plc ( Xstrata ) has made, through a subsidiary, a cash offer (the offer ) for the entire issued capital of WMC Resources Limited ( WMC ).

WMC has engaged Grant Samuel & Associates Pty Ltd ( Grant Samuel ) to prepare an independent expert s report setting out Grant Samuel s view as to whether the Xstrata offer is fair and reasonable.

Grant Samuel has engaged AMC Consultants Pty Ltd ( AMC ) to provide technical advice to Grant Samuel for the purposes of its assessment. In particular, Grant Samuel engaged AMC to provide a specialist s technical report including a description of the WMC assets and their planned development, AMC s conclusions as to the technical assumptions regarding ore reserves, production profiles, capital costs, operating costs and an assessment of the exploration interests with a technical valuation of those interests.

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For each of the operations reviewed, AMC has provided production and capital and operating cost projections to Grant Samuel for valuation purposes. AMC has, for some projects, prepared two projection models; Case 1 typically being based on WMC Ore Reserve estimates and that part of other Mineral Resources and exploration potential for which AMC judges there is a high confidence of future conversion to reserves. Case 2 typically adds to Case 1 additional tonnages which AMC judges to represent reasonably possible future additions to reserves from existing resources and from readily demonstrable exploration potential. In some cases, Case 2 provides for a significant expansion of production and/or other technical upgrades and improvements.

AMC has completed its engagement as a Specialist in accordance with the Code and Guidelines for Technical Assessment and/or Valuation of Mineral and Petroleum Assets and Mineral and Petroleum Securities for Independent Expert Reports, 1998 (the Valmin Code ).

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**WMC Resources Limited**

**Specialist s Technical Report**

We present this Technical Report which follows in the form of:

WMC Mineral Assets - Summary

Copper Uranium

Nickel

Fertilizer

Corridor Sands

Technology

Exploration

Sources of Information

Qualifications.

For the purposes of preparing this report, AMC has visited the operating sites, reviewed material technical reports and management information and held discussions with management staff both on site and in WMC s Melbourne, Perth and Townsville offices. AMC has not visited the Corridor Sands project for the purposes of this report.

AMC has not audited either mineral resource or ore reserve estimates or relevant production forecasts and cost estimates but has aimed to satisfy itself that all estimates for the operations and other projects have been prepared in accordance with proper industry standards and are based on data that AMC considers to be of acceptable quality and reliability. Where AMC has not been so satisfied, AMC has included comment in this report and made modifications to the estimates and forecasts provided by AMC to Grant Samuel for its valuation purposes.

For exploration assets, it is not possible to project positive cash flows and/or production estimates with sufficient confidence to rely on discounted cash flow methodology. AMC therefore has considered other methods to value the exploration assets. These methods are commonly used in Australia to value exploration projects and are discussed in this report.

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The Valmin Code defines a Technical Value as an assessment of future net economic benefit and a Fair Market Value as one which adds to or subtracts from a Technical Value a premium or discount relating to market, strategic or other considerations. AMC's values of exploration assets are Fair Market Values. Some of the exploration valuation methods result in a Technical Value but AMC does not believe it appropriate at this time to apply a premium or discount to assets such as these to obtain Fair Market Value.

The status of WMC's material Australian tenements has been reviewed and reported by Resource Mapping Pty Ltd, a Specialist in mining title administration. AMC has reviewed the report and considers it appropriately address the Valmin Code requirements that the status of tenements has been disclosed and that disclosure is based on recent independent enquiry by a suitably qualified party. WMC has also provided AMC with a copy of the Prospecting and Research Licence (65L) held by Corridor Sands Ltd as issued by the Ministry of Mineral Resources and Energy, Republic of Mozambique on 17 October 2004 and valid to 17 October 2005. AMC is satisfied that the documentation provided is evidence of good standing of the tenement for the project. AMC concludes from its review and its queries of WMC that there are no material tenement issues jeopardising title to any material asset. AMC has not reviewed legal agreements pertaining to ownership or operation of WMC's operational or exploration assets except as to their impact on the stated objectives of this review.

AMC's review did not include a judgement on future commercial terms and prices for the various commodities and products produced by WMC, nor did it include a judgement on future commercial terms and prices for consumables required for the operations which are important cost drivers such as acid for Fertilizer and energy inputs generally. AMC has not reviewed issues of taxation or state or third party royalty.

All monetary figures in this report are in 2004 Australian dollars ( \$ ) unless otherwise noted. Where there have been conversions from other currencies to Australian dollars, rates effective at December 2004 have been used except where otherwise specified. For definitions of abbreviations used in this report, refer to Appendix A.

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**WMC Resources Limited**

**Specialist s Technical Report**

**1. WMC MINERAL ASSETS - SUMMARY**

The mineral assets of WMC reviewed for this report are summarised as follows:

**CUD**

The Copper Uranium Division comprises the Olympic Dam operations in South Australia and consists of:

A mechanised underground mine.

A copper concentrator.

A hydrometallurgical plant producing both uranium oxide and copper.

A copper smelter.

A copper refinery with a combined precious metal plant.

Associated infrastructure including powerline, water borefield and pipeline and desalination plant.

**NBU**

The Nickel Business unit comprises the following Western Australian major assets:

Kambalda nickel concentrator where nickel concentrates are produced.

Mount Keith mining and milling operations where nickel concentrates are produced.

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Leinster nickel mining and milling operations where nickel concentrates are produced.

Kalgoorlie nickel smelter where nickel in matte is produced from nickel concentrates.

Kwinana nickel refinery where high purity nickel briquettes and powder are produced from nickel in matte.

### **FBU**

The F Business Unit comprises:

A large phosphate resource at Phosphate Hill near Mt Isa in Queensland.

A crushing and beneficiation plant.

A phosphoric acid plant feeding to a granulation plant.

An ammonia plant converting natural gas.

A sulphuric acid plant at Mt Isa.

A product storage facility at Townsville Port.

The HiFert distribution business (not reviewed by AMC).

### **CORRIDOR SANDS**

A major mineral sands resource in Mozambique.

A feasibility study has been undertaken.

### **REGIONAL EXPLORATION**

WMC's regional exploration is headquartered in offices in Belmont, Western Australia and Denver, USA.

Recent activity has been primarily in Australia, North America, China and Latin America and some in Africa.

**TECHNOLOGY**

The following technological developments made by WMC are considered by AMC to have an estimable market value:

Exploration databases and systems.

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WMC s proprietary EM System.

Re-treatment of uranium tailings at Olympic Dam.

Olympic Dam smelter - taphole and concentrate burner developments.

**2. COPPER URANIUM**

**2.1 Introduction**

The Olympic Dam project is located approximately 570 km NNW of Adelaide in South Australia. (Figure 2.1). The deposit was discovered in 1975 by the exploration division of WMC. A joint venture to facilitate development of the project was formed in 1979 between WMC (51%) and BP Minerals (Roxby Downs) Pty Ltd (49%). WMC purchased the partner s share in April 1993 and owns the project 100%.

Production commenced in mid-1988 at a rate of 1.3 Mtpa of ore for an output of approximately 45,000 tpa of copper and 1,200 tpa of uranium oxide. Significant amounts of refined gold and silver were also produced.

In 1992 an optimisation programme increased the production rate to 2.2 Mtpa of ore and a second optimisation in 1995 increased the rate 3.3 Mtpa of ore. This second expansion involved construction of the Robinson Shaft, an autogenous mill and an electric furnace. Also in 1995 a prefeasibility study for a major expansion was initiated, leading to the announcement in 1996 of an expansion to 9.2 Mtpa.

Construction of the expansion, which included construction of the Sir Lindesay Clark shaft hoisting facility and a major plant expansion, commenced in 1997 and was completed in 1999. A further optimisation to enable a production rate of 10.5 Mtpa of ore by 2003 ( Opt-3 ) was undertaken in 2000. Productions of uranium oxide (forecast to be 4,300t in 2004) and precious metals have generally increased pro rata with the copper production rate.

Since October 2001, disruptions have occurred to production due to fire in the solvent extraction ( SX ) part of the process plant. A subsequent redesign and enhancement of the SX circuit was completed in April 2004. Major smelter shutdown and mill reline was brought forward from 2004 to 2003 to coincide with the SX circuit rebuild. These events have resulted in copper production, since 2000, being less than planned. The Copper Uranium Division ( CUD ) has invested considerable engineering effort and capital to improve the circuit and establish systematic operating procedures to improve operability and reliability, that has resulted in improved process plant utilisation and performance. The forecast 2004 copper production is 224,000t Cu, with recent performance in the plant equivalent to a 235,000 tpa Cu rate.

**Table 2.1 Olympic Dam, 4-year Summary of Production, Operating Costs and Capital Costs**

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<b>Item</b>	<b>Unit</b>	<b>2002</b>	<b>2003</b>	<b>2004 Forecast <sup>2</sup></b>	<b>2005 Forecast <sup>2</sup></b>
Ore Mined	Mt	8.7	9.0	8.8	9.3
Copper produced <sup>1</sup>	t	178,120 <sub>1</sub>	160,080 <sub>1</sub>	224,000	226,000
Uranium oxide produced <sup>1</sup>	t	2,890 <sub>1</sub>	3,203 <sub>1</sub>	4,300	4,700
Gold produced <sup>1</sup>	oz	64,294 <sub>1</sub>	86,117 <sub>1</sub>	86,300	115,000
Cash and non-cash productions costs <sup>2</sup>	\$M	526	584	765	815
Total capital costs <sup>2</sup>	\$M	216	397	115	170

Notes: <sup>1</sup> Source, 2003 WMC Concise Annual Report

<sup>2</sup> Source, 2004 WMC internal memorandum

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**Figure 2.1 Locality Plan, Olympic Dam**

In late 2002 and early 2003 regional instability in the FN mining area resulted in modifications to the mine plan that resulted in increase in development and backfill requirements. As a consequence mining rates have not met the 10.5 Mtpa rate. In addition milling circuit utilisation has been below plan due to failures of major pipelines in the

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hydrometallurgical circuit. These issues have been addressed and production rates are expected to be at 10.5 Mtpa rates by the end of 2005. A further increase in production to 12.3 Mtpa by 2010 could be attained through low capital debottlenecking of the existing plant.

The operation consists of:

a mechanised underground mine

a copper concentrator

a hydrometallurgical plant

a copper smelter

a copper refinery with a combined precious metal plant

associated infrastructure (power line, water borefield and pipeline and desalination plant, etc).

The operation currently has about 1,130 employees and 550 contractors on site. The mine township of Roxby Downs, 16 km south of the mine, was first occupied in 1987 and houses over 4,000 people. The township has a good range of community facilities and is suited to the ongoing requirements of the current operation.

At present WMC is examining two future operating scenarios:

#### **The 12.3 Mtpa Case**

This scenario is an optimisation of the existing underground sublevel open stoping ( SLOS ) operations (which may utilise alternate mining methods in the undeveloped southern areas) and the processing facilities to produce 12.3 Mtpa of ore (nominally 250,000 tpa of copper).

#### **The 40 Mtpa Case**

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This scenario is an expansion of the operation using bulk mining methods such as block caving or open pit mining in the southern area, whilst the existing underground operations in the north continue. The production rate proposed for this expanded mine is 40.0 Mtpa (nominally 500,000 tpa of copper) based on converting the current single stage smelting process to two stage smelting.

The 18 month prefeasibility study for this expansion is approximately 30% complete. At this stage of the study, both block caving and open pit mining are potentially viable. The most likely result of the study and the basis for the case described in this report, is a recommendation to design an open pit operation in a feasibility study due to commence in early 2006.

For the purpose of this report, WMC provided AMC with detailed models of physical schedules, capital and operating costs for the two operating scenarios at Olympic Dam. Following site visits and investigations by AMC, the models were adjusted where necessary before being provided to Grant Samuel for valuation purposes.

## **2.2 Geology, Mineral Resources, Ore Reserves and Exploration**

### **2.2.1 Geology**

The Olympic Dam copper uranium-gold-silver deposit is situated on the Stuart Shelf geological province of South Australia, where relatively flat-lying sedimentary rocks of Late Proterozoic and Cambrian age overlie the north-eastern part of the Proterozoic/Archaean Gawler Craton. In the Olympic Dam area, the cover rocks are predominantly sandstones with minor shales, while the underlying cratonic rocks comprise deformed granites and metasediments overlain by volcanics and siltstones.

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The deposit itself is hosted by a large granitic haematitic breccia complex, the Olympic Dam Breccia Complex ( ODBC ). There is a wide variety of breccia types and a complete gradation from granite breccias, through haematitic granite breccias, to haematite-rich breccias. The ODBC is believed to have formed through a combination of hydrothermal, volcanogenic, sedimentary and tectonic processes. Subordinate rock types include incorporated blocks of fine-grained, haematitic sandstones and siltstones, and altered fine-grained mafic to felsic igneous dykes.

The ODBC exhibits a broadly defined concentric zonation of major lithological groups, although the distribution in detail is complex (Figures 2.2 and 2.3). Granite-rich breccias envelop and are complexly intermingled with, the haematite-rich breccias. Haematite-quartz breccias, which are barren of economic mineralisation, form an L-shaped configuration in the centre/south west of the deposit.

Alteration is widespread and locally extreme, assemblages comprising one or more of sericite, haematite, chlorite and silica. Haematite alteration is more abundant and more intense towards the centre.

The deposit has an overall north-westerly trend, suggesting that a major regional structure may have localised hydrothermal activity and breccia development. The deposit is criss-crossed by a complex array of faults and veins of variable orientations.

The deposit contains anomalous concentrations of iron, copper, uranium, gold, silver, barium, fluorine and rare earths, although only copper, uranium, gold and silver are currently considered to be economically exploitable. Ore grade mineralisation is broadly of two types: copper uranium (the dominant ore type), and gold.

Copper uranium (-gold-silver) mineralisation is contained in over 150 individual zones, with copper and uranium occurring mainly as disseminated grains or discrete aggregates and less commonly as veinlets or in a massive form. Copper is present as bornite-chalcocite mineralisation (approximately 35% of resource tonnage) with an average grade of over 2% Cu and as chalcopyrite mineralisation (approximately 65% of resource tonnage) with an average grade closer to 1% Cu. The interface between bornite-chalcocite mineralisation and chalcopyrite-pyrite mineralisation (the bn-cp interface) is a sharply defined boundary with the former occurring mainly in the upper and more central parts of the deposit and the latter tending to occur in the deeper and more outer parts (Figure 2.3). Downwards and outwards from the bn-cp interface, there is a gradational increase in the pyrite:chalcopyrite ratio and a general decrease in the total amount of sulphide. Uranium mineralisation generally occurs with copper mineralisation, with higher uranium grades tending to occur with higher copper grades within the bornite-chalcocite zone. Uranium is present mainly as fine grained pitchblende with coffinite and brannerite. Gold and silver occur intimately associated with copper sulphides, gold being very fine grained.

There is also a gold ore type, which is hosted by granite-rich or haematite-rich breccias. Abundances of copper, uranium and silver are generally low within these zones.

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**Figure 2.2 Geological Plan of Olympic Dam Deposit**

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The Mineral Resource and Ore Reserve estimates reported at September 2003, and the Mineral Resource estimate publicly released in October 2004, are presented in Tables 2.2 and 2.3. The October 2004 Mineral Resources had only just been released at the time of this report and WMC had not then completed an update of the corresponding Ore Reserve estimate. For both the December 2003 and October 2004 estimates, the resources are inclusive of those resources modified to produce the reserves.

**Table 2.2 Olympic Dam, Mineral Resources and Ore Reserves at December 2003 and Mineral Resources at October 2004**

(Cut-offs, \$30/t Resources, \$60/t Probable Reserves, \$90/t Proved Reserves)

Category	Mineral Resources at December 2003					Category	Ore Reserves at December 2003				
	Tonnes (M)	Cu (%)	U <sub>3</sub> O <sub>8</sub> (kg/t)	Au (g/t)	Cu:S		Tonnes (M)	Cu (%)	U <sub>3</sub> O <sub>8</sub> (kg/t)	Au (g/t)	Cu:S
Measured	590	1.6	0.5	0.5	1.2	Proved	115	2.1	0.6	0.6	1.6
Indicated	1,370	1.1	0.4	0.5	0.9	Probable	615	1.5	0.5	0.5	1.0
Inferred	990	1.1	0.4	0.5	0.7						
<b>Total</b>	<b>2,950</b>	<b>1.2</b>	<b>0.4</b>	<b>0.5</b>	<b>0.9</b>	<b>Total</b>	<b>730</b>	<b>1.6</b>	<b>0.5</b>	<b>0.5</b>	<b>1.1</b>

*Mineral Resources are inclusive of those resources modified to produce Ore Reserves*

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<b>Category</b>	<b>Tonnes (M)</b>	<b>Cu (%)</b>	<b>U<sub>3</sub>O<sub>8</sub> (kg/t)</b>	<b>Au (g/t)</b>	<b>Cu:S</b>
Measured	650	1.5	0.5	0.5	1.2
Indicated	1,420	1.1	0.4	0.5	0.9
Inferred	1,740	1.0	0.3	0.5	0.8
<b>Total</b>	<b>3,810</b>	<b>1.1</b>	<b>0.4</b>	<b>0.5</b>	<b>0.9</b>

*Mineral Resources are inclusive of those resources modified to produce Ore Reserves*

The main reasons for the very substantial increase in the Mineral Resources as estimated at October 2004, 90% of which has occurred in the Inferred category, are:

incorporation of the results of a 71 hole, 55,000m surface drilling programme in the Southern Mine Area, which has added 590 Mt at a lower than average copper grade, most in Mine Area E (Figure 2.2)

an approximate 30% increase in the uranium price used in the calculation of resource block values, which has added 180 Mt, while resulting in a decrease in copper grade

additional underground drilling, which has added 90 Mt.

**2.2.2.2 Drilling and Sampling**

The Mineral Resource estimate is based on samples from underground and surface diamond drilling, in the approximate ratio of 66% underground to 34% surface. All holes are collar and down-hole surveyed where possible. Core is split and sampled on 1m or 2.5m lengths within mineralised zones. Core recovery averages around 99% for all mining blocks except B Block, for which it averages around 95%. Drill spacing is discussed later under Classification .

Sample preparation and assaying has varied between on-site and off-site. Before 1987, core samples were prepared to pulp stage on site and then sent to a commercial laboratory for assay. Between 1987 and 1997, samples were prepared and assayed on site, with gold and silver being analysed by a procedure that resulted in only approximately 90% sample dissolution. In 1997, the pre-1987 procedure was re-established and equipment and protocols were upgraded following a 1996 review by an internationally recognised sampling consultant, who advised that the sampling protocols for gold and uranium up to that time had not been of an appropriate standard.

In AMC's view, Olympic Dam sampling and assaying practices are now equal to or better than good industry practice. Based on reconciliation data to date, it appears unlikely that the pre 1997 uranium grades represent a material risk to the project. Gold assays based on the 1987-1997 incomplete dissolution procedure remain unchanged in the database. The Proved Reserves conversion factor (discussed later) is designed in part to compensate for this under assaying but the Probable Reserves and Mineral Resources are not similarly adjusted, suggesting that the gold grades for these estimates may be under-stated by approximately 20% to 30%. Since gold accounts for only around 5% of the in situ value of copper uranium resource blocks, AMC is satisfied that under-assaying for gold does not represent a material matter. CUD has advised that if gold only stopes were to be mined, the relevant samples would be re-assayed for gold and silver.

In some mine areas, particularly the Southern Mine Area, there is a relative lack of sulphur assays in the database. For these areas, sulphur values are estimated from the logged sulphide content. WMC has a rolling programme to re-assay pulps for sulphur for mining areas within the five-year plan. In the Southern Mine Area, the new drilling programmes recently completed and planned for 2005/06 will provide reliable sulphur assays.

### **2.2.2.3 Resource Modelling and Estimation**

Geological interpretation and wire framing is based on a \$30/t cut-off, based on in situ metal value, with domaining of zones of homogenous strike and dip. Inverse distance weighting to the power of 3 (ID<sup>3</sup>) is used for grade estimation. Block sizes range up to a maximum of 30m x 30m x 30m. Search ellipsoids are oriented according to the

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interpreted principal directions of continuity of mineralisation. Estimates are generated for Cu, U<sub>3</sub>O<sub>8</sub>, Au, Ag, S and bulk density, and others, such as Fe and CO<sub>2</sub>, where data is available. The Cu:S ratio is derived from the estimates of Cu and S (barium corrected). Anomalously high grades have their influence restricted to single cells in the block model or to a group of cells in a small radius around the high grade composites.

AMC considers that there may be a slight risk of local grade over estimation having occurred as a result of the use of ID<sup>3</sup> but that, given the size of the deposit and the multiple number of ore sources, is not a material risk. WMC is examining the implementation of kriging as an alternative to ID<sup>3</sup>.

**2.2.2.4 Resource Classification and Reporting**

Resources are classified as shown in Table 2.4:

**Table 2.4 Resource Classification**

Search ellipse	Drill spacing (Distance to nearest sample)		
	≤40m	40m - 80m	≥80m
12.5 x 12.5 x 5m	Measured	Indicated	Inferred
25 x 25 x 10m	Measured	Indicated	Inferred
>50 x 50 x 20m	Indicated	Inferred	Inferred

Historically, WMC has applied the same resource classification criteria regardless of cut-off value. Work being undertake as part of studies on bulk mining options for the Southern Mine Area suggests that the drill spacing criteria can be relaxed for resources estimated at a low cut-off value. WMC is also examining the application of a risk-based resource classification criteria that takes account of the planned scale of mining, as discussed in the 2004 JORC Code.

**2.2.2.5 Commodity Prices and Cut-Off Values**

Cut-off values are based on long term projections of commodity and exchange rates. The commodity prices used for the December 2003 Mineral Resource estimate were:

Cu: A\$1.42/lb; U<sub>3</sub>O<sub>8</sub>: A\$23.33/lb; Au: A\$500/oz; Ag: A\$8.33/oz.



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The commodity prices used for the October 2004 Mineral Resource estimate were:

Cu: A\$1.42/lb; U<sub>3</sub>O<sub>8</sub>: A\$30/lb; Au: A\$500/oz; Ag: A\$8.33/oz.

The Mineral Resource cut-off in situ value of \$30/t was established in 1993 and while it has been re-examined each year since, it has not changed. Internal and external reviews have suggested that it may be too low for the present underground operations and AMC agrees. A review of resource and reserve cut-off values is being undertaken as part of the studies on bulk mining options.

For the October 2004 resource estimate, while block values were adjusted upwards for the increased uranium price, the \$30/t wireframe outlines were not reviewed due to time constraints. It can be expected that such a review would result in a tonnage increase and copper grade decrease.

Internal studies have shown that applying average commodity prices over the preceding three years instead of forecast commodity prices would have a negligible impact on Mineral Resource estimates.

For copper uranium mineralisation, copper accounts for approximately 70% of the value, uranium for 25% and gold for 5% (with silver negligible).

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##### **2.2.2.6 Audits**

Olympic Dam Mineral Resource estimates are audited both internally and externally. AMC has reviewed the audit results for both the December 2003 and October 2004 resource estimates and is satisfied that they have been undertaken to high standards and have not identified any issues of material impact.

##### **2.2.2.7 Summary**

In AMC s view, the estimation, classification and public reporting of Mineral Resources at Olympic Dam has been undertaken to a high standard and is in accordance with the JORC Code. A substantial proportion (around 45%) of the October 2004 Mineral Resource estimate is in the Inferred category. Consistent with its categorisation, the detailed geological interpretation for much of the Inferred Resources is subject to some uncertainty. WMC is planning to undertake an infill drilling program during 2005 to resolve these geological uncertainties and upgrade much of the Inferred Resources to Indicated Resources.

### **2.2.3 Conversion of Mineral Resources to Ore Reserves**

The following section describes the conversion of Mineral Resources to Ore Reserves for the existing underground SLOS operations.

Proved Reserves and some Probable Reserves (internally referred to as Stope Mined Reserves or SMR ) are derived from Measured and Indicated Resources (internally referred to in part as Stope Design Reserves or SDR ) by undertaking stope designs to a \$90/t cut-off contour in areas fan drilled to a nominal 20m by 20m spacing. The proportion of Proved and Probable Reserves in SMR is consistent with the proportions of Measured and Indicated Resources in SDR. However, if the SMR for a stope contains less than 50% Measured Resources, all of the resulting SMR is classified as Probable Reserves. Tonnage/grade conversion factors are applied which cover both mining dilution/losses and sub-standard assaying of gold and silver in the on-site laboratory between 1987 and 1997 (except for those areas sampled post-1997). Experience with stope sizes around 200,000t suggests that the tonnage increases by 14% due to over-break.

Early in the life of the operation, a \$100/t cut-off contour or higher was applied for the derivation of Proved Reserves, which is the main reason for the higher copper grade of Proved Reserves compared with Probable.

Other Indicated Resources and those Measured Resources not converted to Proved Reserves are converted to Probable Reserves via a floating stope analysis, based on a cut-off of \$60/t. An 85% adjustment factor is applied to derive the tonnes of Probable Reserves, for all mine areas except FN, in order to allow for material lost to pillars (primarily), bias in the grade estimation method and uncertainty due to estimating reserves on material that is not drilled to the density required for Measured Resources. The FN area adjustment factor is 65%, primarily due to relative geological complexity, sharper grade boundaries and lower levels of data. Probable Reserves are usually not scheduled for extraction within 8 - 10 years. CUD has recently introduced a policy that Probable Reserves derived by a floating stope analysis must be supported by the development of a technically feasible mine plan. In the 2004 Ore Reserve estimation process, any Probable Reserves not so supported will be removed from Ore Reserve tabulations.

In AMC's view, the conversion from Mineral Resources to Ore Reserves at Olympic Dam is appropriately handled and the public reporting of the Ore Reserves is in accordance with the JORC Code.

#### **2.2.3.1 Reconciliation of Resources and Reserves from Mining**

Table 2.5 sets out reconciliation data at Olympic Dam over a ten-year period.

In general, reconciliation has been reasonable, although for the last ten years, there has been an undercall on the Cu:S ratios between Ore Reserves and the mill, relatively minor to 1998 but significant since 1999. This is caused

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mainly by the historical lack of sulphur assays in some sections of the mine, as described earlier in this report. The undercall is likely to continue for the next few years at least. CUD has recently introduced an adjustment factor of plus 5% in detailed mine schedules to allow for the historical undercall. In AMC s view, this is a reasonable response but cautions that the factor is somewhat arbitrary and that significant variations from the predicted Cu:S ratio may be experienced on both a short-term and medium-term basis.

**Table 2.5 Olympic Dam Reconciliation between Ore Reserve Prediction and Mill Feed**

<b>Parameter</b>	<b>Unit</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004*</b>
<b>Ore Reserve prediction</b>	(Mt)	2.4	2.6	3.1	3.2	3.5	6.8	8.8	9.1	8.7	9.0	7.2
<b>Cu</b>	(%)	2.9	3.0	3.0	3.0	2.8	2.6	2.4	2.3	2.4	2.3	2.3
<b>U<sub>3</sub>O<sub>8</sub></b>	(kg/t)	0.79	0.71	0.76	0.85	0.79	0.77	0.66	0.64	0.65	0.64	0.67
<b>Au</b>	(g/t)	0.45	0.56	0.60	0.54	0.44	0.56	0.45	0.57	0.52	0.52	0.52
<b>Cu:S</b>			2.5	2.2	2.3	2.3	1.9	2.2	1.9	1.7	1.8	1.7
<b>Ore milled</b>	(Mt)	2.4	2.7	3.1	3.1	3.4	6.8	8.9	9.3	8.9	8.4	7.3
<b>Cu</b>	(%)	2.9	3.0	3.0	3.0	2.7	2.7	2.5	2.5	2.6	2.4	2.2
<b>U<sub>3</sub>O<sub>8</sub></b>	(kg/t)	0.79	0.71	0.76	0.85	0.80	0.77	0.73	0.72	0.69	0.63	0.64
<b>Au</b>	(g/t)	0.45	0.56	0.59	0.54	0.56	0.59	0.53	0.59	0.54	0.48	0.47
<b>Cu:S</b>			2.6	2.4	2.4	2.4	2.2	2.4	2.2	1.9	1.9	1.8
<b>Undercall on Cu:S</b>	(%)		5	7	5	3	18	10	16	10	8	8

\* To October 2004

**2.2.3.2 Potential Additions to Resources and Reserves**

The potential to discover additional resources and reserves in the vicinity of the Olympic Dam deposit is excellent. In the immediate mine area, continued underground drilling in the FNW, Green West and Deep Olive areas (see Figure 2.2) should add to Mineral Resources in the northern part of the mine. In the Southern Mine Area, there is very good potential to add significantly to Mineral Resources south of E Block and around H and DSE Blocks. Surface drilling in the Southern Mine Area, designed to add new resources and infill existing resources, is ongoing, with nine drilling rigs in operation at the time of writing, and a further six being due to start by early 2005.

WMC holds extensive (2,600 km<sup>2</sup>) exploration ground in the Stuart Shelf area, including most of the prospective ground with less than 500m of cover. There is good potential for the discovery of other iron oxide-associated copper uranium-gold deposits similar to Olympic Dam. Four prospects, Wirrda Well, Acropolis, Oak Dam and Island Dam, have had limited drilling undertaken to date, most of it conducted in the late 1980 s. Wirrda Well, located 30 km south of Olympic Dam, has been shown to host mineralisation, iron-oxide in style similar to Olympic Dam, with encouraging grades. There has been insufficient drilling undertaken to estimate an Inferred Resource, mainly due to the prospect being covered by a clay pan, which has heritage significance. WMC considers the prospect to have the potential to host very significant tonnages.

**2.2.4 40.0 Mtpa Case Mineral Inventory**

The bulk mining studies in the Southern Mine Area are based on preliminary conversions to a mineral inventory (a non-JORC Code internal term) from an interim Mineral Resource estimate prepared in July 2004, when only 44 of the 71 surface holes drilled in the Southern Mine Area had been completed. The July 2004 Mineral Resource estimate was not publicly reported but was some 450 Mt less than the Mineral Resource estimate publicly released in October 2004. For the areas of exploration potential that adjoin the July 2004 Mineral Resource areas, WMC has estimated tonnes and grade for the purposes of examining bulk mining options using a relatively coarse block model based on wide-spaced drilling.

In the conversion of the Mineral Resource and exploration potential to a mineral inventory for the conceptual open pit mine plan, WMC has added mining dilution of 5% at zero grade.

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The break-up of the 1,137 Mt of ore, 234 Mt from underground and 903 Mt from the open pit, scheduled in the 40.0 Mtpa case is as follows:

21% of the schedule is from underground northern area reserves

14% is from Indicated Resources within the pit

39% is from Inferred Resources within the pit

26% is from unclassified material from the coarse block model (exploration potential).

#### **2.2.5 Potential Mine Life**

The 12.3 Mtpa and 40.0 Mtpa cases have been scheduled for periods of 30 and 33 years respectively. In the 12.3 Mtpa case, after 30 years of operation, nearly 30 years of reserves remain. This does not take into account the conversion to reserves of part of the inferred resources with time. Hence for the 12.3 Mtpa case, it is not difficult to envisage a mine life in excess of 70 years based on the current and proposed production rate.

There is future mining potential after 33 years of 40.0 Mtpa ore production. Preliminary pit optimisations which do not encroach on the process plant facilities demonstrate that there is potential for a pit with in excess of 2,000 Mt of ore with a similar grade and stripping ratio to that described in the 33 year 40.0 Mtpa case. For the 40.0 Mtpa case a mine life in excess of 60 years is considered realistic.

### **2.3 Mining**

#### **2.3.1 Existing Operations**

The underground mining operation is the largest in Australia and one of the largest non-caving mines in the world. The mine has three shafts (Whenan, Clark and Robinson shafts) of which Clark is the principal hoisting shaft. Other surface connections include a service decline and twenty-five active intake and exhaust raises. The mining method is a variant of SLOS, with stopes up to 35m wide and between 60m and 120m high. All stope voids are backfilled on completion with cemented aggregate fill ( CAF ) and/or waste rock.

The mining operation uses the best available technology. The production drills are capable of semi-autonomous operation and a research programme at the mine is directed at automating the load-haul-dump ( LHD ) units.

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Broken ore is drawn from the stope drawpoints by LHDs and either tipped directly into the orepass system or loaded into trucks. The orepasses feed down to a rail haulage level where trains are loaded through remote-controlled chutes. The trains are automated, but it is unlikely that the loading operation can be fully automated because of the nature of the ore and the mechanism of the loading chutes.

The trains discharge into an underground crusher, with the crushed ore being delivered by conveyor to Clark shaft. Alternatively, ore or waste can be trucked to the Whenan shaft crusher and hoist.

### **2.3.1.1 Mine Planning and Scheduling**

The production schedule for the 12.3 Mtpa case is based on Measured and Indicated Resources and Reserves using a cut-off of \$85/t. The difference in cut-off between the 12.3 Mtpa case and the 2003 reserves is due to additional work undertaken in late 2003 and 2004 after the reserves were prepared.

The production schedule is generated by developing a stope sequence in designated mine areas, based on geotechnical (including stope size and sequencing) design criteria and drawing on stopes from within the areas in the correct sequence to balance the copper grade, uranium grade, Cu:S ratio and the number of stopes in any given ventilation district. Within each mine area, ventilation shafts and fans define ventilation districts, within which only

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two or three stopes may be active (producing tonnes) at any time. This aspect of the operation is well planned and managed.

Scheduling of the Cu:S ratio is important for the smelter. CUD s technical staff expect that they will continue to find ore suitable for single stage smelting for at least 20 years. Experience so far has been that the need to replace the single stage smelter with a two stage smelter to treat lower Cu:S ratio ore is always about 10 years away and continues to be pushed further away with ongoing planning. Other key planning drivers are the uranium grade (of 0.6 to 0.7 kg/t) with an aim to remove peaks and troughs. Gold and silver grades are taken as they come.

Typically, there are 20 to 22 stopes online. The scheduling of stopes takes into account rock mechanics requirements and the time required for placement and curing of backfill.

CUD has used a mine scheduling software package to derive the first ten years of the LOM production schedule. All northern stopes and the first three ventilation districts in the southern area above the haulage horizon were available for scheduling using the package, and this ore was able to completely meet the production profile up to the end of 2011. From 2012 to 2015, ore from existing ventilation districts below the haulage horizon and additional ventilation districts in the south come into production. The ore from these areas is based on individual stope designs.

From 2016 onwards the remaining schedule was broadly scheduled using the average grade of the unmined areas.

The mine plan allows for all ore to be hoisted through the existing shafts. The Robinson shaft, which is currently under care and maintenance, will be recommissioned. Stope ore that is within 300m of an orepass will be trammed by LHD, while more distant ore will be transferred by diesel mine trucks, either to the Clark shaft orepass system or to Whenan shaft.

Waste will be trucked to surface, used as backfill or trucked to one of the shafts if there is available hoisting capacity.

The schedule ramps underground production up from the current level of ~9.0 Mtpa to 12.3 Mtpa by 2010. The 12.3 Mtpa Cu case schedule mines approximately 361 Mt of ore over a 30 year period and is essentially a subset of the 730 Mt reserve.

#### **2.3.1.2 Development of the Southern Mine Area as part of Existing Operations**

The Southern area does not significantly (greater than 20%) contribute to production until 2012, although pre-development starts in 2006. As the Southern Mine Area is developed, the plan is to construct ventilation infrastructure progressively and extend the existing rail system to the south.



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The WMC plan is based on using the current SLOS mining methods. There is potential for an underground southern mine to be developed using a cheaper and more productive SLOS or caving (SLC) mining method. The main risk with SLC is that the shale in the unconformity above the orebody could draw through the cave and could cause excessive dilution, increasing the unit cost of copper production. In addition there are environmental issues associated with the surface expression of the cave and its possible impact on heritage sites. These environmental issues are also pertinent to the development of an open pit. This is recognised by WMC and has been incorporated within the scope and timing of the ODO prefeasibility study.

### **2.3.1.3 Backfill**

The cost of backfill is substantial and currently comprises approximately 25% of the total mining cost. Stopes are currently backfilled with CAF and rock fill.

The crushed aggregate and the majority of the rock fill come from a limestone quarry at the mine, with the quarry and CAF plant operated by a contractor. Development waste from underground is also used as backfill whenever this is possible.

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The mine currently has more unfilled stopes than it should and a second CAF plant is being constructed to reduce the void. Over time the CAF requirement in the plan increases as areas that have been mined using a primary secondary sequence are completed and production comes from new areas that are sequenced using continuous advance.

The plan assumes that CAF and rockfill will continue to be used. CUD recognises and AMC agrees, that potentially considerable cost savings could be made by optimising the backfill system and is considering using alternate binders to cement such as granulated blast furnace slag and other backfill types such as paste.

In AMC s opinion, the current backfill cost will decrease over time.

#### **2.3.2 Open Pit Mining of the Southern Mine Area**

The southern resources are potentially mineable using bulk underground and open pit mining methods. The 40.0 Mtpa case presented to AMC is based on the mining of 35 to 40 Mtpa of ore from an open pit and up to 5.0 Mtpa of ore from the existing northern underground mining operations.

The proposed open pit has an average stripping ratio of 4.7:1 (tonnes waste:tonnes ore) and a total material movement of up to 325 Mtpa. This total material movement is roughly equivalent to that achieved at the largest open pit operations in South America, such as Escondida and Chuquicumata.

The current open pit design evaluation has imposed a constraint of a 600m wide corridor between it and the existing infrastructure. Without this constraint, the open pit will increase in size. The existing open pit design is the result of design work aimed at assessing the optimal location for a starter pit and does not reflect the ultimate open pit design because the constraints imposed will be substantially modified for future open pit designs.

The final dimensions of the roughly circular current pit design are 3.0 km long by 2.8 km wide and 1.0 km deep. The total material movement is 7,700 Mt and the projected ore, which at this stage is primarily a conversion of Inferred Resources, is 1,350 Mt at a grade of 1.1% Cu, 0.4 kg/t U<sub>3</sub>O<sub>8</sub>, 0.6 g/t Au and 2.4 g/t Ag.

Because the depth of overburden is approximately 370m, the size of the pre-strip is considerable with approximately 1,000 Mt of overburden being removed (which includes 80 Mt of ore) from a starter pit before the main ore is exposed.

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The 40.0 Mtpa case proposes the use of large electric shovels to load large off-highway trucks. The trucks will haul both ore and waste to in-pit crushers. Crushed ore will be conveyed out of the pit to the ROM stockpile and crushed waste will be conveyed to the dumps. It is possible that the mining lease will need to be extended to the east to accommodate the waste dumps and to the west to accommodate tailings storage facilities.

### **2.4 Processing**

#### **2.4.1 Process Description**

Olympic Dam produces copper cathodes, uranium oxide concentrate and gold and silver bullion in a single, fully integrated processing facility. Plant capacity has been progressively upgraded from an initial copper cathode production rate of 45,000 tpa in 1988 to a current level of about 235,000 tpa. A further increase to 250,000 tpa by 2010 is planned, by implementing low cost plant de-bottlenecking measures and increasing metallurgical efficiencies.

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The process comprises the following major steps (see Figure 2.4).

**Figure 2.4 Olympic Dam Process Flowsheet**

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#### **2.4.1.1 Concentration**

Ore is hoisted to the surface, conveyed to a stockpile/blending system and fed to one of the three differently sized autogenous grinding mills. Each mill has a dedicated pebble crusher. Grinding achieves both the required degree of copper mineral liberation for subsequent flotation and uranium mineral exposure for subsequent leaching. After grinding, the resultant slurry is pumped to the flotation circuit where a series of flotation stages and a further regrinding step produce a copper concentrate. Flotation performance is controlled in order to maximise copper recovery whilst producing a concentrate containing a minimum non-sulphide content.

#### **2.4.1.2 Leaching**

Olympic Dam has two leaching circuits. The larger one, the tails leach, is designed to extract uranium from minerals that passed unchanged through copper flotation, together with as much residual copper as possible. The smaller one, the concentrate leach, extracts the small amount of uranium locked to copper minerals in the concentrate.

Copper flotation tails slurry is thickened to extract water for re-use in grinding. Thickened slurry is then pumped to a train of five agitation leaching tanks. Here, uranium and copper are dissolved under hot acidic oxidising conditions.

The concentrate leach circuit comprises six agitation leach tanks and operates under hot acidic anaerobic conditions that dissolve uranium with a minimum extraction of copper. Some of the iron present in the small content of haematite gangue is also taken into solution. This results in an increase in the copper content of the leached concentrate but does not change the Cu:S ratio. Following leaching the slurry is thickened and filtered. The resultant liquor is directed to the tailings leach circuit where the residual acid and the iron in solution aid in the leaching process. Filtered concentrate is re-slurried and pumped to the smelter feed preparation section.

#### **2.4.1.3 Smelting**

Copper concentrate is thickened, filtered in Larox filters to about 9-10% moisture, dried to less than 0.05% moisture and directed to the smelter feed storage bin. From here it is withdrawn at a controlled rate and fed together with silica flux and recycled dust to the Outokumpu flash furnace. The blend enters via the concentrate burner situated in the roof of the furnace reaction shaft. Oxygen enriched air is injected through the burner providing the oxygen necessary for combustion of the sulphide minerals. The reaction is continued through to the production of blister copper containing about 99% Cu and flash furnace slag containing about 24% Cu.

Flash furnace slag is periodically tapped and laundered to an electric slag cleaning furnace which produces a further amount of blister copper and a slag containing about 4% Cu. Both furnaces discharge blister to one of two anode furnaces for fire refining. Electric furnace slag is discharged to slag ladles and transported to a cooling area. Subsequently it is re-milled and floated to produce a slag concentrate for re-smelting. Slag flotation tailings report with final washed tailings to the tailings dam. Anodes weighing 370 kg are cast on one of the two anode casting wheels.

#### 2.4.1.4 Gas Cleaning and Acid Plant

Flash furnace gas at 1350°C is ducted to the waste heat boiler ( WHB ) where it is cooled to about 380 producing about 40 tph of steam for heating in the hydrometallurgical and refining sections. Cooled gas is cleaned in an electrostatic precipitator ( ESP ) and routed to the acid plant, which has provision for both gas processing and sulphur burning. Anode furnace gas is also processed through the acid plant but enters separately, part way through the process, ahead of the mist precipitators.

The acid plant consists of a series of gas scrubbers, cooling towers, mist precipitators and absorption towers. It is a double contact plant with a design capacity of 1640 tpd of acid.

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Dust is collected from both the WHB and the ESP. A portion of the dust must be leached with SX raffinate from the uranium section for radionuclide control purposes. Leach liquor containing copper reports to the main tails leach plant. The remainder of the dust is recycled to the flash furnace.

#### **2.4.1.5 CCD Copper Solvent Extraction and Electrowinning**

Residue from the copper tails leach circuit is washed to maximise the recovery of soluble copper and uranium. This is carried out in a six-thickener, counter current decantation train ( CCD ). Washing employs uranium SX plant raffinate entering via the sixth thickener feedwell. Each thickener overflow reports to the preceding thickener, with the final pregnant liquor solution (PLS) exiting as the first thickener overflow. Solids travel down the thickener train, finally exiting from the sixth thickener underflow.

Final thickener underflow slurry is pumped to de-sliming cyclones to produce a mine fill supplement as required. The mine fill cyclone overflow slime product is thickened and pumped to the tailings dam.

PLS is clarified before entering the SX circuit to remove entrained solids that would adversely affect the separation of the aqueous and organic phases in the SX process. Provision exists to pump the clarified PLS solution through a series of sand filters to further enhance SX performance.

Copper is removed in the first SX circuit, followed by uranium in a separate circuit. Each circuit comprises three operations, extraction, scrubbing and stripping.

In the copper extraction circuit, copper is extracted into an organic fluid consisting of an oxime extractant dissolved in high flash point kerosene. The resultant loaded organic fluid is scrubbed in water to remove impurities. Scrubbed organic then reports to the stripping circuit. Here the organic is contacted with spent electrolyte to strip out the copper, producing a strong electrolyte and a barren organic fluid that returns back to the start of the SX process.

Strong electrolyte is pumped to electrowinning ( EW ) to produce EW cathodes of LME quality. Cell current is varied between 14,000 and 30,000 amps depending on the content of copper in electrolyte. An electrolyte bleed to the tailings leach circuit controls the level of iron in the electrolyte to ensure cathode quality. Spent electrolyte from the EW refinery returns to the copper SX stripping circuit.

Following copper extraction from pregnant liquor in the SX extraction circuit the now copper-denuded liquor (raffinate) is pumped to the uranium plant.

#### **2.4.1.6 Uranium Plant**

Uranium is extracted from the raffinate after the copper SX stage in an uranium SX plant comprising extraction, scrubbing and stripping. Extraction employs pulsed columns using a tertiary amine extractant. Scrubbing and stripping are carried out in mixer-settlers. Stripping of organic is achieved with ammonium sulphate solution recycled from the precipitation plant. Ammonium diuranate (yellow cake) is precipitated from loaded ammonium sulphate strip solution by injecting ammonia. The yellow cake is then calcined to produce uranium oxide concentrate, which is drummed ready for dispatch. Drums are loaded on to pallets and containerised. The entire product handling system is fully automated.

#### **2.4.1.7 Copper Electrorefining**

Electrorefined ( ER ) copper cathodes are produced in a modern tankhouse employing a fully automated anode preparation machine, anode scrap machine and cathode stripping machine. The plant has 47 half sections, each containing 32 cells. Each cell contains 55 anodes and 54 stainless steel motherplate cathodes. Anodes have a 20-day life yielding two 75 kg cathodes each 10 days. At the end of the 20 day cycle, the anodes are removed as scrap anodes having lost about 85% of their initial weight. Both scrap anodes and reject anodes from the smelter are remelted in an Asarco shaft furnace at the old smelter.

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All ER cathodes are sold as OLYDA copper, attracting a premium price for overall quality, i.e. both chemical and physical. Chemical quality is maintained by an electrolyte bleed to the tails leach circuit, and physical quality by good tankhouse management.

At present, cathode production is achieved by operation at 32,000 amps with a current density of 315 amps/m<sup>2</sup>, a current efficiency of 96.5% and a time efficiency of 94.5%.

#### **2.4.1.8 Gold and Silver Production**

At the end of each anode cycle the ER cells are emptied and the anode slimes removed. Slimes are processed on-site yielding high quality gold and silver bars.

The process starts with acid leaching to remove copper, followed by cyaniding to extract gold and silver. Zinc dust is added to recover a silver-gold precipitate that is further leached to remove excess zinc, selenium and polonium. The precipitate is then dried, fluxed and smelted to doré. Doré is remelted and further refined to remove lead and then cast into anodes for silver electrorefining. Silver is deposited as crystals that are remelted and cast into 99.99% silver bars. Gold mud is left behind during silver electrorefining. This is leached for selenium and tellurium removal, melted and cast into impure gold anodes, electrorefined in two stages and finally melted and cast into 99.9% gold bars.

#### **2.4.2 12.3 Mtpa Case Processing Forecast Performance**

##### **2.4.2.1 Mill Throughput**

It is proposed to increase mill throughput from the actual level of 8.9 Mt achieved in 2004 to 10.75 Mt in 2006, and 12.3 Mt from 2010 onwards. These increases are proposed to be achieved by improving mill utilisation time, increasing the tonnage rate per utilised hour in the all three milling circuits and reintroducing the idle ball mill.

The utilisation in 2004 is abnormally low but it does indicate the need to take account of downstream interruptions when establishing future mill utilisation criteria. Downstream circuit utilisation is a function of the downstream circuit complexity. At Olympic Dam the downstream circuit complexity is greater than at most concentrators and mill utilisation is effectively concentrator-hydromet utilisation. CUD has implemented a number of programs to improve mill utilisation and AMC expects that improvements will be made.

Actual milling rates for the three grinding circuits in 2004 were 776 tph, 457 tph and 110 tph for the Svedala, Fuller and ANI mills respectively. The ANI mill treats ore for approximately half the year at 72% utilisation. At 2004 milling rates and 90% utilisation for the two largest mills, total ore throughput would be 10.06 Mt.

The projected performance for the 12.3 Mtpa case requires a milled ore capacity of 12.3 Mt from 2010 onwards. This is an increase of 2.24 Mt, i.e. a 22.3% from 2004 average milling rates.

CUD has identified and quantified potential increased milling capacity for all three milling circuits.

To increase ANI milling performance, it is proposed to introduce a spare ball mill and convert the ANI mode of operation to semi-autogenous grinding. AMC is comfortable that these changes will raise throughput capacity. The projected increase to 230 tph (a 109% increase) is realistic. Such an increase would reduce the amount of time required for slag milling from approximately 50% each year to only 24%. As a result, ore capacity would increase by 230 tph for 26% of the year plus 120 tph for 50% of the year. Applying these increases, and the projected production plan ANI mill availability factor, the resultant increase in ore milled would be 0.76 Mtpa.

CUD proposes optimising Svedala and Fuller mill capacities by fully utilising available pebble crushing capacity. Modelling indicates a possible increase for the Svedala mill from 760 tph to 910 tph, i.e.150 tph, and for the Fuller

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mill from 459 tph to 560 tph, i.e.101 tph. At 90% utilisation, the 251 tph increase equates to 1.98 Mtpa. The combined increase is 2.73 Mtpa, 0.5 Mtpa above the required level.

AMC believes the projected milling rates can be achieved.

If projected mill performance is not achieved, a modest capital expenditure will provide the required capacity.

#### **2.4.2.2 Copper Recovery**

Both ER and EW copper cathodes are produced. ER cathodes account for about 90% of total copper production. Copper flotation recovery is the major factor controlling copper recovery to ER cathodes. In 2004 the average copper flotation recovery was 92.2%. The projected performance indicates this will increase to 93% in 2005 and 94% from 2006 onwards.

CUD has conducted laboratory scale testwork to assess the potential for increasing copper recovery employing an alternative flowsheet similar to one that has been successfully implemented at other WMC operations. The work indicated that copper recovery could be increased from 92% to 95% whilst the pre-leach concentrate sulphide content increased from 79% to 85%.

The 3% increase in copper flotation recovery achieved in the testwork supports the 2% increase to 94% in the 12.3 Mtpa projected production plan.

Another factor influencing copper recovery to ER cathodes is the flotation recovery achieved from milling electric furnace slag. AMC has confidence in the proposed slag flotation recovery of 78% from 2007 onwards.

Flotation tails copper leach extraction recovery is the main factor affecting copper recovery to EW cathodes. An average value of 64.9% has been achieved during the last three months. In 2007 CUD will introduce a modified tails leach circuit that will permit leaching at a higher acid concentration and maintain a more consistent temperature. Whilst the main purpose is to increase uranium leach recovery, it will also yield approximately 2% more copper recovery. AMC is confident the proposed leach recovery value of 65% is appropriate.

Combined CCD-Copper SX recovery is also a key factor influencing copper recovery to EW cathodes. The current average recovery level is 85%. In 2007 the two-stage tails leach circuit will commence operation. This will allow the acid level in copper PLS to be reduced from the current level of 13 g/l to the more advantageous level of 5 g/l. This reduction will raise the copper SX recovery to 90%, which will increase the combined CCD-Copper SX recovery from 85% to 96.1%. AMC has confidence in the proposed value.

### 2.4.2.3 Uranium Recovery

Tails leach uranium recovery in 2004 was 81.3%. AMC believes this value understates the current capability. The average for the last three months of 82.5% is a more realistic guide.

The current uranium leach circuit achieves a high uranium extraction level from uraninite and coffinite. Current losses are due mainly to its inability to leach brannerite and ultra-fine uraninite locked in other minerals.

CUD has developed an alternative 2 stage uranium leach system that can leach brannerite. The tails leaching metallurgical testwork undertaken indicates that an increase in uranium extraction of 3.4% relative to the current capability.

CUD will convert the leaching circuit to the new 2-stage leach operation in mid 2006.

AMC is comfortable that the proposed uranium leach recovery value of 84.5% from 2007 onwards is appropriate for valuation purposes.

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The combined CCD-Uranium SX circuit recovery was 93% in 2004. This average value is far below circuit capability when the SX circuit is operating normally. In November 2004 the average combined CCD-SX recovery was 97.6%. This was achieved with an average SX circuit recovery of 93.2% and a daily range of 61.5% to 98.7%. AMC is confident that when the SX optimisation program is completed by the end of 2005, the average SX circuit recovery will achieve the level of 94.3% that will give a combined CCD-SX recovery of 98%. AMC is comfortable that the overall uranium recovery level of 83.84% is appropriate for valuation purposes.

#### **2.4.2.4 Gold and Silver Recoveries**

Year to date gold and silver recoveries in 2004 are 61.0% and 59.4% respectively.

CUD has recently established that an amount of gold equivalent to an additional recovery of 12.6% could potentially be extracted from a recycle stream. AMC believes this will occur. A similar increase in silver recovery would also be expected.

Appropriate gold and silver recoveries for valuation purposes are 73.6% and 71.0% for gold and silver respectively.

#### **2.4.2.5 Smelter Capacity**

The 2004 forecast for the smelter is to treat 477 kt of concentrate with a Cu:S ratio of 2.01 at a utilisation rate of 78.7%.

The 12.3 Mtpa production plan requires an increased smelter treatment rate by 2010 to 646 kt of concentrate with a Cu:S ratio of 1.44 at a utilisation of 90%. The required hourly rate is 82 tph.

The Cu:S ratio of 1.44 is below the original minimum design capability for the flash furnace of 1.6. To date, the smelter has not treated concentrate with a Cu:S ratio below 1.6. Nor has any other operation in the world treated concentrate with a Cu:S ratio below 1.6 in the direct-to-blister manner required to achieve the projected production.

CUD has made major gains in recent years in increased smelter utilisation and throughput capability. AMC is impressed by the level of improvements achieved to date and by the very high degree of technical proficiency of the smelter management team. Valuable information was gained from the modifications incorporated during the 2003 smelter rebuild. The key technical requirements to achieve the projected production level are well understood and documented. Planning for their implementation is ongoing with the intention of making the necessary modifications during the planned 2009 smelter shutdown.

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Although WMC proposes stepping outside of established technology limits, AMC believes the technical risk for the smelter is relatively low, provided the current level of smelter expertise is retained.

### **2.4.2.6 Electrolytic Refinery Capacity**

ER cathode production in 2004 was 208 kt. Peak production of 231 kt will occur in 2014, after which it will steadily decline.

The required maximum rate can be achieved by increasing cell current, current efficiency and time efficiency. The present operation is highly efficient and the requirements to achieve the required production are appropriate and achievable.

AMC believes the 12.3 Mtpa projected ER cathode production can be achieved provided anode requirements are met.

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#### **2.4.2.7 Copper SX-EW Capacity**

The existing EW plant has capacity to produce the maximum required production level of 30 kt of EW cathodes in 2010.

#### **Figure 2.5 Olympic Dam - Overview of Processing Plant and Smelter/Refinery Infrastructure**

#### **2.4.3 Processing Expansion to 40.0 Mtpa**

##### **2.4.3.1 Flowsheet Selection for Expansion**

The Olympic Dam flowsheet was tailored to maximising recovered value from the known ore reserves at the start of the operation. AMC believes it was eminently suited to the task. As operations have continued, the ore characteristics have slowly changed. This is not uncommon in mineral processing operations.

As the ore has changed, operational parameters have adjusted accordingly. Smelting has now started to move outside the previously accepted comfort zone for single-stage smelting. Copper production by electrowinning is providing a reduced proportion of total copper output.

To date the magnitude of the required operational changes has been small but major changes in ore characteristics will occur when the open pit comes on-stream. Some of the changes are obvious, as are their implications. Others can only be determined by a detailed program of ore characterisation testwork. Such a program has recently commenced.

As the ore characterisation work is progressing, metallurgical testwork will examine mineral extraction capability for a range of potential process options. The viability of employing various process options will be determined on the basis of market factors and process technical risk. Market factors are important, as these affect the relative economic importance of the individual minerals. Taken together, all the factors will identify the appropriate position on the extraction cost/reward curve for each mineral.

WMC has identified a default flowsheet that employs proven technology and in-house expertise. The current testwork will enable comparison of other process options against the default flowsheet. If they cannot compete they will be discarded from the list. The main feature of the default flowsheet is the conversion of the existing flash furnace to a flash converting furnace ( FCF ) and the installation of a new flash furnace as a flash smelting furnace ( FSF ). The new FSF will produce matte that will be cooled, granulated, milled and pneumatically transported to the existing smelter feed bins. The existing flash furnace will treat the matte to produce blister.

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AMC believes the current approach to flowsheet selection is sound. It is important to take this opportunity to be certain that the new flowsheet is the most cost effective and can accommodate changes that will occur in perceived future ore characteristics. Even if the default flowsheet proves to be the best, it is important to optimise all operational parameters such as grind size for both copper flotation and uranium extraction, copper concentrate grade/recovery relationship and uranium leach kinetics.

When the current testwork programs are completed the flowsheet can be specified and the plant design criteria specified. Until that is achieved all proposed values are indicative.

#### **2.4.3.2 Process Performance for Expansion**

Process performance parameters cannot be determined until the flowsheet is established. However, indicative parameters have been proposed based on current performance.

AMC believes appropriate recoveries for the projected 40.0 Mtpa operation are the same as proposed for the projected 250 ktpa Cu plan until 2010. From 2011 onwards, appropriate values are 90.7%, 77%, 73.6% and 71% for copper, uranium, gold and silver respectively. The copper recovery factor of 90.7% is based on a copper flotation recovery of 93% and a smelter recovery of 97.5%.

AMC believes the main factor that could affect copper flotation recovery over time is changing mineralogy. Ore characterisation testwork on future ore source material is limited. If mineral grain sizes and mineral associations were to change adversely, copper flotation recovery could be impacted.

The limiting factor in throughput capacity for the default flowsheet is the capacity of the existing flash furnace when converted from a single stage smelter to a FCF. The prefeasibility study engineer has indicated that the maximum capacity should be approximately 500 ktpa of copper.

AMC believes there are issues that must be worked through in order to achieve the proposed 500 ktpa copper capacity.

Firstly there is only one other Outokumpu flash furnace operating as a FCF in the world. It is a similar size to the Olympic Dam furnace and treats 70 tph of feed. Olympic Dam s FCF will need to treat 110 tph of feed. AMC is however encouraged that the prefeasibility study engineer has indicated that the existing flash furnace can be converted to a FCF capable of treating this tonnage.

Secondly, there are no individual FSF units currently treating the required concentrate throughput of 1.6 Mtpa proposed in the 40.0 Mtpa case. The most productive FSF s in operation today are treating 1.1 to 1.3 Mtpa of concentrate. Again AMC notes that the prefeasibility study engineer

has indicated that based on preliminary heat and mass balance requirements it is eminently feasible to design an Outokumpu FSF to treat 1.6 Mtpa of leached concentrate.

Finally AMC notes that the only other Outokumpu flash furnace in operation as a FCF employs a lime-ferrite slag system, whereas CUD currently employs a silicate slag. Lime-ferrite slag is more corrosive than silicate slag. If CUD adopts the lime-ferrite slag system it may reduce FCF life.

## **2.5 Infrastructure**

### **2.5.1 Power Supply**

The Olympic Dam operation is connected to the state grid and is the largest consumer in South Australia. There is a 275 kV transmission line from Port Augusta and a 132 kV transmission line from Pimba to the site. There are two switchyards that contain a number of 11 kV substations. There is 10 MW of on-site generation that starts up

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automatically to supply power to critical/essential plant during power outages. In some circumstances the 132 kV transmission can be used as a backup.

At present the average load is in the 105 to 115 MW range and the maximum demand is approximately 125 MW.

For the 12.3 Mtpa case, the maximum demand is expected to be 140 MW and this is expected to require an additional transformer, or an upgrade to the existing two 275/132 kV 140MVA transformers and the site substations.

Savings are expected to come from continuous improvement of power management on site. There is also the possibility of increased energy competition in South Australia following the completion of the Seagas gas pipeline project linking South Australia to Victoria. Studies completed have shown that, based on gas supply from the PNG Gas Project, power can be supplied at approximately 20% below current costs. The smelter is fuelled by waste oil and LPG, which can also be replaced by natural gas.

For the 40 Mtpa case, the average demand is expected to increase to 370 MW. At this stage WMC is seeking formal proposals from energy suppliers but the likely outcome is for a gas pipeline to site to supply a stand-alone power station, that may be owned by others.

#### **2.5.2 Water Supply**

Water supply is a crucial constraint on any expansion of the operation. The current licence provides for 42 MI/d<sup>1</sup> from the Great Artesian Basin ( GAB ), of which 32 MI/d is currently used. Management is reasonably confident that it should not be necessary to develop a new borefield for the 12.3 Mtpa case over the next 20 years; that view is based on detailed knowledge of the characteristics of the groundwater resource and on reasonable assumptions about projected long-term water-use efficiencies, especially reductions in per-tonne-milled usage rates and management s ability to encourage pastoralists to increase the efficiency of their use of the resource the South Australian State Government has prescribed the GAB and thus a Water Allocation Plan is to be implemented in 2005 restricting pastoral use by law (some success has already been achieved in this endeavour).

Borefield A, located on the southern fringe of the GAB, is located 106 km north of the mine and was the original supply (see Figure 2.6). The initial pipeline capacity was 9 MI/day, but the reliable capacity is now 6 MI/d.

A greater rate of abstraction from Borefield A was considered likely to cause unacceptable impacts on the GAB, with the drawdown potentially affecting the ecologically and heritage-sensitive Mound Springs surface expression. Thus, Borefield B was developed 180 km north of the mine to facilitate expansion of operations. Three bores were developed, with a dedicated pipeline, which duplicated the Borefield A line over its southern section.

Borefield B is much deeper, reaching the water at 700m depth (Borefield A bores are some 100m deep). Water temperature is around 60°C. The existing system can deliver about 34 MI/d, in addition to the 6 MI/day from Borefield A.

The operation also has a desalination plant with a capacity of 13.7 MI/day. The 2003 demand for water from the GAB was 29.6 MI/day and desalination plant use was 8.4 MI/day.

The water consumption per tonne of ore milled is expected to reduce from 1.2 kl/t to just over 1.0 kl/t for the 12.3 Mtpa case. These improvements are due partly to economies of scale as production increases, and partly to water-saving and alternative-supply strategies such as upgrades to some of the process thickeners.

For the 40.0 Mtpa case, an additional 70 MI/day of water will be required, with similar TDS (total dissolved solids) and chloride content.

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<sup>1</sup> Abstraction from the Great Artesian Basin is regulated by impacts on groundwater pressures (drawdown) at the boundary of a designated area around the supply bores. This equates to the 42 MI/d figure used here.

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A number of options are being considered which include additional GAB borefields, seawater desalination, local saline water and tailings water recycling. The most likely 40.0 Mtpa water supply scenario at this stage will include an additional GAB borefield supplemented by local saline water.

**Figure 2.6 Olympic Dam Borefields**

**2.5.3 Tailings Storage**

The tailings storages are designed to have a final height of 30m. Cell 4 was constructed as part of the expansion and has an area of 200 hectares. This is roughly equal to the total area of the first three cells. The new cell was built with a central decant and the three previous cells now have decants retro-fitted.

The cells are progressively lifted to provide a residual capacity to design freeboard of approximately 120 days. CUD is currently working towards reducing the amount of excess liquor reporting to the tailings retention system, as part of a number of site projects to minimise water consumption.

**2.6 Environmental Impact and Permitting**

AMC has reviewed the 2003 annual report to the South Australian State Government on environmental compliance at Olympic Dam.

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During 2003, CUD has made significant progress with minimising salt spray from raise bore 21 by installing mist elimination grilles, fitted to the discharges points of the exhaust ventilation fans, to catch water droplets. There were also improvements in the number of process plant spills (43% less) and smelter emission events (34%).

In AMC s opinion the main environmental issues for the long-term future of Olympic Dam are the impact on and access to regional water resources and the permitting of an open pit or caving operation with respect to land access and heritage.

Water for the mining operation and ancillary facilities is provided from artesian sources. Volumetric impacts are relatively large, with questions about safe yield already being raised and addressed by the company through a use-reduction program and via other water conservation initiatives such as the borehole closure program.

There are also uncertainties about impacts on aquatic invertebrates in environments associated with groundwater abstraction, some species being on international threatened-species lists.

These water-related issues require management, partly because of the inherent difficulties in both baseline and impact-monitoring assessment. Nonetheless, they represent a risk, especially to expansion, because the socio-political pressure is difficult to answer or deflect. To reduce the risk the expansion study is examining a number of water supply options.

In the past there has been limited community opposition to companies in the nuclear cycle . The Olympic Dam site was subjected to protest in 1999 and 2000. Mine management has managed this issue professionally but there is potential for it to result in slow environmental approvals.

Thus, while technical compliance is of a high standard, there remain technical and socio-political challenges, which cannot be ignored when considering the security and viability of the operation and any expansion to it. WMC recognises this and have included addressing these issues early within the scope for the expansion pre-feasibility study.

#### **2.7 Rehabilitation and Closure Provision**

The rehabilitation provision appears as a non-cash cost in the 12.3 Mtpa case model. An amount of approximately \$150.0M is allowed over the 35 years of the model. CUD s report considers the accuracy of the cost estimate for the closure plan to be +/-30%.

It is noted that, over a 35-year period, task identification is made difficult by likely changes in both project scope and statutory and other demands on closure standards. Additionally, the nature of the operation necessarily demands that a sizeable proportion of the closure and

rehabilitation costs will occur at the end of project life.

Cash rehabilitation expenditure expected within the next 10 to 20 years has been allowed, primarily for the closure and rehabilitation of tailing storage cells 1 to 4.

## **2.8 Capital Costs**

### **2.8.1 12.3 Mtpa Case Capital Costs**

AMC has reviewed the WMC estimates of capital costs, and adjusted them as necessary for valuation purposes.

Near term (2005 to 2009) capital expenditure of approximately \$1,000M has been estimated from identified projects. Long term (2010+) expenditure has been estimated from industry benchmarks. Both near term and long term estimates have been compared to historical expenditure to assess reasonableness.

In AMC's opinion the projected capital costs for the mining operations adequately reflect the operations future capital development, infrastructure and mobile equipment requirements.

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In the process plant, AMC believes the enhancement capital estimate has an appropriate level of contingency to meet the requirements for the projected 12.3 Mtpa production plan.

The major capital expenditure items, apart from sustaining capital for general plant and mobile equipment replacements, identified between 2005 and 2009 are summarised in Table 2.6.

**Table 2.6 12.3 Mtpa Case Major Capital Expenditure between 2005 and 2009**

<b>Item</b>	<b>\$M</b>
Mine development	229
Smelter re-line	110
Rail system and hoist upgrade	95
Ventilation	65
Other	229
<b>Total</b>	<b>728</b>

**2.8.2 40.0 Mtpa Case Capital Costs**

The mining, process and infrastructure capital cost estimates for this expansion are at a less than prefeasibility study level as the study is yet to be completed.

For processing the capital cannot be established until the flowsheet is determined and the equipment specified. A capital cost estimate for the process plant expansion consistent with the level of studies undertaken to date of \$2.3 billion has been developed. AMC accepts the estimate and notes that the level of accuracy is commensurate with the current level of study assessment.

The total start up capital for the pit and associated processing plant and infrastructure required to achieve 40.0 Mtpa of ore production is estimated to be \$5.0 billion. This start capital is summarised in Table 2.7.

**Table 2.7 40.0 Mtpa Case Start-up Capital**



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<u>Item</u>	<u>\$M</u>
Open Pit	
Mining Equipment	880
Open pit pre-strip	1,310
Subtotal	2,190
<hr/>	
Process plant	
Concentration	390
Smelting	410
Hydromet	260
Solvent Extraction	160
Refining	180
Miscellaneous	110
Indirects and contingency	750
Subtotal	2,260
<hr/>	
Infrastructure	
Water supply	270
Township	270
Logistics	60
Subtotal	600
<hr/>	
<b>Total</b>	<b>5,050</b>
<hr/>	

In AMC's opinion, taking into account the level of accuracy of individual cost estimates provided, the likely start-up capital cost is in the range \$4.3 billion to \$6.3 billion.

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**2.9 Operating Costs**

**2.9.1 12.3 Mtpa Case Operating Costs**

Site operating costs have been projected by factoring against the physical schedule, using the 2005 budget as a base.

CUD has a number of improvement plans in progress. These are aimed at efficiency, cost reduction, safety and operational profitability.

AMC believes both unit consumption levels and unit cost rates for mining and process plant consumables form an appropriate basis for input to future variable cost determination. However, AMC does have some concern regarding the determination of fixed costs in some areas such as concentrator. In the concentrator maintenance costs include mill liner and lifter costs, and crusher liner costs that are usually variable.

On balance, taking into account our concerns on the estimation of fixed costs, AMC accepts the WMC estimate of operating costs going forward for the 12.3 Mtpa case.

The cost reduction programs that AMC has accepted and that are incorporated in the valuation model from 2007 onwards include:

strategic sourcing of consumables

maintenance improvement programs

backfill reductions due to reduced binder costs and reduced fill strength

reductions in the amount of ground support rehabilitation due to a change in stope scheduling

reduced shaft furnace operating time

reduction in diesel consumption due to use of gas in some areas.

**2.9.2 40.0 Mtpa Case Operating Costs**

The underground operating costs are based on the 12.3 Mtpa plan.

The open pit operating costs are based on recent studies undertaken as part of the prefeasibility study. In AMC's opinion the open pit costs estimated by WMC are fair and reasonable.

Process operating costs for the projected 40.0 Mtpa plan were assessed by comparison with current and historical fixed and variable costs for the existing operation. The costs for the concentrator, smelter and refinery are in accordance with expected values. The projected costs for the hydromet section are below expectation. Two factors are believed to be responsible for this finding. Firstly historical costs for the hydromet section are elevated by abnormal factors in past years. In addition the 40.0 Mtpa plan does not include a copper SX circuit. When these factors are taken into consideration the projected costs for the hydromet operation appear reasonable.

## **2.10 Valuation Cases**

### **2.10.1 12.3 Mtpa Valuation Case**

The 12.3 Mtpa case is well supported by engineering studies and estimates. The major production physicals and capital and operating costs, excluding royalties, for the 12.3 Mtpa case are summarised in Table 2.8.

In the first few years of the schedule, copper production exceeds the production that would be obtained by only treating mined ore. This is due to the treatment of existing surface stockpiles of ore (estimated to be 1.0 Mt at 2.3%)

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Cu at the start of 2005), reverts (0.13 Mt at 15.0% Cu at the start of 2005) and slag (estimated to be 0.32 Mt at 4.6% Cu at the start of 2005).

**Table 2.8 12.3 Mtpa Case - Summary of Physicals and Costs**

		2005	2006	2007	2008	2009	2010 - 2034	
		Forecast	Plan				Average Plan	Total
<b>Ore Mined</b>								
<b>Tonnes</b>	Mt	9.3	10.8	11.2	11.5	11.5	12.3	361
<b>Cu grade</b>	%	2.2	2.3	2.1	2.1	2.1	2.0	2.0
<b>U3O<sup>8</sup> grade</b>	kg/t	0.6	0.6	0.6	0.7	0.6	0.6	0.6
<b>Au grade</b>	g/t	0.5	0.5	0.5	0.5	0.5	0.8	0.7
<b>Ag grade</b>	g/t	3.9	4.3	4.2	4.0	4.3	4.9	4.8
<b>Cu:S ratio</b>		1.8	1.7	1.7	1.3	1.5	1.4	1.5
<b>Metal Produced</b>								
<b>Copper</b>	kt	226	219	237	228	204	237	7,042
<b>Uranium</b>	kt	4.7	5.4	5.9	6.3	6.1	6.6	193
<b>Gold</b>	koz	115	119	129	129	134	217	6,045
<b>Silver</b>	koz	878	1,010	1,054	1,011	1,081	1,321	38,062
<b>Operating Cash Costs</b>								
<b>Total</b>	\$M	629	620	574	576	579	613	18,307
<b>Capital Costs</b>								
<b>Total</b>	\$M	170	212	179	216	308	84	3,189

*Royalty payments and corporate allocations not included*

**2.10.2 40.0 Mtpa Valuation Case**

The 40.0 Mtpa case is at a lower level of accuracy than the 12.3 Mtpa case.

The major production physicals and capital and operating costs, excluding royalties, for the 40.0 Mtpa case are summarised in Table 2.9.

Table 2.9 40.0 Mtpa - Summary of Physicals and Costs

		2005	2006	2007	2008	2009	2010 - 2039	
		Forecast	Plan				Average Plan	Total
<b>Ore Mined</b>								
<b>Tonnes</b>	Mt	9.3	10.8	11.2	11.5	11.5	38.7	1,137
<b>Cu grade</b>	%	2.2	2.3	2.1	2.1	2.1	1.3	1.3
<b>U3O<sup>8</sup> grade</b>	kg/t	0.6	0.6	0.6	0.7	0.6	0.5	0.5
<b>Au grade</b>	g/t	0.5	0.5	0.5	0.5	0.5	0.6	0.5
<b>Ag grade</b>	g/t	3.9	4.3	4.2	4.0	4.3	2.4	2.4
<b>Total Pit</b>	Mt				325	325	215	6,662
<b>Metal Produced</b>								
<b>Copper</b>	kt	226	219	237	228	204	453	13,574
<b>Uranium</b>	kt	4.8	5.4	5.9	6.3	6.1	13.9	407
<b>Gold</b>	koz	115	119	129	129	134	524	14,768
<b>Silver</b>	koz	861	1,010	1,054	1,011	1,081	2,091	63,419
<b>Operating Cash Costs</b>								
<b>Total</b>	\$M	629	620	574	628	645	1,214	37,080
<b>Capital Costs</b>								
<b>Total</b>	\$M	170	212	179	1,852	2368	207	10,475

*Royalty payments and corporate allocations not included*

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#### **2.11 Project Risks**

AMC has identified the following project risks:

The mine materials handling system relies on orepasses which feed a train haulage level through loading chutes. Although there is no history of ore pass failures to date at Olympic Dam, experience elsewhere has shown that orepass/chute systems may experience failure due to wear. Ore pass failures have the potential to reduce mine production for a period or lead to increases the capital and operating costs.

Available grinding capacity is adequate to achieve the 12.3 Mtpa case. There is 0.5 Mtpa capability above requirement however if throughput falls below plan, as occurred in 2004, grinding capacity could be increased by converting one or more of the autogenous mills to semi-autogenous grinding. This would result in increased operating costs.

After 2009, in the 12.3 Mtpa case, the smelting operation will become more challenging as copper concentrate mineralogy moves outside the range for which CUD s single-stage smelter was designed.

Two fires have occurred in the solvent extraction (SX) circuit in recent years. SX plants are not generally regarded as high fire risk. The rebuild following the second fire incorporates safety design features that minimise the risk of a fire occurring and the exposure of equipment to potential fire damage.

To date only limited testwork has been carried out to establish the performance capability for future ore supplies. There is some risk that the performance criteria employed in the 40.0 Mtpa case may have overstated copper, gold and silver recoveries.

Although the process flowsheet has yet to be finalised, AMC expects it will employ established technology throughout. It is likely to include a new flash furnace producing matte to feed the existing Outokumpu flash furnace, modified to operate as a converter. The converter capacity will determine the overall process capacity. At present, world wide, there is only one other Outokumpu flash furnace operating as a converter. CUD s furnace is a similar size but will be required to operate at a 50% greater feed rate. Although the new flash smelting furnace will not be the limiting factor for copper production it will be required over time to operate at greater throughput rate than any individual smelting furnace currently in operation.

There is a risk that water supply for the large expansion of the project will not be sourced from the GAB, leading to higher capital and operating costs. Because of this WMC is evaluating alternate water sources as part if its expansion studies.

Although CUD has significantly increased the number of geologists, mining engineers and metallurgists in recent years, both turnover and a general shortage of mining industry professionals is a concern. This is a widespread Australian problem with potential to impact on many mineral projects. AMC believes that the problem at Olympic Dam can be managed, due partly to the technical challenges provided and to the high quality of the residential facilities and environment.

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There are unquantifiable potential environmental and socio-political risks, particularly associated with water, heritage and nuclear issues, if the mine undergoes a significant expansion. This has the potential to distract management and possibly delay environmental approvals. WMC is confident as a result of the publicly stated high level support from the South Australian State Government that this risk is low.

### **3 NICKEL**

#### **3.1 Introduction**

Producing in excess of 100,000t of contained metal per annum, WMC's Nickel Business Unit ( NBU ) is the third largest nickel producer in the world. It is also one of the lowest cost producers. WMC's nickel division is a vertically integrated nickel producer comprising two mine and concentrator complexes, a third concentrator, smelter, refinery and a marketing arm. Figure 3.1 indicates the locations of the operations included in the NBU. WMC's nickel is mined from sulphide deposits and is processed using proven and established technologies.

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Nickel ore is mined, concentrated and dried at mine sites, with the majority of nickel concentrate being railed to the Kalgoorlie Nickel Smelter ( KNS ) and smelted into an intermediate product known as nickel matte. From early 2005, the entire concentrate production will be treated at KNS. Approximately 65% of the nickel contained in matte is further refined at the Kwinana Nickel Refinery ( KNR ), with the remaining 35% sold to overseas refiners, predominantly in China from 2005. Final product from KNR is sold in the form of high purity nickel metal and various co-products. The integrated nickel production of the NBU is illustrated in Figure 3.2.

**Figure 3.1 WMC Nickel Location Map**

**Figure 3.2 NBU Integrated Production**

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Successful management of the contained iron to magnesia ( Fe:MgO ) ratio at KNS is a key aspect of the NBU. The NBU manages the Fe:MgO ratio by scheduling production levels from different sites and blending at the smelter. The primary constraint is the capacity of the smelter to treat low Fe:MgO ratio concentrate versus scheduling of mining operations to maintain the Fe:MgO ratio at an acceptable level.

WMC commenced nickel production in 1967 with the establishment of Kambalda Nickel Operations ( KNO ). After 30 years of production, KNO had become a mature producer with a declining production profile. A feature of KNO is the production of high Fe:MgO ratio concentrate from the Kambalda Nickel Concentrator ( KNC ), which is a key feed component for operation of the smelter. WMC has rationalised its holdings at Kambalda with the sale of all the WMC mines to third parties. Ore is supplied to KNC for toll treatment by WMC and the resulting nickel in concentrate is purchased by WMC under ore tolling and concentrate purchase agreements with the third parties and supplied to KNS.

Leinster Nickel Operations ( LNO ) is a large multi mine complex. The majority of LNO production comes from the Perseverance underground mine s sub level caving ( SLC ) operation. In addition, Perseverance has some small high-grade stope production from the 1A and Progress orebodies. Remaining LNO production comes from the nearly completed Harmony pit and the recently commenced Eleven Mile Well ( EMW ) open pit. Treatment of ore from the planned Cliffs underground mine located near Mount Keith is scheduled from 2007.

Mount Keith Nickel Operations ( MKO ) operates a large-scale open pit with a current planned depth of 550m. MKO concentrate traditionally has a low Fe:MgO ratio requiring blending prior to smelting. WMC has developed a gravity processing technique that upgrades MKO concentrate to be suitable for smelting without blending with other concentrates. The gravity circuit was installed in 2002 with a capacity to treat 50% of concentrate production. Further capacity to allow treatment of 100% of the concentrate will be installed in 2005.

WMC is currently evaluating the treating of talc and low sulphur ores through a separate concentrator at MKO to produce a concentrate as feed to a low pressure leach ( LPL ) plant. The LPL plant would produce an intermediate product that could be either treated at KNR or sold. Introduction of the LPL plant will allow earlier production of nickel from ore that would have otherwise remained stockpiled for treatment at the end of the open pit operations.

WMC acquired the mineral tenements containing the Yakabindie nickel deposit from North Limited for \$40M in February 2001. North Limited estimated endowment at 519 Mt at 0.47% Ni. In initial scoping studies by WMC, a combination of resources classified as Measured, Indicated and Inferred totalling 196 Mt grading 0.56% Ni were estimated to be contained within the optimal pit limits.

The Yakabindie resource also contains ore of a talc and low sulphur character and it is proposed to process this material through a separate concentrator at MKO to produce smelter feed concentrate and feed for the LPL plant.

KNS currently has capacity to treat approximately 750,000 tpa of concentrate but de-bottlenecking projects to be implemented in 2005 will increase capacity to over 800,000 tpa. Nickel throughput is dependent upon concentrate grade with KNS currently producing some 100,000 tpa of contained nickel in matte. Approximately 65% goes to KNR for refining to pure metal. The balance of the matte is sold to overseas refineries. In 1996, an acid plant was installed which allows the smelter to operate with little impact from emission related environmental shutdowns.

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KNR has recently been expanded to 70,000 tpa Ni and it is proposed to further increase the capacity to 80,000 tpa by installing an additional leach circuit and reduction autoclave. The additional feed will be sourced from KNS.

A summary of NBU production for the last five years is summarised in Table 3.1.

Average unit cost of sales for 2003 was steady at \$4.79/lb of nickel including intermediate products. Direct cash costs of production including intermediate products was \$2.24/lb of nickel. Sales revenue net of commodity trading for 2003 was \$1,623M.

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**Table of Contents****WMC Resources Limited****Specialist s Technical Report****Table 3.1 NBU Operating Performance**

Operating Area	Units	Year ended 31 December					
		1999 (actual)	2000 (actual)	2001 (actual)	2002 (actual)	2003 (actual)	2004 (forecast)
<b>Kambalda</b>							
Ore milled	kt	369	540	602	688	805	993
Nickel grade	%	3.36	3.84	3.37	3.78	3.58	3.10
Recovery	%	89.7	92.7	92.2	89.2	90.0	91.2
Nickel-in-concentrate	kt	11.1	19.2	18.6	23.2	25.9	27.9
<b>Leinster</b>							
Ore milled	kt	2,098	2,642	2,324	2,571	2,489	2,690
Nickel grade	%	2.08	1.92	2.04	1.99	2.02	1.88
Recovery	%	82.2	80.4	80.2	78.1	83.1	85.7
Nickel-in-concentrate	kt	36.0	40.7	38.0	40.0	41.8	44.0
<b>Mount Keith</b>							
Ore milled	kt	10,435	10,685	10,920	11,054	11,200	11,209
Nickel grade	%	0.65	0.63	0.62	0.58	0.63	0.57
Recovery	%	61.1	71.0	70.8	67.6	71.1	66.5
Nickel-in-concentrate	kt	41.2	47.5	47.9	43.2	50.0	43.0
<b>Total nickel-in-concentrate</b>	<b>kt</b>	<b>88.3</b>	<b>107.5</b>	<b>104.6</b>	<b>106.4</b>	<b>117.7</b>	<b>114.9</b>
<b>Kalgoorlie Smelter</b>							
Concentrate treated	kt	575.2 <sup>1</sup>	737.2	704.3	640.5	711.1	710.1
Nickel grade	%	13.9	14.3	14.2	14.9	14.6	14.4
Recovery	%	98.5	97.8	96.5	95.9	95.8	95.7
Nickel-in-matte produced	kt	79.7	103.0	96.7	91.6	99.2	97.7
<b>Kwinana Refinery</b>							
Matte treated	kt	79.8	94.0	94.2	95.7	92.0	93.8
Nickel grade	%	64.4	66.9	66.5	66.6	66.7	67.9
Recovery	%	97.6	97.4	97.2	98.1	98.2	97.9
Refined nickel produced	kt	53.0	60.5	61.3	65.1	61.4	62.3

<sup>1</sup> In 1999 KNS was shut down for 63 days for a major furnace rebuild following a furnace leak.

MKO is revising the resource estimate with respect to domaining and resource classification. AMC expects a reduction in the order of 20% of total resources compared with the December 2003 reported estimate, mostly in the Inferred and Indicated Resource categories. The majority of the potential resource reduction occurs at depth, with only a 1 to 2% variance expected within the current planned life-of-mine Stage J pit shell. Drilling programs are currently underway to provide more data below the current pit and it is expected that future estimates of resources will recover at least part of the anticipated resource reduction relative to the December 2003 estimate.

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The Ore Reserve work currently underway may result in a 3% grade reduction and approximately 4% tonnage reduction. This potential reduction has been applied to the tonnes and grades included in the production scenario for MKO provided to Grant Samuel for valuation purposes.

Mineral Resource and Ore Reserve estimates for the year ending 31 December 2004 are not available for inclusion in this report. Following verbal discussions with relevant WMC personnel, AMC is of the opinion that, other than the previously discussed revision of the MKO Resource and Reserve and provision for depletion, there are no material changes in the resources and reserves as published at 31 December 2003. AMC is aware of work being conducted at Leinster to develop an initial Ore Reserve estimate for the below 11 Level project, however, the materiality of any impact this work will have on published resources and reserves is, as yet, unknown.

WMC's nickel Proved and Probable Ore Reserves as at 31 December 2003 are listed in Table 3.2. These are the most recent publicly reported reserves. Allowance has been made in the production schedules for material changes that have occurred up to 31 December 2004.

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**Table of Contents****WMC Resources Limited****Specialist s Technical Report****Table 3.2 WMC Nickel Business Unit Ore Reserves as at 31 December 2003**

<b>Operating Area</b>	<b>WMC s Interest (%)</b>	<b>Type of Reserve</b>	<b>Tonnes (Mt)</b>	<b>Grade (Ni %)</b>
Kambalda	100	Underground	0.1	3.3
Leinster	100	Underground	18.5	1.8
	100	Open Pit	0.6	1.7
	100	Stockpile	0.2	1.9
Mount Keith	100	Open Pit	281.0	0.56
	100	Stockpile	27.2	0.49

Source: WMC 2003 Annual Report.

WMC manages MgO by blending different concentrates at the smelter. Achievement of the required Fe:MgO ratio in smelter feed is assisted in the short term by increased production from KNO and in the medium term by production from Cliffs, both of which produce high Fe:MgO ratio concentrate. In latter years the use of the gravity circuit by MKO will allow target Fe:MgO ratio to be achieved.

The current mine plan is to increase annual material movement at MKO by 66% to 40 bcm per year by 2007, accelerating waste stripping in preparation for increased production rates with construction of a new process plant and expansion of the current plant. The consequent schedule provides for MKO mining rates to increase and for Ore Reserves at MKO to be fully extracted by 2019 with Yakabindie to be fully extracted by 2024. Extension to mine life of existing open pit operations and continued access to new nickel deposits whether by acquisition or exploration is a prerequisite to long-term success of the business.

Historically, the NBU has demonstrated an impressive record of cost reductions and technical improvements. It has in place a series of programs to maintain momentum and retain WMC s relative position on the cost curve and continue to extend the profitable operating life of the business.

Successful exploration at Collurabbie, in particular, has the potential to have a substantial positive effect on the life, operation and economics of the NBU. This project is discussed more fully under Exploration.

Based on information provided by WMC, AMC has generated two life-of-mine production scenarios. Expected production volumes and operating and capital costs were determined for each of these scenarios. The scenarios considered are as follows:

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The Likely case is based on the existing operations of the NBU and considers expected outcomes if all assets were run to completion on the basis of what can be reasonably expected to occur per the current WMC strategic plan. At LNO, this scenario includes mining of the SLC at Perseverance down to 14 level, mining of small satellite deposits and underground mining of the Cliffs resource. This scenario also incorporates an expansion at MKO from 11.5 Mtpa of ore to 26.0 Mtpa with successful implementation of additional gravity concentration capacity in 2005, construction of a new mill (Type B ) to process talc and low S:Ni ore from MKO and Yakabindie, construction of an additional module (Type A ) to the existing plant and construction of an LPL plant to produce an intermediate product from the Type B mill output. This case includes the development of the Yakabindie deposit with ore being mined at an average of 14 Mtpa with an assumed ore mining inventory of 196 Mt. At KNS the furnace capacity will be increased to approximately 125,000 tpa contained Ni by de-bottlenecking operations and increasing uptime. The capacity at KNR will be increased to 80,000 tpa through the installation of an additional leach circuit and reduction autoclave.

The Upside case incorporates improved metal recovery from the SLC mining operations at LNO and extension of pit life at MKO and Yakabindie, an increased Kambalda feed, extended LNO Satellite life and an additional 18,000 tpa of third party concentrate purchases. The MKO extensions are based on exploration success at depth and to the north and Yakabindie extensions are based on exploration success at depth. The KNR capacity is increased to 100,000 tpa and the LPL plant is modified to produce an hydroxide product, rather than an intermediate sulphide product. The hydroxide product from the LPL plant is refined at KNR.

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## **3.2 Kambalda Nickel Concentrator**

### **3.2.1 Overview**

High grade nickel sulphide ore has been mined in Kambalda since 1967 using a range of underground mining methods. WMC no longer operates any mines itself and all the mines have been acquired by third parties. Production from these operations is subject to ore tolling and concentrate purchase agreements with WMC.

The third party ores are treated by WMC at KNC to produce a final concentrate containing 13 to 14% Ni. All concentrate is dried at KNC and railed to KNS for conversion to nickel matte. KNC produces a concentrate with a high Fe:MgO ratio of approximately 11 which is beneficial for blending with other low Fe:MgO ratio concentrates.

### **3.2.2 Mining**

Historically, Kambalda nickel mines have all been mined by underground methods, usually with shaft hoisting and a variety of mining methods including uphole benching and cut and fill.

As previously mentioned, WMC has divested all of its mines at Kambalda to third parties.

Estimates of mine production from the third party mines have been based on estimates provided by the third party suppliers to WMC.

For the Likely case, WMC has modified the raw third party estimates based on recent delivery history. Production from third party mines is estimated by WMC to increase to a maximum of approximately 37,100t of nickel in concentrate in 2007 and decline thereafter concluding in 2010.

For the Upside case, the delivery estimates provided to WMC by the third party suppliers have been adopted. For this case, 2006 deliveries are increased by approximately 7,000t contained Ni. There are no significant changes to ore deliveries in other years. In both cases production ceases in 2010.

### **3.2.3 Concentrator**

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KNC was commissioned in 1967 and since then has been through several expansions to achieve a capacity of 1.5 Mtpa in 1997. It is a conventional plant with a jaw crusher, autogenous grinding, sulphide flotation, thickening and a 440 ktpa spray dryer. The plant is in good condition having had a major modernisation of the crushing, milling and flotation sections completed in 1997. Metallurgical recoveries in 2004 were around 91% with concentrate grades of approximately 13 to 14% Ni.

The concentrator treated 0.805 Mt of ore in 2003 and produced 25,913t of nickel in concentrate. In 2004 third party ore deliveries have increased. Estimated 2004 production is approximately 1.0 Mt ore milled for production of approximately 27,900t nickel in concentrate.

WMC plans to implement split size flotation and cleaning of flash concentrate. These changes are based on test work at KNC and demonstrated benefits at MKO and LNO. AMC has assumed an increase in flotation recovery of 1.2% is achieved from July 2005 with no change to concentrate grade or Fe:MgO ratio.

### **3.2.4 Site Infrastructure and Overheads**

The sale of the WMC Gold Business Unit in 2001 has had direct cost and community implications for KNC, significantly reducing the cost of shared services, housing, public facilities, Kambalda utilities (water, power and sewerage) and management structures.

Surplus concentrate dryer capacity at KNC is available to dry purchased concentrate and any excess concentrate from MKO, LNO or Yakabindie. This facility is anticipated to be used for a considerable period of time.

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At WMC s request and in accordance with its reporting practice, AMC has not included detailed direct cash operating costs for KNC or unit costs in this document as it is considered contractual commercial-in-confidence. The cost per pound of nickel in concentrate is highly sensitive to Ni price and is based on a processing charge per tonne of ore set between WMC and the third party suppliers.

For its scenarios, AMC has projected direct cash operating costs and contractual ore tolling and concentrate purchase price for third party feed. The reliance on purchased feed results in a relatively high, nickel price dependent cost structure at KNC. Table 3.3 summarises KNC production.

**Table 3.3 Kambalda Nickel Concentrator-Likely Case Assumptions**

<b>Item</b>	<b>Units</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008-10</b>
Ore milled	kt	1,276	1,043	1,409	1,551
Head grade	% Ni	2.82%	2.93%	2.93%	2.91%
Nickel recovery	%	90.4%	91.4%	89.9%	90.3%
Concentrates output	kt Ni	33.1	28.1	37.1	42.8
Capital expenditure	A\$M	4.0	3.3	3.3	2.3

**3.2.6 Future Performance and Upside**

AMC has accepted the third party production estimates as provided by WMC and for both the Likely and Upside cases, KNC production is assumed to cease by 2010.

Any extension of the operating period, while adding little to overall NBU value would reduce some of the medium term issues relating to Fe:MgO ratio control.

**3.3 Leinster Nickel Operations****3.3.1 Overview**

At LNO, approximately 380 km north of Kalgoorlie, WMC currently operates the Perseverance underground mine and the Harmony and EMW open pits. LNO mines high-grade massive sulphide and low-grade disseminated resources by both underground and open pit methods. The mill capacity is rated at 3.0 Mtpa, however, actual annual milling rates have been limited by ore availability. During 2003, 2.5 Mt of ore, primarily

from Perseverance, was milled to produce 41,806t Ni in concentrate.

Long-term plans are based on 10% open pit and 90% underground ore supply. Perseverance mine output is forecast to increase from the current 2.7 Mtpa up to 3.1 Mtpa in 2009 and then taper off slightly each year as SLC mining progresses at depth. During 2004, the mining plan for the Hanging Wall Limb ( HWL ) was changed from continuous panel open stoping with paste fill to SLC. Mining from the Progress shoot by SLC is scheduled to commence in 2005. Mining from the 1A massive orebody complex is scheduled to re-commence in 2005. The mine life in the Likely case scenario is approximately 14 years. This case includes the mining of Inferred Resource below 11 level, which is the subject of a current diamond drilling program to improve the confidence of resources located between the 11 level and the 14 level.

### **3.3.2 Geology**

#### **3.3.2.1 Regional Geology**

LNO nickel deposits are located within an extensive ultramafic horizon close to the eastern margin of the Agnew-Wiluna Greenstone Belt. All known nickel mineralisation in the Greenstone Belt from Honeymoon Well in the north to Weebo Bore in the south occurs within this domain.

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#### **3.3.2.2 Perseverance Deposit Geology**

Several zones of high-grade massive nickel sulphide mineralisation within a large body of disseminated mineralisation are hosted by an extensive ultramafic unit on the overturned eastern limb of a regional scale anticline.

Deformation has resulted in folding of the orebody, the remobilisation of massive sulphide mineralisation into fault bounded lodes and fault hinges, and the creation of a series of vertical lenses in the disseminated mineralisation. The disseminated mineralisation forms a shoot that plunges at 70° to the south and extends to a measured depth of 1,100m below the surface. Fault bounded massive sulphide mineralisation forms steeply west-dipping lodes.

The Perseverance mineralisation, which has been mined by both underground and open pit methods, is divided into four separate geological domains:

The Main Disseminated Domain - the main source of nickel mineralisation, it consists of steeply-dipping disseminated sulphide mineralisation enclosed within an extensive zone of moderate to weak disseminated sulphide mineralisation. The dominant sulphide minerals are pyrrhotite and pentlandite in a ratio of about 4:1.

The 1A Shoot - the 1A Shoot is the largest source of massive sulphide mineralisation at Perseverance and is a fault-controlled zone that extends to the north from the disseminated mineralisation.

The F1-F2 Shoots - a massive sulphide, fault controlled body.

The Progress Shoot - consisting of disseminated sulphides on the basal contact of the ultramafic.

#### **3.3.2.3 Harmony Deposit Geology**

The Harmony deposit is located about 4 km north of the Perseverance mining operations and about 2 km north of the Rocky s Reward open pit and was discovered in 1997. Disseminated and massive sulphide nickel mineralisation is hosted by the Perseverance ultramafic complex. The stratigraphy and massive sulphide mineralisation dip to the west at about 60°. The mineralisation is structurally controlled within the ultramafic unit. The ultramafic has a dominant mineralogy of talc, magnesite and chlorite and is high in MgO. Serpentinisation increases with depth and carbonate alteration is pervasive.

The deposit consists of multiple, steeply west-dipping, faulted and openly folded mineralised surfaces. Disseminated mineralisation makes up about 30% of the contained nickel metal in the resource estimate and generally occurs in higher talc zones below the massive sulphide surfaces.

**3.3.2.4 Rocky s Reward Deposit Geology**

The Rocky s Reward deposit is located 2 km north of the Perseverance deposit and was discovered in 1984. Open pit mining was carried out between 1989 and 1991 and underground mining from 1991 to 2000.

Nickel mineralisation consists of massive and disseminated sulphides hosted by two thin komatiitic ultramafic layers within a thick succession of felsic volcanoclastic sediments. The rocks have been metamorphosed and undergone hydrothermal alteration.

Mineralisation is located on two surfaces that have been folded to form steeply dipping fault-controlled and shallowly dipping terrace structures. The Main Terrace consists mainly of disseminated sulphides with lesser massive sulphides. The Lower Terrace is thinner but is dominated by massive sulphides. The West Fault zone is the main source of massive sulphide mineralisation. The East Fault is a major source of structurally controlled disseminated mineralisation.

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#### **3.3.2.5 Cliffs Deposit Geology**

The Cliffs massive nickel sulphide deposit is located about 96 km north of the LNO and about 10 km south of MKO within the Agnew-Wiluna Greenstone Belt. Mining at Cliffs will be operated under LNO management and ore will be treated at LNO. The greenstone belt at Cliffs consists of Archaean felsic volcanoclastic and sedimentary rocks, ultramafic lava flow units and mafic volcanic and volcanoclastic rocks. Transported Tertiary cover up to 20m thick overlies the mineralisation and weathering can extend to 270m. Supergene mineralisation in the weathered zone has largely been excluded from the resource estimate although it provides an opportunity for resource expansion.

Mineralisation is predominantly massive sulphide at the eastern contact of the Central Ultramafic Unit. In some areas, massive, stringer or heavily disseminated sulphides occur within the ultramafic unit or close to the basal contact with footwall volcanoclastic rocks. Massive sulphide mineralisation ranges from 1 to 5m thick with grades of 3 to 4.5% Ni in the north and 4 to 6% in the south with a central zone of thinner, less continuous massive sulphide and disseminated/stringer mineralisation.

The mineralisation occurs as a sub-vertical lode that plunges to the south at about 15°.

#### **3.3.2.6 Eleven Mile Well Geology**

EMW is located about 8 km south of the Perseverance mine and is being mined in an open pit. It is a structurally emplaced, nickel-sulphide deposit on the eastern margin of the Agnew-Wiluna greenstone belt. A tholeiitic basalt unit with minor gabbro is overlain by a thick sequence of dominantly felsic volcanic and volcanoclastic rock with lesser mafic units, cherts, pelitic sediments and black shales. Several komatiite sequences are intercalated within the felsic rocks.

Mineralisation consists of a disseminated nickel sulphide lode hosted in an ultramafic unit of variable thickness (generally 5 to 20m) with a brecciated massive sulphide unit on the western basal contact. Stringer mineralisation also occurs in mafic and felsic rocks adjacent to the basal massive sulphide lode and appears to be further remobilised in a fault. Mineralisation extends over about 450m in a shallow to moderate northerly plunge.

#### **3.3.2.7 Sir Tristram Geology**

The Sir Tristram nickel sulphide deposit is located about 15 km to the north of the Perseverance mine on the eastern margin of the Agnew-Wiluna greenstone belt.

Sir Tristram is one of several prospects occurring in the Camelot Project area. It is a structurally complex area with a series of upright to overturned north plunging folds disrupted by shallow west dipping thrust faults resulting in a series of oppositely facing lithological units. The Sir Tristram mineralisation is hosted by the Sir Samuel ultramafic unit that occurs as three sheets bound and divided by felsic quartz-biotite and

volcaniclastic sediments that also host cherts and sulphidic shales. The stratigraphy dips at a moderate angle to the west. The Archean lithology is overlain by up to 10m of recent sands and gravel.

Mineralisation consists of disseminated nickel sulphide within west-dipping ultramafic units and minor sub-parallel massive sulphide shoots.

### **3.3.3 Mineral Resources and Reserves**

LNO's Mineral Resources and Ore Reserves as at 31 December 2003 are listed in Tables 3.4 and 3.5. Since that date, resources and reserves have been depleted by mining at Perseverance, Harmony and EMW. There have been resource additions at Cliffs and minor resource additions at Progress. The Mineral Resources and Ore Reserves are reported as in the 2003 WMC Annual Report which aggregates estimates from a number of deposits and operations. WMC has requested that AMC's report does not include the breakdown of individual estimates because it is not consistent with WMC's reporting practice.

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**Table of Contents****WMC Resources Limited****Specialist s Technical Report****Table 3.4 Leinster Nickel Operations Mineral Resources as at 31 December 2003**

<b>Deposit</b>	<b>Measured Resource</b>		<b>Indicated Resource</b>		<b>Inferred Resource</b>		<b>Total Resources</b>	
	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>
Underground	14.0	2.2	14.2	2.6	7.6	2.0	35.9	2.3
Open Pit (sulphide)	4.5	1.7	69.1	0.5	83	0.5	156.2	0.6
Stockpiles	2.2	0.9					2.2	0.9
Stockpiles (oxidised)	4.5	1.7					4.5	1.7

Source: LNO December 2003 Resource and Reserve Tables.

**Table 3.5 Leinster Nickel Operations Ore Reserves as at 31 December 2003**

<b>Deposit</b>	<b>Proved Reserve</b>		<b>Probable Reserve</b>		<b>Total Reserve</b>	
	<b>Mt</b>	<b>Ni %</b>	<b>Mt</b>	<b>Ni %</b>	<b>Mt</b>	<b>Ni %</b>
Underground	7.5	1.8	11.1	1.9	18.5	1.8
Open Pit			0.6	1.7	0.6	1.7
Stockpiles	0.2	1.9			0.2	1.9

Source: LNO December 2003 Resource and Reserve Tables.

**3.3.4 Perseverance Resources, Reserves and Mine Operations****3.3.4.1 Perseverance Disseminated Orebody****Resource Estimate**

The Perseverance mineralisation resource below 6 level was estimated in November 2003 using all data available at that time. The estimation is based on interpretation of a mineralisation domain at a nominal 1% Ni cut-off for the disseminated mineralisation. Grade is estimated using

ordinary kriging based on variographic studies.

The estimate is classified under the JORC Code on the basis of confidence in the estimate and drillhole spacing. The estimate is classified as Measured Resource in the disseminated mineralisation where drilling approximates 25m x 25m or closer. Massive sulphide mineralisation drilled at this spacing is classified as Indicated Resource. The estimate is classified as Indicated Resource where drilling is nominally 50m x 50m. Inferred resources have drillhole spacing of 50m x 100m up to 100m x 100m. The resource classification assumes that mining of the disseminated mineralisation will be by a bulk mining method such as the SLC.

The estimate from 6 to 11 level is largely classified as Measured and Indicated Resources. These resources are the basis of Ore Reserve estimates. Below 11 level, the estimate is classified as Indicated and Inferred Resources but these resources have not currently been converted to Ore Reserves. Parts of the Inferred Resource have been drilled subsequent to the 2003 resource estimate and are likely to be converted to Indicated Resource when the resource is re-estimated. On this basis, AMC accepted the inclusion of Indicated and Inferred Resources below 11 level (with appropriate conversion factors) for the purposes of considering production scenarios.

The resource estimate has been carried out to good industry standard and is appropriately classified under the JORC Code.

The surface expression of the disseminated mineralisation has been mined as an open pit with a large body of adjacent low-grade material totalling 161 Mt at 0.64%Ni. Although it may contain some higher grade, drilling is very widely spaced. Taking into account the results of pit optimisation work done to date, this mineralisation has not been included in the production for LNO.

The 1A, 1B and 1C massive sulphide lodes have been estimated using an accumulation method that is a common approach for the estimation of narrow vein deposits.

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#### ***Ore Reserves and Mining***

The disseminated orebody is mined by SLC. Ore Reserves were calculated using stope blocks that are based on the development centre lines and are normally 3m long by 14.5m wide and 20 to 25m high. Production levels consist of cross-cuts spaced at 14.5m centres. The cross-cuts are staggered on adjacent levels. The level interval is 25m. Development designs have been completed for the entire reserve, down to 11 level. AMC considers these parameters to be appropriate.

Key parameters in the assessment of SLC reserves are estimates of tonnage recovery and grade recovery. Actual performances for these parameters are heavily influenced by development layouts and draw practices. Refinement to mining practices and draw strategies used for the SLC at Perseverance have resulted in significant improvement in tonnes recovered, without any reduction to the recovered grade. This has resulted in an increased metal recovery from the SLC. AMC has reviewed planned draw parameters and relative to peer mines and to what has been achieved at Perseverance and considers the tonnage and grade recovery factors applied to be appropriate. In estimating the 2003 Reserves, WMC has assumed 85% of SLC stope design tonnes are recovered at 79% of the stope design grade. Given the improvements achieved during 2004, it is expected that these factors will be increased when compiling the 2004 Reserve estimate.

For the purposes of assessing production scenarios, AMC accepts the Ore Reserve estimate above 11 level. Between the 11 and 14 levels, AMC has reviewed the latest drilling data and has incorporated the likely reserve/resource impact in its mining schedule. AMC cautions that this block of the Perseverance orebody is still subject to detailed studies and mining conditions are likely to deteriorate with depth.

The disseminated ore body is approximately 200m in length and up to 75m in width. Ore is broken by blasting fans of holes drilled upwards from the cross-cuts on each level against the material in the drawpoint. Broken ore is bogged by rubber tyred loaders and loaded into diesel trucks for haulage to the crusher tip horizon. The rubber tyred loaders will tip directly into ore passes when the new materials handling system on the 11 level is commissioned in 2005. The waste material above the orebody caves into the void left by stoping, forming a broken waste blanket which moves downward as blasted ore is removed. Continuing improvements to the operation are being implemented to enhance ore recovery. These include the use of interactive draw technique, operating up to three SLC levels simultaneously and adhering to simple rules for ground support, drilling, charging, blasting and bogging.

The majority of the remaining SLC levels contain approximately 50,000 Reserve tonnes per vertical metre. The maximum production rate scheduled from the SLC is 2.1 Mt in 2010. This equates to a vertical advance of approximately 45m or approximately two SLC levels. Considering the past performance from the SLC (1.66 Mt in 2002 and 1.64 Mt in 2003) plus the constraints of interactive draw and rock stress, AMC considers the rates included in the schedule to be reasonable.

#### **3.3.4.2 Perseverance Disseminated Ore Body - HWL**

Between 6 and 8 levels, a distinct HWL has become evident. In May 2004, the HWL mining method was changed from continuous panel open stoping with paste fill to SLC. The change in mining method was necessary to ensure that mining of the HWL can be completed by the time the SLC undercuts it on the 8 level. The Reserve for the HWL has been re-estimated based on mining by SLC. AMC has used the SLC Ore Reserve

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estimate that is based on the same tonnes and grade factors used for the SLC in the disseminated orebody for consideration of production scenarios. As there is no proved performance from the HWL using SLC, there may be some implementation risk as a result of the use of these factors. Production from the HWL using SLC is scheduled to commence in late 2004 and contributes approximately 25% of total ore tonnes from Perseverance in 2005 and 2006.

The main issue with caving the HWL is the potential for the near surface portion of the haulage shaft to be affected by the cave subsidence as mining progress down to the 11 level. WMC has reviewed the potential for the cave subsidence to impact on the near to surface portion of the shaft. In addition to continually monitoring any ground movement, skip haulage speed has been reduced to mitigate risk of impact between skips and shaft guides.

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Mining of the SLC between the 11 level and 14 level has been included in the Likely Case. A geotechnical and mining review of the disseminated resource and associated waste rocks is currently underway. SLC mining costs below the 11 level have been factored up by 50% to account for likely difficulties associated with mining at depth.

#### **3.3.4.3 1A Shoot**

The 1A massive sulphide shoot and the associated 1B and 1C shoots have an overall tabular nature, but have very complex internal geology, which cannot be accurately interpreted from the existing drilling. All drilling used for the resource estimate is diamond drilling. Drillhole spacing is about 20m x 30m between 9760 mRL and 9570 mRL. Below 9570 mRL the drill spacing is approximately 50m x 50m. The drill spacing is not uniform through the shoot. Above 9760 mRL drill spacing is approximately 80m x 80m.

The resource estimate for the 1A shoot has been developed using a two dimensional method which estimates the accumulation of grade and width, estimates width and back calculates grade. The values are estimated by ordinary co-kriging. This is a common method for narrow vein deposits.

The resource estimate is classified under the JORC Code based primarily on drilling density and confidence in geological interpretation. AMC considers the resource estimation method and classification to be acceptable.

1A is a high-grade ore body but has had a difficult production history. Mining above the 6 level (9760 mRL) ceased in October 2003 due to difficult ground conditions. Production is planned to recommence on 9540 mRL in 2005 utilising bottom up open stoping with paste fill. Stopping on each level will retreat toward a central pillar. The central pillars are based on geometry and size of the central pillars left behind in the 1A above the 6 level. It is planned to mine between 130,000t and 150,000t per year at 2.7% Ni. Seismicity is expected during the mining of the 1A ore bodies due to high stress levels. Previous strategies developed to deal with seismicity whilst mining on higher levels in the 1A orebody are still considered applicable and appropriate ground support allowances have been planned. Stopping below the 6 level has not commenced in the 1A ore body, therefore mining conditions cannot be confirmed.

Down to the 8 level the ore surface is similar to that above 6 level but it then splits into three lenses, 1A, 1B and 1C. The 2003 Reserve below the 6 level is 0.95Mt at 2.64% Ni (cut-off of 1.0% Ni). The 2004 Reserve estimate is expected to be similar to the 2003 Reserve estimate. AMC believes it is reasonable to include the 1A Reserve derived using the bottom up mining approach in its assessment.

#### **3.3.4.4 Perseverance F2 Complex**

The F2 shoot is a massive sulphide lens on the eastern side of the felsic embayment adjacent to the Perseverance disseminated mineralisation. The shoot forms a series of north-south striking en-echelon discontinuous massive sulphide stringers.

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Drill hole spacing can be about 25m x 25m between at upper levels and up to 50m x 50m at lower levels. Massive sulphide units are interpreted on the basis of geology assisted by higher nickel grades. Grade was estimated into a block model using ordinary kriging.

Drillhole spacing and kriging variance is used for resource classification. AMC considers the resource estimation method and classification to be acceptable.

The F2 lens is accessed via the cross-cuts on each SLC level and is being mined by underhand open stoping with paste fill. The stope blocks are approximately 3m long, 5 to 15m wide and 20 to 25m high. The high grade, narrow style of mineralisation makes Reserve estimation difficult. The Reserves are depleted and replenished each year, as closer-spaced drilling of the orebody is carried out on a just-in-time basis.

AMC considers the reserve estimates as appropriate and has used them in its production projections.

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#### **3.3.4.5 The Progress Shoot**

The Progress deposit is a high tenor, disseminated-matrix nickel sulphide deposit located approximately 200m to the north, along strike, of the main Perseverance disseminated mineralisation. The principle mineralised zone at Progress extends 300m vertically, has a strike length of about 120m, has an average true thickness of approximately 15m and a sub-vertical dip and plunge.

All drilling is diamond drilling with spacing of about 30m x 30m. Towards the top of the Progress mineralisation, the drilling spacing is about 50m x 50m. The northern shoots have a very sparse drill coverage, of about 80m x 80m.

Interpretation uses a combination of lithological and nickel grade boundaries with eight mineralisation envelopes or shoots interpreted at a nominal 1% Ni cut-off.

No attempt is made to separate out distinct massive sulphide units.

Ni, As and Co grades density values are estimated into a block model using ordinary kriging.

Most of the Shoot 1 portion of the estimate is classified as Indicated Resource in the area of closest drillhole spacing. Other shoots are classified as Inferred Resources. AMC considers the resource estimation method and classification to be acceptable.

Although it is located closer to the shaft than the main Perseverance disseminated mineralisation, access to the Progress orebody is via the 1A orebody decline. A trial stope has been developed and a review of ground conditions has suggested that open stoping would not be a viable option. As a result, the mining approach has been revised and SLC mining is now scheduled to commence in 2005.

#### **3.3.4.6 Perseverance Lower Mine Development**

A 1,162m vertical shaft extends from the surface to the 11 level and a decline currently extends from the surface to the 11 level. A crusher is located between the shaft and the SLC on the 6 level. As mining of the SLC progresses downwards, the cave zone extends both vertically and laterally above the depleted mining zone. Geotechnical modelling of the cave zone indicates that ground conditions in the area of the crusher on the 6 level will deteriorate.

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A replacement ore handling system located on the 11 level is currently under construction and is scheduled for commissioning in the second quarter of 2005. Production from the SLC will be fed to the new crusher via orepasses connecting the SLC levels to a transfer horizon. The new loading station on the 11 level is currently being used for haulage of waste material from development. The 1A and Progress orebodies will be accessed via a separate decline and production delivered to the transfer horizon via separate orepasses.

The walls of the top part of the southern ventilation shaft are cracked and this section will eventually be lost due to the impact of the cave subsidence. A replacement Southern Ventilation Shaft that is located outside the influence of the cave subsidence has been excavated and commissioned. The ventilation shaft near the main hoisting shaft is also expected to be affected by the cave subsidence at some time in the future. The magnitude of this impact is constantly being monitored.

WMC has reviewed the potential for the cave subsidence to impact on the shaft and results from modelling indicate that the near surface portion of the shaft is likely to be subjected to some influence from the cave. AMC's opinion is that there is a moderate probability of the SLC impactor on the shaft integrity as mining of the SLC (inclusive of the HWL) progresses at depth. The magnitude and probability of the SLC impacting the shaft will increase over time. There is a low, albeit real, probability of major impact or total shaft loss in the future. It is possible to design a planned shaft outage for major repairs to coincide with a planned smelter shutdown. Such an action would result in a small total cost in terms of NPV of the NBU. Given the small NPV effect and the inability to quantify the risk, AMC has not allowed for the impact on costs and production in its scenarios.

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#### **3.3.5 Harmony Mine - Reserves, Resources and Mine Operations**

At Harmony the geological interpretation and resource estimation is based on reverse circulation drilling and diamond drilling, nominally on a 40m x 40m spacing. Grades were estimated into a wire framed model using the inverse distance cubed estimation method. The resource estimate has been classified into Measured and Indicated categories. The estimate has been carried out using standard industry practices but the drillhole spacing and geological uncertainty suggests that a classification of Indicated Resource would be more appropriate.

Mining in the Harmony pit has identified a much higher proportion of high talc mineralisation than previously estimated. Recent drilling has improved the geological interpretation and grade estimation in a revised estimate. WMC has reconfigured the milling circuit to manage the higher talc levels without significant recovery losses. Mining of the Harmony pit is almost complete.

#### **3.3.6 Rocky s Reward Resource**

The Rocky s Reward resource estimate is based on remnants of structurally controlled massive sulphides, disseminated mineralisation in terrace and fault structures and other disseminated mineralisation. The open pitable resource reported in Table 3.4 is the compilation of a number of separate estimates covering mineralised structures and disseminated mineralisation. A revised estimate has been developed incorporating all the Rocky s Reward mineralisation into a single competent estimate. Grade estimation used indicator and ordinary kriging.

#### **3.3.7 Eleven Mile Well**

The EMW open pit is located approximately 7 km south of the Perseverance underground mine. Mining of the open pit commenced in 2004 and ore production totalling approximately 0.4 Mt will be completed during 2005.

#### **3.3.8 Cliffs**

##### **3.3.8.1 Resource Estimate**

The Cliffs resource estimate is based on geological interpretation of the mineralised lode separated into massive sulphide and disseminated sulphide domains within a structural framework. All drilling is diamond drilling and varies in spacing from 50m x 80m up to 100m x 100m. Assaying, density determination and assay quality control have been carried out to industry standard. Grade was estimated into a block model using inverse distance methods. The estimate has been classified as Indicated and Inferred Resource based on drillhole spacing. Part of the model with successful grade estimation is not classified as Mineral Resource because of drillhole spacing or structural complexity. It is highly likely that these areas will convert to Mineral Resources with further drilling.

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Drillholes located along strike from the interpreted lodes indicate that the mineralised surface and massive sulphide mineralisation continue for some distance along strike. Supergene mineralisation was not targeted by previous resource drilling. It is likely that this material can be treated at the LNO facility and drilling will be carried out to delineate this resource.

### **3.3.8.2 Ore Reserves and Mining**

Since only a small portion of the Cliffs geological resource has been classified as Indicated, a Reserve has not been reported. AMC cautions that this resource is still subject to a feasibility study, which is currently scheduled for completion in 2005.

A prefeasibility study has been completed and it concluded that the most suitable mining method would be longhole benching with cemented paste fill. Stopping blocks each 15m high and up to 50m long were created to determine a

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mining inventory. The total diluted mining inventory presented in the prefeasibility study was 2.2 Mt at 3.1% Ni. The cut-off grade used was 1.7% Ni.

The mining schedule for Cliffs is based on decline development commencing mid 2005. The annual production rate is up to 350,000t and mine life is approximately nine years. The preferred option for treatment of ore is to truck it to LNO, blend it with LNO ore and process it in the LNO plant. This is reflected in the NBU production schedules considered.

#### **3.3.9 Sir Tristram Resource Estimate**

The Sir Tristram resource estimate is based on percussion and diamond drilling, some of which are historical holes. Drilling is on sections spaced from 60 to 80m with 60 to 80m hole spacing. Assay data by several methods has been collected over several drilling campaigns and no assay quality control data are available. Interpretation for resource estimation is based on geology and grade domains using a nominal 0.7% Ni grade boundary. Massive sulphide and disseminated sulphide domains were interpreted and developed into a three dimensional model. Nickel, arsenic and density were estimated using ordinary kriging.

The resource estimate has been classified as Inferred Resource because of drillhole spacing and uncertain assay quality.

A review of resource potential has identified the Sir Tristram area to have some potential for down-plunge continuity beyond current drilling.

#### **3.3.10 Resource Potential**

There are a number of other locations in the Leinster area where nickel sulphide mineralisation has been identified both as high grade underground mining and disseminated open pit mining targets. Some of these areas have been drilled to various degrees and tonnage and grade have been estimated, although generally not to Mineral Resource status. Some of these areas are extensions or remnants of Mineral Resources.

The Harmony South area between the Harmony and Rocky s Reward pits covers the continuation of massive sulphides mined in these pits with a number of high grade drillhole intersections on known surfaces requiring further drilling for resource estimation.

East Persy is a massive sulphide lode on a contact to the east of the Perseverance disseminated lode that has returned numerous drillhole intersections of greater than 3% Ni but has not been adequately drilled for resource estimation.

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Drillhole intersections of massive sulphides below 11 level of greater than 6% Ni associated with a poorly defined structure referred to as F4 require further underground diamond drilling for resource estimation.

In addition, there are a number of low grade disseminated zones of mineralisation (in addition to the Perseverance Low Grade resource). Among these are Weebo Bore, Water Tank, and Betheno.

Collectively, these targets provide a opportunity to produce Ore Reserves under appropriate economic conditions. AMC has included production from satellites in its production scenarios to reflect the opportunity to mine these or other likely targets.

### **3.3.11 Concentrator**

The LNO concentrator was originally commissioned in 1978 and has been expanded several times, last in 1993. The current circuit is conventional crush-grind-flotation and includes primary crushing, SAG-ball milling, flotation and flash drying.

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The LNO concentrator treated 2.4 Mt of ore in 2003 and 2.5 Mt in 2002. Production of 41,806t of nickel-in-concentrate was achieved in the year ended 31 December 2003 compared to 40,006t of nickel-in-concentrate in 2002. Forecast production for 2004 is approximately 2.69 Mt of ore milled and 44,000t Ni in concentrate.

The 3 Mtpa nominal capacity of the LNO concentrator has rarely been tested due to the limited ore supplies to date. It is anticipated that a maximum capacity of approximately 3 Mtpa is likely to be achievable based on demonstrated short term capacity. In addition, during the most recent quarter July-September 2004 the mill treated 758,672t equivalent to an annual rate of 3.0Mtpa. AMC has therefore assumed a 3.0 Mtpa capability for its scenarios.

The LNO dryer treats both LNO and MKO concentrate, however its achievable capacity is often constrained by concentrate transport logistics. AMC has assumed a dryer capacity of approximately 680,000 tpa. While some improvements in current concentrate transport logistics will be required, this is considered achievable. AMC has assumed surplus wet concentrate above dryer capacity is transported to the KNO dryer.

Current nickel recovery to concentrate is approximately 85 to 88% for a blend of Harmony and Perseverance ore. Over the last two years, flotation recovery improvements of approximately 4% have been achieved through the implementation of split size flotation and other circuit modifications. In addition, concentrate Fe:MgO ratio has been improved to approximately 7.3. The ratio will be further improved by the inclusion of Cliffs ore in mill feed from 2007.

WMC plans to mine the Cliffs deposit and treat the ore at the LNO concentrator from 2007 to 2016. Cliffs ore produces high Fe:MgO ratio concentrate and, during years of peak Cliffs production/milling (2008 to 2013), LNO concentrate Fe:MgO ratio will increase to between 8 and 9. This increases flexibility to include lower Fe:MgO ratio concentrate from MKO as feed to KNS through blending during this period if required.

#### **3.3.12 Site Infrastructure and Overheads**

In August 2001, WMC sold its Gold Business Unit. This has had direct cost and community implications for LNO significantly reducing the cost of shared services, housing, public facilities, Leinster utilities (water, power and sewerage) and management structures.

Power is generated from a 40 MW gas turbine using gas from the Goldfields Gas Transmission pipeline. Water is provided from borefields. This infrastructure is adequate for proposed future production rates. With the capital AMC has allowed for in its scenarios, the current tailings dam appears adequate for the life of the operation.

#### **3.3.13 Operating and Capital Costs**

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AMC's production scenario assumptions are shown in Table 3.6. At the request of WMC and in accordance with its reporting practice, AMC has not included a direct cash operating cost breakdown in its report.

**Table 3.6 LNO - Likely Case Assumptions**

<b>Item</b>	<b>Units</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008 -end</b>
Ore mined & milled	kt	2,780	2,439	2,765	24,110
Head grade	% Ni	1.83%	1.92%	1.93%	1.99%
Nickel recovery	%	84.3%	86.4%	88.1%	88.2%
Concentrate output	kt Ni	42.9	40.4	46.9	422,789
Capital expenditure	A\$M	89.3	51.9	43.8	421

Expenditure allowances have been included for ongoing capital development, sustaining capital and for exploration.

In establishing its projections for the production schedule at LNO, AMC has reviewed and adopted WMC's schedule assumptions. Schedule slippage due to failure to achieve requested capital approvals, unexpected decision delays, or slower than anticipated development rates due principally to geotechnical problems are a risk and, by nature, very difficult to quantify. Schedule slippage would, however, potentially leave LNO with a development deficit in the 1A and Progress orebodies, resulting in production shortfalls.

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#### **3.3.14 Future Performance and Upside**

The Perseverance Mine has the potential to produce at between 2.4 to 2.7 Mtpa. In the Likely case, AMC has considered the impact of additions to mining inventories based on mineralisation being delineated between the 11 level and 14 level in its production scenarios.

WMC has achieved recent improvements in flotation recovery through application of modifications successfully implemented at MKO. These recovery improvements are reflected in the scenarios considered.

LNO Fe:MgO ratios of approximately 7:1 or higher exceed KNS minimum specification. As implementation of 100% gravity circuit capability at MKO is expected to provide adequate improvement of the Fe:MgO ratio for MKO concentrate transported to KNS, the requirement to blend MKO concentrate with LNO concentrate will be eliminated. As a consequence of this, no further change in Fe:MgO ratio at LNO has been assumed necessary. AMC expects production at LNO to range between 2.7 Mtpa and 3.0 Mtpa until 2011 and then declining until 2018. Grades range between 1.8 and 2.2% Ni.

### **3.4 Mount Keith Operations**

#### **3.4.1 Overview**

MKO is 450 km north of Kalgoorlie and 80 km from Leinster. The Mount Keith deposit is a low-grade disseminated sulphide ore body averaging some 0.56% Ni and is mined by an open pit. Production began in 1995 and the operation currently includes an 11.5 Mtpa concentrator, ancillary facilities and a village.

A contract for concentrate sales of approximately 14,000 tpa of nickel-in-concentrate will conclude in early 2005. The remainder is transported by road to operations at either Leinster or Kambalda for drying and blending with other concentrates, which are then delivered to KNS for further processing. From early 2005, all concentrates from MKO will be delivered to LNO and onto KNS.

The ore processing rate at MKO is proposed to be increased to 26.0 Mtpa for expansion of the existing concentrator and construction of a new concentrator.

WMC is currently evaluating the treating of talc and low sulphur ores through a separate concentrator of 7 Mtpa to produce a concentrate as feed to an LPL plant. The LPL plant would produce an intermediate product that could be treated at KNR or sold. This proposal allows production of nickel from ore that would otherwise remain stockpiled and treated at the end of mine life. Treatment of ore from the proposed Yakabindie mine through integrated treatment facilities on the MKO site would allow treatment of talc and low sulphur ores from the Yakabindie deposit in a similar manner. Normal Yakabindie ore would be combined with MKO ore and treated through expanded facilities, with an additional 7.5 Mtpa concentrator module to produce smelter feed concentrate. While the exact production split between normal high sulphur ore and talc and low

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sulphur ore remains to be confirmed with improved resource data from the current drilling programs, AMC believes the proposed schedules provided a reasonable basis for the production scenarios at MKO. WMC has achieved significant improvements in flotation recovery at MKO since 2000. In addition, the implementation of a gravity circuit to treat 50% of the concentrate has allowed Fe:MgO ratios in final concentrate to be significantly improved, at some recovery penalty. Following the implementation of the LPL plant the nickel units previously lost as a result of operation of the gravity circuit will be recovered as part of the low grade concentrate as feed for the LPL plant. Implementation of a gravity circuit with the capability to treat 100% of the concentrate produced at MKO will further increase flexibility to increase Fe:MgO ratio if required. This is particularly significant in the later years of operation and ensures concentrates from MKO/Yakabindie ore will be able to meet smelter concentrate requirements once LNO has ceased concentrate production. AMC has assumed that KNS will have a capability to treat an Fe:MgO ratio of 4.7 after 2015 and considers MKO/Yakabindie concentrate blends with gravity treatment will be able to achieve this target.

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### **3.4.2 Geology, Mineral Resources and Ore Reserves**

#### **3.4.2.1 Geology**

The deposit is a large tonnage, low-grade (0.5 to 1.5% Ni) disseminated nickel sulphide deposit hosted by large layered bodies of olivine cumulate. Nickel mineralisation extends for about 2 km along strike and has been delineated in drilling to about 500m below surface.

Mount Keith is located in the Agnew-Wiluna Greenstone Belt which consists of deformed and metamorphosed felsic to intermediate volcanics and volcaniclastic rocks, basalt, gabbro, high magnesium basalt, komatiite and minor sedimentary rocks metamorphosed to greenschist facies. The deposit is in the upper part of the zone dominated by komatiite, which can be correlated over a strike length of over 100 km. Transported material and in situ weathered material extends from 80 to 120m below the surface. In situ weathered material can contain significant oxide nickel mineralisation that is not currently treated.

The mineralogy of sulphide minerals is an important metallurgical consideration with carbonate and carbonate talc alteration being important features of the deposit. The carbonate-altered zones tend to be higher in arsenic. The interpretation of the talc-altered zone is important because of the deleterious effect of talc in the flotation plant. Pentlandite is the most common nickel sulphide mineral and is associated with pyrrhotite. Millerite is an important component in the lower 20% of the Mount Keith mineralisation.

#### **3.4.2.2 Mineral Resources**

The geological interpretation of mineralisation and alteration types is as important as the estimation of metal grades at MKO. Mineralisation type affects plant recoveries and therefore pit optimisation and ore cut-off. Although it is preferable during mining to avoid inclusion of talc alteration material in the ore feed to the concentrator because of the adverse effect of the talc on the process, the planned plant modifications and LPL treatment route will allow treatment of this material.

MKO resources as at 31 December 2003 (the most recent public reporting date) are listed in Table 3.7. The resource estimate is expected to be substantially revised in December 2004 reported resources, with a simplified approach to domaining and revised approach to resource classification. This will result in a significant reduction in total resources compared to the publicly reported 2003 resource estimate. Based on information provided by MKO, AMC considers that the December 2004 resources will be about 20% less than 2003 resources, mainly affecting the Inferred and Indicated Resource categories. The majority of the potential resource reduction occurs at depth with only a 1 to 2% variance expected within the current planned life-of-mine Stage J pit shell. Reconciliation indicates that the revised approach to estimation is a better indicator of tonnage and grade. Drilling programs are currently underway to provide more data below the current pit and it is expected that future estimates of resources will recover at least part of the resource reduction anticipated relative to the December 2003 estimate.

The resource estimate is based on diamond drilling ranging in spacing from 40m x 40m to more than 80m x 80m. The interpretation defines the mineralised ultramafic units and weathering domains. Talc zones are delineated by interpreting talc-bearing structures. Ni, S, talc, As and other grades are estimated into the block model using ordinary kriging.

In AMC's opinion, the MKO resource estimate has been prepared using common industry procedures and has been appropriately classified under the JORC Code (see Table 3.7).

**Table 3.7 MKO Mineral Resources as at 31 December 2003**

Source	Measured Resource		Indicated Resource		Inferred Resource		Total Resources	
	Mt	Ni%	Mt	Ni%	Mt	Ni%	Mt	Ni%
Open Pit	205	0.55	145	0.56	108	0.53	457	0.55
Stockpiles	38	0.51			10	1.2	48	0.67
<b>Total</b>	<b>243</b>	<b>0.55</b>	<b>145</b>	<b>0.56</b>	<b>118</b>	<b>0.58</b>	<b>505</b>	<b>0.56</b>

Source: MKO Mineral Resources Tabulation.

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MKO Ore Reserve estimates at 31 December 2003 are shown in Table 3.8 below.

**Table 3.8 MKO Ore Reserves as at 31 December 2003**

<b>Source</b>	<b>Proved Reserve</b>		<b>Probable Reserve</b>		<b>Total Reserve</b>	
	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>
Open Pit	195	0.56	86	0.57	281	0.56
Stockpiles	27	0.49			27	0.49
<b>Total</b>	<b>222</b>	<b>0.55</b>	<b>86</b>	<b>0.57</b>	<b>308</b>	<b>0.56</b>

Source: MKO Dec 2003 Resources & Reserves Summary.ppt.

Mining constraints and other factors applied to the resource model to estimate Ore Reserves include geotechnical, mine design, operating and capital costs, metal prices, exchange rates, percent London Metal Exchange ( LME ) nickel transfer rates, discount rates, payable nickel factors and various adjustment factors.

Metallurgical recovery assumptions are based on extensive test work on each domain with grain size being the main control. GRIP I and II recovery improvements are included in the ore reserve. An additional 4.9% recovery for GRIP III projects is not included in the ore reserve but has been applied to the nickel recoveries in AMC s Likely and Upside production scenarios. The scenarios also include estimates for concentrate grade including Fe:MgO ratio, which has been the most difficult of all parameters to reconcile.

Because of the large ore widths, no internal dilution is applied and 100% mining recovery is assumed. Parameters and constraints in the resource model were reviewed following reconciliation of 2003 production with the relevant portion of the Ore Reserve. An alternative resource model has been prepared in 2004 with updated model constraints. These constraints are detailed in the Ore Resource section above. The alternative model may result in a reduction of the Ore Reserve, in excess of mining depletion, from the stated December 2003 Ore Reserves. The Ore Reserve reduction is anticipated to be less significant than the Mineral Resource reduction. AMC has taken account of a possible reduction in Ore Reserve in the production scenario provided to Grant Samuel for valuation purposes.

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Pit optimisation software is used to define an economic pit shell at a 12% pa discount rate. Resulting pit shells are intersected with the resource model to define the Ore Reserve. The calculated cut-off grades have been between 0.16% and 0.17% recovered Ni. The metallurgical recoveries at lower grades are not well understood due to lack of relevant plant operational data. A combined 0.2% recovered Ni and 0.4% head grade Ni cut-off has been applied.

The 2003 Ore Reserves have been developed from the MKO De-bottlenecking Study, Phase 1 Mine Feasibility Study pit optimisation, being the Feasibility Study Ore Reserves less mining depletion.

The open pit is designed as a series of cut-backs. Stage F is the current principal ore source and Stage G waste stripping commences in January 2005 supplying ore in late 2006. The final three stages commence waste stripping in late 2007 (Stage H), 2009 (Stage I) and 2012 (Stage J) and take the pit to its ultimate depth. Stages F, G and H contain 54% of the remaining in situ nickel.

The de-bottlenecking study pit optimisation slope design constraints are based upon appropriate geotechnical assessments. AMC considers the level of geotechnical risk to be similar to that experienced by other well-managed large open pit mining operations.

In assessing mineralisation scheduled for milling AMC has developed Likely and Upside production scenarios based on schedules provided by WMC and according to the de-bottlenecking study pit optimisations. The pit optimisations upon which the pit design and Ore Reserve estimate are based are most sensitive to metal price, process recovery and recoverable nickel grade.

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#### **3.4.3 Mining Operations**

The pit is currently around 350m deep. The final pit dimensions will be 550m deep, 3.2 km long and 1.5 km wide utilising 15m benches.

A conventional drill and blast, load and haul mining method is employed with annual material movement of around 20 Mbcm per year. The mining is undertaken as an Alliance between WMC and a contractor, utilising two Liebherr R996 hydraulic shovels, two Liebherr R994 hydraulic excavators and 21 Caterpillar 793C haul trucks as its main production units. Overburden and sub-grade material are trucked to designated stockpiles, while the ore is trucked to the run-of-mine (ROM) blended stockpile.

The mining operations are well managed, equipment is in good condition and operating performance parameters are indicative of a reasonably efficient operation. In 2003, 14.0 Mt of ore and 28.0 Mt of waste were moved.

The current mine plan is to increase annual material movement to 40 Mbcm per year by 2007, accelerating waste stripping in preparation for increased production rates with construction of a new process plant and expansion of the current plant. WMC has secured supply of an additional (third) mining fleet for delivery in the first half of 2005 and has identified an option for a fourth mining fleet to achieve this production ramp-up. AMC does not see any operating constraints to achieving this increase.

#### **3.4.4 Stockpiles**

The pit is currently being high-graded with any material between 0.20% and 0.26% recovered Ni being stockpiled as low-grade ore. High talc ore grading more than 0.20% Ni is separately stockpiled. WMC plans to continue stockpiling these ores until 2007 when the proposed Type B plant will commence operation with feedstock directly from the pit supplemented with stockpile reclaim.

At December 2003, total stockpiles per the Ore Reserve estimate were 27 Mt at 0.49% Ni. AMC has included the same stockpile opening stocks in its scenarios as WMC has used in its strategic planning. This includes low-grade stockpiles of 10.4 Mt at 0.43% Ni and high talc stockpiles of 12.8 Mt at 0.52% Ni with around 4 Mt being current ore stocks. Even though processing of high talc and low S:Ni material commences in 200o8, stockpile tonnages are estimated to continue to increase to a maximum of 112 Mt in 2019 with reclaim feed to the plants continuing in subsequent years until depletion.

#### **3.4.5 Upside Case**

AMC s Upside scenario includes the MKO mine life extending beyond the present ore reserve. This is based upon the exploration upside stemming from the orebody being open at depth with the ore reserve apparently limited by lack of drilling at depth. Mineralisation is interpreted to continue at depth displaying the same or similar qualities (Ni tonnes per vertical metre, metallurgical recoveries, etc). A significant risk to this scenario is the unknown geotechnical behaviour of the MKO ultramafic orebody at depths greater than 550m. To deepen the pit beneath the

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current pit design limits may require a flattening of the overall pit wall angles resulting in increased cost for waste stripping per tonne of ore mined.

Additionally, there is potential to mine the MKD49 orebody immediately north of the existing pit. This deposit is relatively shallow and is now considered more favourably than in the past due to a better understanding of the importance of the S:Ni ratio for determining nickel recovery, Fe:MgO ratios in this region and the introduction of a Type B plant to process low S:Ni ore and talc ore.

It is feasible that the combination of these exploration opportunities could extend the MKO mine life by an additional five years beyond that shown in the Likely case and this is what AMC has accepted for its Upside case.

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#### **3.4.6 Concentrator**

The concentrator utilises crushing, grinding and flotation to recover nickel to concentrate. The circuit includes primary crushing, two parallel SAG/ball mill grinding modules, deslime cyclones, flotation, CCD washing and filtration. In 2003 the concentrator treated 11.2 Mt at 0.63% Ni to produce 50,004t of Ni in concentrate at a recovery of 71.1%. The concentrator is currently operating at a capacity of approximately 11.5 Mtpa.

Significant recovery improvements have been achieved through a series of recovery improvement projects including separate size flotation and acid cleaning. These changes have improved recovery by more than 10% over what would have been achieved without the changes. Plant recoveries vary depending on the location and type of ore from the pit. Operating results reconcile reasonably with those predicted from the geology and metallurgical model ( GEOMET model ), which is based on bench test work on ore samples of the same rock domain. Fe:MgO ratios can be predicted with greater confidence than in the past based on the S:Ni ratio of the ore treated.

The Fe:MgO ratio of 2.5 to 3.5 in MKO concentrate is below the minimum level required by KNS. As such, MKO concentrate currently relies on blending with KNO and LNO concentrate. WMC has implemented a gravity circuit to treat up to 50% of concentrate production and reject composite particles to improve Fe:MgO ratio of MKO concentrate. Plant results confirm testwork results. Additional capacity to allow all the concentrate to be treated through the gravity circuit will be installed in 2005. The circuit is forecast to be able to increase concentrate Fe:MgO ratio by a factor of 1.7 for a recovery penalty of approximately 2.1%. The planned introduction of separate cleaning in 2006 is expected to improve the Fe:MgO ratio by a further 0.3 units.

In its assessment of MKO, AMC has included gravity separation and separate cleaning in both the Likely and Upside scenarios.

WMC currently sells approximately 14,000 tpa nickel in concentrate to Outokumpu Mooney Group ( OMG ) under a contract due to expire early in 2005. It is understood the contract will not be renewed and this has been assumed in AMC s cases.

#### **3.4.7 Site Infrastructure and Overheads**

The tailings storage facility is a central discharge type and has been designed for the life of the ultimate pit. Water recovery is about 30%. The proposed increase in milling rate to 18.5 Mtpa from 2008 and 26 Mtpa from 2010 will, however, require additional tailings storage capacity above the original design. WMC plans to achieve this by lifting the level of the current dam walls.

Process water for the concentrator is pumped from a borefield 30 km south west of the operation and is two and a half times saltier than sea water with new water consumption of about 1.0 kl of water per tonne of ore processed. Smaller amounts of sub-potable and potable water are obtained from other borefields. Additional water supplies will be required for the planned expansions.

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Electricity is generated by a 40 MW gas turbine using gas from the Goldfields Gas Transmission pipeline. Backup is provided by five 10 MW Sulzer diesel generator sets and Leinster and Mount Keith are interconnected by an overland line for emergency backup. Two additional gas turbines will be required for the planned expansions. The mine and concentrator operate a 365 day fly-in fly-out continuous roster from Perth using daily commercial flights from Perth. There is a village of single room accommodation units with a wide range of support facilities.

### **3.4.8 Operating and Capital Costs**

WMC has forecast mining costs based on historical performance and schedules of future material movement requirements. AMC has accepted these historical costs and schedules as reasonable for its production scenarios. At the request of WMC and in accordance with its reporting practice, AMC has not included a breakdown of direct cash operating costs in its report.

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WMC believes that it will be able to reduce mining costs by approximately 5% relative to recent performance through a combination of continuous improvement programs to improve equipment utilisation and mining efficiency. Foremost of these are truck despatch, shovel digging efficiency and bucket fill. Additionally, the potential introduction of an electric rope shovel for bulk waste stripping and electric drive haul truck trials would capture the benefits of emerging technologies and generate competitive tension amongst equipment manufacturers contending for equipment sales.

The Likely case includes the installation of a new 7 Mtpa Concentrator to treat talc and low sulphur ore from both MKO and Yakabindie and produce concentrate feed for an LPL plant. A further 7.5 Mtpa concentrator module will be provided to increase the capacity of smelter feed concentrate production from both MKO and Yakabindie ores.

For the Upside case, the recovery from the LPL plant has been increased by 2% to recognise higher recoveries that may be achievable. The upside is based on production of a hydroxide product from the LPL plant in place of the sulphide product assumed in the Likely case. A capital saving of \$70M results. The LPL product is assumed to be treated at KNR where capacity is expanded to 100,000 tpa Ni production at a capital cost of approximately \$160M.

#### **3.4.9 Future Performance and Upside**

The viability of the long-term smelting operation beyond the closure of KNC (in 2010) and LNO (in 2018) requires a shift in the Fe:MgO ratio of MKO concentrates. Plant performance of the gravity circuit has confirmed laboratory and pilot work and confirmed this as a viable means of upgrading Fe:MgO ratio on MKO concentrate at modest recovery loss. The achievable Fe:MgO ratio target in concentrate is a function of the S:Ni ratio in the ore. More detailed information on the S:Ni distribution within the MKO and Yakabindie reserves is being developed. Careful scheduling of ore and stocks may be required to meet target S:Ni ratios and Fe:MgO ratios. AMC has assumed that with appropriate scheduling of ore it will be possible to produce smelter quality concentrate directly from MKO and Yakabindie concentrates.

In summary, AMC believes that the results from the plant gravity circuit testwork are sufficiently encouraging to assume that MKO concentrate will be smeltable over the long term. There is, however, a risk that metallurgical recoveries may fall further than expected over the long term as lower-grade material is fed to the plant in later years.

The introduction of an LPL circuit provides the opportunity to treat talc ore and low sulphur ore that would otherwise have been stockpiled till the end of the operation. In this way, nickel production can be achieved earlier. Some aspects of the LPL concept, however, require further definition.

The quantitative partition of ore on the basis of S:Ni ratio between a concentrator producing smelter feed concentrate and a concentrator producing LPL feed concentrate will be refined as more detailed information on the S:Ni distribution of the MKO and Yakabindie reserves becomes available. Test work is underway to confirm the likely behaviour of talc and low S ore in the production of LPL feed concentrate and the design of the concentrator is at prefeasibility level. Much information can however be inferred from the behaviour of ores in the current concentrator circuit. The LPL process is the subject of a feasibility study. Notwithstanding some remaining details to be resolved, AMC has

assumed the LPL process represents a valid processing approach for these ores. A treatment rate of 7 Mtpa has been assumed. This results in the production of approximately 25,000 tpa Ni in LPL intermediate product which has been assumed to be sold in the Likely Case.

### **3.5 The Yakabindie Project**

#### **3.5.1 Overview**

The Yakabindie Nickel deposit was discovered in 1970 and has been explored by a number of operators since that time. WMC acquired the Yakabindie project from North Limited in 2001 for \$40M, of which \$15M is payable upon receipt of government approval to mine. The Yakabindie Six Mile Well deposit is contiguous with WMC's existing North Six Mile Well deposit and their combination under one owner enhances their viability.

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Since acquiring Yakabindie, WMC has conducted a number of scoping studies on its potential. Having regard to these studies, AMC is confident that Yakabindie will be developed and will form an important source of nickel for the NBU to supplement and replace Kambalda and Leinster. AMC has included Yakabindie in both the Likely and Upside cases.

The site has been subject to several development proposals in the past. These proposals have encountered difficulties in regard to Aboriginal clearance. In April 2004, the Federal Minister for the Environment and Heritage dismissed applications seeking to have the site declared a protected area under the Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act. This decision effectively upheld prior approval by the Western Australian Minister for Aboriginal Affairs of WMC s application to access Yakabindie for development purposes.

#### **3.5.2 Geology and Mineral Resources**

The Yakabindie nickel sulphide deposits are located about 25 km south of the Mount Keith mining centre and are of a similar mineralisation style to Mount Keith deposit. Two major (Goliath North and Six Mile Well) deposits have been incorporated in resource estimates but there is another small disseminated deposit at Serpentine Hill and massive sulphide mineralisation at Sheba.

The mineralisation is hosted within thick cumulate zones in komatiitic ultramafic flows. Flows can range from several metres to a few hundred metres thick. Complex flow geometry, combined with subsequent shearing faulting, metamorphism, alteration and weathering can make interpretation of individual sulphide zones difficult. The gross volcano-stratigraphy is interpreted as being shallowly west-dipping, bound to the east by a prominent regional-scale shear zone and disrupted by a series of vertical to steeply-dipping faults. The mineralisation consists mostly of disseminated nickel and iron sulphides (pentlandite and pyrrhotite) interstitial to the grains of the ultramafic rock. Goliath North mineralisation is dominated by pentlandite-rich and pentlandite-only assemblages, and is therefore higher tenor than Six Mile Well. Other sulphides (e.g. millerite, heazlewoodite, and pyrite) occur distal to the main mineralised zones.

All resource estimation drilling is diamond core drilling after reverse circulation drilled pre-collars. Drillhole spacing at Six Mile Well is at a 40m x 80m spacing and at Goliath North at 30m x 60m spacing. Since acquiring the project, WMC has carried out drilling to improve the confidence in the resource estimate at depth and define limits to the mineralisation. WMC conducted an extensive core relogging and reassaying programme on acquiring the tenements. Nickel, arsenic and talc were analysed along with base metals. Very few samples were analysed for sulphur.

The interpretation for resource estimation includes identification of domains within ultramafic rock units and identification of talc alteration zones. A mineralised domain is identified at a 0.35% to 0.40% Ni assay boundary. Mineralised zones are open at depth at both Six Mile Well and Goliath North and trial pit optimisations stop locally at the limit of the model, suggesting that depth of economic mineralisation could be deeper than the current resource model.

Grades are estimated into a block model using ordinary kriging with data limited to the geological and grade domains. Density values were set based on values used in previous estimates. Nickel grades are converted into recovered nickel values using a regression based on MKO data.

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The resource estimates were classified into Measured, Indicated and Inferred categories using the kriging variance, maximum distance to the nearest sample and the number of composites used for estimation.

AMC considers that the estimate as prepared in Table 3.9 has been prepared in line with good industry practice but notes that the grade domaining and current approach to resource classification follows practices that have been discontinued at MKO.

AMC also considers that the estimate has been classified in accordance with the JORC Code.

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<b>Deposit</b>	<b>Measured Resource</b>		<b>Indicated Resource</b>		<b>Inferred Resource</b>		<b>Total Resources</b>	
	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>	<b>Mt</b>	<b>Ni%</b>
Six Mile Well	75.9	0.56	99.0	0.57	39.0	0.56	213.9	0.56
Goliath North	31.6	0.61	32.6	0.62	11.2	0.64	75.5	0.61
<b>Total</b>	<b>107.6</b>	<b>0.58</b>	<b>131.6</b>	<b>0.58</b>	<b>50.2</b>	<b>0.57</b>	<b>289.4</b>	<b>0.58</b>

Reported at a 0.4% Ni cut-off

AMC also notes that assumptions about metallurgical treatment of Yakabindie ore in either the existing MKO plant or the proposed additional plant and LPL plant rely on an understanding of the S:Ni ratio which, in the absence of sulphur data, is not known with certainty.

**3.5.3 Ore Reserves**

WMC has not stated an Ore Reserve for the Yakabindie deposits. The Likely case is based upon a mine production schedule totalling 196 Mt ore at 0.56% Ni. The Upside case extends the mine life for an additional two years with an ore mining rate of approximately 10.5 Mtpa.

**3.5.4 Mining Plan**

The Yakabindie Project has been developed to scoping study level with a prefeasibility study currently underway. The size of the deposits and WMC s experience from mining the similarly large low grade Mount Keith deposit means it is well placed to optimise the exploitation of the resource. Cost saving synergies can be achieved by combining a number of mine planning and administrative activities to service these mining operations. Its distance (25 km) from Mount Keith will limit the introduction of mining operation synergies such as sharing mobile equipment from the mining fleet and mining infrastructure.

AMC has assumed in its consideration of production scenarios that WMC would proceed with the currently preferred project case where ore mined at Yakabindie is transferred by overland conveyor to Mount Keith with ore feed selectively distributed to the Type A and B plants and stockpiles located adjacent to the Mount Keith open pit. The project is assumed to be a standalone mining operation with contractor operated conventional truck and shovel open pit mining, with ore mined averaging 14 Mtpa for a period of 14 years. Capital for the Type B plant (\$287M) and LPL plant (\$300M in Likely case, \$230M in Upside case) have been included in the capital costs for MKO. Capital for site

infrastructure (\$35M) and tailings dam (\$35M) have been included in the Yakabindie capital costs.

### **3.5.5 Upside Case**

The Upside case projects the Yakabindie mine life to extend beyond this production schedule based upon the exploration upside that the orebodies are open at depth and limited by drilling extent.

Mineralisation is interpreted to continue at depth displaying the same or similar qualities (e.g. Ni tonnes per vertical metre, metallurgical recoveries etc).

### **3.5.6 Operating and Capital Costs**

Mining operating costs have been estimated from MKO mining operation costs. The unit rates are from the previous mining contract prior to the current Alliance agreement and the allocation for mining shared services are based on actual shared services costs from that same period less cost saving synergies with MKO.

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Mining capital costs are limited to the installation of fixed infrastructure such as workshops and offices. For the purposes of modelling, it has been assumed that a mining contractor would purchase the mobile equipment fleet.

### **3.6 Kalgoorlie Nickel Smelter**

#### **3.6.1 Overview**

KNS, using Outokumpu flash smelting technology, was commissioned in 1972 with a design capacity of 200,000 tpa concentrate or 30,000 tpa nickel in matte. Subsequent upgrades to the smelter have increased the design capacity to the current 750,000 tpa concentrate or 110,000 tpa nickel in matte.

The smelter receives nickel concentrates from KNC, LNO and MKO. Part of the flash furnace is dedicated to recovery of nickel from the slag produced in the smelting process. A 47% nickel low-grade matte from the flash furnace is further smelted in three converter units. Two final products come from the converters; a 74% Ni High Grade matte for export to custom refiners and a 68% Ni KNR Grade matte for refining at KNR to recover nickel in a pure form and to recover copper and cobalt as co-product sulphides. KNS will move to produce one grade of 68% Ni matte in 2005.

Smelter gases are captured to produce co-product sulphuric acid prior to air emissions being released to atmosphere.

#### **3.6.2 Smelter Operations**

The flash furnace smelts sulphide concentrates with sand flux to concentrate the valuable minerals of nickel, copper, cobalt and precious metals ( PMs ) into a sulphide matte. Impurities are combined with silica sand to form a waste slag. The waste slag is disposed of on a tailings lease immediately adjacent to the smelter. No significant commercial use has been found for the waste slag. Overall recovery of nickel into matte is high at 96 to 97%.

Sulphur dioxide gas from the flash furnace and the converters is collected and delivered to a sulphuric acid plant rated at 550,000 tpa capacity. The acid product is used internally at MKO and sold to users in WA, principally to the Cawse nickel plant and other users through Coogee Chemicals.

Nickel in matte production in 2003 was 99,150t and in 2004 is forecast to be 97,700t. Since coming back on stream after a major shutdown and rebuild in February/March 1999, smelter production has operated consistently at an annual rate of around 100,000t of contained nickel.

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During normal smelting operations, the furnace mechanical structure, refractory lining and cooling elements deteriorate to the point where the furnace must eventually be taken off line for extensive repairs. The operating campaigns would normally last several years and the rebuild or repair would take one to three months. The most critical item determining the length and cost of the rebuild is whether the furnace refractory hearth requires replacement.

The current operating furnace, No 2 Furnace (1978 to present) is in its fifth operating campaign and was scheduled to be rebuilt in 2009. Because of a clash with a similar rebuild due at Olympic Dam smelter, WMC has elected to advance the schedule for the KNS furnace rebuild to 2008 for planning purposes. In addition, it is planned to construct a new No 3 Flash Furnace and separate electric furnace adjacent to the currently operating No 2 Furnace. The new furnace will be equipped to operate at a higher temperature (up by 50° Celsius) which will allow the Fe:MgO ratio constraint to be lowered from 5.3 to 4.7. The furnace will be built in a manner to avoid interference with the operating furnace. The capital cost is currently estimated to be \$65M in 2007 and \$219M in 2008. Changeover of operating furnaces is projected to take 14 days thus shortening the business interruption from 70 to 14 days. In addition, the construction of an electric furnace separate to the flash furnace, will allow more effective slag cleaning and recovery of nickel into matte is expected to improve from 96.4% to 98.7%. Recovery of cobalt similarly is expected to improve to 67%.

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The alternative of rebuilding the existing furnace and enhancing its capacity to operate at a higher temperature is projected to cost around \$100M. However, for the purposes of considering production scenarios, AMC has assumed the new furnace will be constructed in both the Likely and Upside cases.

In AMC s view, the decision to build the new furnace is soundly based from a technical viewpoint and will result in a more robust furnace to operate at the higher projected operating temperatures and also improved metal recoveries. The engineering and cost estimate is at the prefeasibility stage and when it proceeds to detailed engineering there remains some risk that there will be some escalation of the capital cost. AMC does not consider this risk to be of magnitude that should alter the capital cost assumptions.

#### **3.6.3 Site Infrastructure and Overheads**

The KNS site is 15 km south of the Kalgoorlie/Boulder town boundary. The work force is mainly located in the nearby town and commutes to the site by car and bus.

Water is supplied through the Goldfields Water scheme. Power is generated by a 2 x 10 MW facility on site and by a 35 MW gas turbine operated by a third party. Fuel is natural gas supplied by the Goldfields Gas Transmission pipeline and diesel liquid fuel shipped through the port of Esperance. Gas is taken under a long term WMC contract. Sand flux is mined from a resource at Mt Burgess, in the vicinity of Coolgardie and then trucked to the smelter site. An on site 525 tpd Linde air separation plant supplies oxygen for enrichment of the process air.

#### **3.6.4 Operating and Capital Costs**

At the request of WMC and in accordance with its reporting practice, AMC has not detailed costs per pound of nickel. Actual costs are close to budget and confidence can be placed in the future estimates shown in the cases considered. The capital charge of \$280M for the replacement furnaces over 2007/2008 result in significant amortisation charge adding to the total cost in subsequent years.

#### **3.6.5 Future Performance and Upside**

The principal constraint apart from physical ones associated with equipment capacity is the Fe:MgO ratio in the concentrate blend supplied to the smelter. This parameter determines the melting point properties of the slag produced in the flash smelter. At lower Fe:MgO ratios, the magnesia content of the furnace slag increases and the temperature of the slag melting point increases, requiring higher operating temperatures to maintain slag fluidity. Lime is added to improve slag behaviour when required. Failure to maintain the Fe:MgO ratio within control limits can severely compromise furnace performance resulting in costly delays and repairs. Future lime usage is not scheduled to rise unduly and should remain as forecast.

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The KNS strategy for operating is designed to ensure that there are no excursions, on a daily basis, below an Fe:MgO ratio of 4.7. To ensure this ratio is not compromised due to daily variations in feed, the smelter is run at a target ratio of 5.3 with added lime to a level of up to 9% when required. Recent operations have been trouble free in the ratio range 6.0 to 6.5.

WMC has demonstrated major improvements in management of the daily variation in smelter feed quality allowing a progressive drop in Fe:MgO ratio over time. Improvements in feed blend management both at LNO and KNS have contributed to improved performance. Such performance enables the Fe:MgO constraint at KNS to be progressively lowered to 4.7. This is to be accommodated by higher operating temperatures made possible with the new furnace combined with further progress on reducing variation in the feed.

There is potential upside to the smelter performance that derives from de-bottlenecking of the furnace operations and increasing the uptime. These steps are projected to raise the flash furnace capacity to 125,000 tpa contained Ni. The converter throughput is projected to be improved to 130,000 tpa contained Ni with moving to a single grade of high iron matte and arranging for a synchronised two converter operation. The proposed developments are well advanced

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and could be realistically achieved in the time frames envisaged. A number of these developments have been included in both of AMC s cases.

In the Upside case, concentrate purchases contribute 18,000t of contained nickel in concentrate as feed to KNS. These purchases are projected from 2012 onwards. There are no formal arrangements yet in place for purchases so far into the future. WMC has, however, shown it has successfully purchased concentrate from the third party suppliers in Kambalda and that approaches have been made from other parties with the intent to sell or toll concentrates through KNS. AMC accepts that it is reasonable to expect that WMC can purchase supplies as projected in the Upside case.

### **3.7 Kwinana Nickel Refinery**

#### **3.7.1 Overview**

KNR is 30 km south of Perth. The refinery uses the Sherritt-Gordon ammonia leach process to convert nickel matte from KNS into LME grade nickel briquettes and also nickel powder. The refinery also produces a number of intermediate products including copper sulphide, cobalt-nickel sulphide and ammonium sulphate. The cobalt-nickel sulphide is treated by a third party processor that separates the nickel and cobalt into metal. WMC receives a credit for the nickel and has the cobalt metal returned for subsequent sale. Ammonium sulphate product is sold to a number of fertilizer manufacturer/marketing companies, predominantly the CSBP fertilizer plant also located in Kwinana.

The refinery treated 91,663t of matte to produce 61,417t of refined nickel for the year ended 31 December 2003 and is projected to treat 93,800t of matte to produce 62,300t of refined nickel in 2004.

#### **3.7.2 Refinery Operations**

Since 1994/1995, KNR has lifted capacity from 42,000 tpa to the current 70,000 tpa. The plant has been progressively upgraded by increasing process intensity, improving process control and targeted de-bottlenecking. In 2001, KNR completed an expansion to 67,000 tpa and in 2004, the capacity was further expanded to 70,000 tpa.

Increased metal production at KNR was expected to result in additional ammonium sulphate sales. This increase, together with the additional quantity of ammonium sulphate now produced by Minara Resources Limited ( Minara ), was expected to overload the local WA market. The market has softened somewhat but projected returns from ammonium sulphate sales are expected to remain steady into the future. If the marketing companies are forced to move the product to the eastern sea-board markets then further softening of the market may be expected. AMC has accepted the projected sales revenue from WMC estimates to be reasonable for the cases considered.

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KNR has commenced production of a coarse ammonium sulphate product ( Maxam ), which would command a higher price. Production has been maintained at a small proportion of overall sales but studies are underway to investigate the feasibility of increasing the output of the premium product. In AMC 's production scenarios, no export of ammonium sulphate is assumed and the proportion of the premium Maxam product remains low.

The planned increase in the proportion of MKO concentrate feed to KNS in future years should result in an increase in refinery matte feed cobalt levels. The impact of slightly higher cobalt feed levels has been investigated by KNR and is not expected to provide significant processing problems.

A package steam boiler was installed in 2004. This provides backup capacity for the duty boiler and will satisfy plant duty during the three year turnarounds when the existing boiler is shut down for inspection. This has allowed reduced downtime to be factored into future performance estimates.

KNR 's performance has been robust and in line with production forecasts and the plant has demonstrated that the 70,000 tpa throughput rate has been achieved.

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### **3.7.3 Site Infrastructure and Overheads**

Electric power, natural gas, nitrogen, ammonia and water are provided by external parties. Steam, hydrogen, carbon dioxide, hydrogen sulphide, compressed air, cooling water and demineralised water are produced on site. A recent review of supply of hydrogen sulphide did not identify a suitable external supplier and KNR will proceed to replace the plant and continue to generate its own supply. WMC regularly considers the option to obtain all these services externally, however, AMC has assumed the status quo for all other supplies for the scenarios considered.

The groundwater facilities previously used for recovery of contaminated water from beneath the refinery are currently used to treat ground water recovered from under the now decommissioned Baldivis tailing facility. This recovery program forecasts completion of recovery by 2008.

### **3.7.4 Operating and Capital Costs**

At the request of WMC and in accordance with its reporting practice, AMC has not detailed total costs per pound of nickel. Direct cash cost (before ammonium sulphate marketing) of nickel produced for 2003 was in close agreement with budget costs. Unit costs (before ammonium sulphate) at current rates are in line with forecast and when projected forward at 80,000 tpa are expected to remain similar.

### **3.7.5 Future Performance and Upside**

Forward projections for the refinery see it expanding from a 70,000 to 80,000 tpa rate with upside to go to 100,000 tpa. The 80,000 tpa upgrade would take matte feed from KNS and involve an additional leach circuit and reduction autoclave for relatively modest capital expenditure of \$57M during years 2006 and 2007.

The 100,000 tpa upside option would be matched to the proposed LPL installation at MKO and involve receiving an hydroxide product from the LPL plant. The capital cost currently is \$156M for the hydroxide option and the expenditure would extend over 2006/2007. Design work for the expansion options is more advanced for the 80,000 tpa case and full confidence could be placed in the presented plans. The 100,000 tpa option is less developed but remains achievable in the limited time frame if adequate resources are applied. For this review, AMC has restricted the Likely case to the 80,000 tpa option. For the Upside case, the 100,000 tpa option has been adopted and the assumed feed to the plant would be hydroxide product from the LPL plant at MKO.

## **3.8 Environmental**

### **3.8.1 Management and Overview**

In the broadest terms, environmental management in the NBU is characterised by sophisticated and pre-emptive management systems mediated through both a strong corporate input and operations-integrated site personnel. Environmental factors are addressed early in the project-planning

process, and relevant permits and authorities are obtained in a timely and efficient manner, based on rigorous impact-assessment and environmental management plans. A rigorous program of peer and independent third-party environmental auditing is well established.

### **3.8.2 Significant Environmental Risks**

Except for the groundwater-pollution issues at KNR, no large-scale environmental threats are considered to hazard NBU operations in the short or mid-term. The groundwater issues at KNR have been responsibly addressed, to the point that the groundwater treatment at the refinery is regarded by the government regulator as complete and the groundwater treatment at Baldvis is well-progressed and is forecasted to be completed by 2008.

All NBU sites, especially the KNS smelter and the KNR refinery site, will in time need to be reported under contaminated-sites legislation. However, given that that legislation is based on future proposed land-use, and that

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and uses more intensive than industrial are unlikely to be proposed, no ongoing liability of significance is considered likely to exist. (The WA legislation requires initial reporting of land as possibly contaminated if its use involves even theoretical risk of soil or water contamination, but that reporting does not of itself demand any site investigation or clean-up which are issues for the party proposing a more intensive (people-sensitive) land use at some time in the future.)

Acid drainage from sulphide-rich mine waste and tailings is not considered to be a significant issue. As demonstrated by extensive geochemical test-work at all mines, the ultramafic host-rock provides large acid-consuming potential to almost all waste. Thus, while high sulphide contents create significant acid-producing potentials, the large acid-consuming capacities of carbonate minerals in the waste result in the net acid-generating potentials of almost all waste being negative (i.e. net acid-consuming). Only a few percent of waste volumes are net acid-generating and require encapsulation in waste dumps to prevent oxidation and acid production; such encapsulation has already been shown to be completely effective at LNO and MKO. Unless future operations present the unlikely scenario of producing large volumes of net acid-producing wastes, no significant acid drainage issues are envisaged. Yakabindie testwork has already shown the acid-generation risks at that operation to be almost identical with those at LNO and MKO.

Air quality considerations pose a challenge to KNS operations, as an environmental protection policy for the Kalgoorlie air-shed requires curtailed operations under meteorological conditions which transport sulphur dioxide over residential areas. Under adverse conditions, converter off-gas that exceeds the capacity of the acid plant must be diverted to the furnace, rather than to atmosphere, necessitating a reduction in feed rate to the furnace. KNS personnel estimate that approximately 2% of theoretically possible production was foregone in 2003 in such circumstances. Management of air emissions is facilitated by a sophisticated ground level monitoring and modelling system, operated co-operatively with other sulphur dioxide emitters in the region and giving real-time information to aid decision making based on environmental risk. There is considerable potential, using this system, to manage emissions without significant loss of production. Should experience prove it necessary, the capacity of the acid plant could be enhanced with small capital expenditure and thus remove the need for environment-mediated curtailment of production.

It is noted that the recently-established arrangement for treatment of KNR tailings at the Minara operation has removed a potentially significant environmental risk. This material no longer needs to be stockpiled and will not require expensive encapsulation at the end of project life.

**3.8.3 Closure Costs**

Closure represents a significant liability at all NBU sites, reflecting the large areas of disturbance involved. In 2001, rehabilitation/closure costs were identified as listed in Table 3.10.

**Table 3.10 Rehabilitation/Closure Costs**

Site	2001 Closure/Rehabilitation Costs
	(\$M)

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KNO	28.3
LNO	27.2
MKO	58.3
Yakabindie	10.0
KNS	25.3
KNR	27.8
<hr/>	
<b>Total</b>	<b>176.9</b>

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A thorough reassessment of closure costs is currently being finalised, with the expectation of adjustments to reflect inflation, changed standards, improved task definition and altered time-lines. A small overall increase is anticipated, while costs for some sites may be reduced through implementation of parts of closure/rehabilitation programs since the last review.

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The process for estimating closure costs is a robust integration of engineering and environmental experience and skills. Personnel from site and WMC Group Projects are involved, based on accounting policies that are regularly reviewed. Demolition costs are included without allowance for salvage, and unit rates for demolition and rehabilitation determined in consultation with contractors, often with site inspections. Areas and volumes are determined from historical survey data and aerial photography, with GIS increasingly employed in recent years. A series of linked computer spreadsheets are used to amalgamate the various data. From 2005, all sites will be GIS-based, increasing the accuracy of closure estimates and the ease and speed of their compilation. Monitoring after closure is also provided for. In the case of KNR, a 20 year post-closure monitoring regimen is established.

Closure costs estimated in this manner are incorporated, generally via linked spreadsheets, into financial models, including those used for the scenarios referred to herein. In accordance with WMC accounting policies and best industry practice, the quantum of the closure estimate for each site is related to budgeted metal production to derive annual provisions in the accounts; further dissemination into monthly accounts is also undertaken. Expenditures on closure and rehabilitation are offset against the progressively-accumulating provision, thereby providing an accurate portrayal of closure liability at any point in time over project life.

Closure/rehabilitation estimates for NBU sites are all significantly greater than environmental bonds imposed by government as conditions of mining tenements. In the case of MKO, the closure estimate is approximately twice that of the bonds. It is not uncommon for closure costs to be to 30 to 40% larger than bonds but the NBU closure estimates are nonetheless considered generous because they do not offset demolition costs with salvage revenues and because they include large project management costs, much of which can be avoided by carrying out progressive rehabilitation during the life of operations. It can thus be stated with confidence that the closure estimates developed for NBU operations are unlikely to be exceeded.

### **3.9 Risks**

#### **3.9.1 Long Life Assets**

A key assumption in the Likely and Upside scenarios for the NBU is that unit operating costs would remain static over the life of the assets. AMC recognises, and concurs with WMC in the base assumption that, in general, it is reasonable to assume costs fall at about the same rate of commodity prices and, under such circumstances, it is reasonable to use a fixed projection for long term business planning. However, a risk does exist that the cost structure of the industry may change, invalidating assumed cost to revenue relativities.

#### **3.9.2 Fe:MgO Ratio in Concentrate Produced**

The management of the Fe:MgO ratio of smelter feed is the single most important factor affecting the future of the NBU. Once operations at KNC and LNO cease the future of smelter operation relies on producing acceptable smelter concentrate production from MKO/Yakabindie. In the absence of the smelter, KNR would be required to purchase matte feed or treat concentrate for a reduced nickel production. Excess concentrate production would need to be sold for lower returns than internal processing.

This risk is being managed by four key elements:

- a. Reduction of MgO at the flotation stage.

The performance of the gravity circuit at MKO in improving Fe:MgO ratio in MKO concentrates has been demonstrated with a rejection of approximately 50% of the MgO while retaining 85% of the iron. Expansion of the capacity of this facility to potentially treat 100% of the current MKO concentrate production is planned for 2005 and will increase the capability to control concentrate Fe:MgO ratio at MKO. This will be augmented by the installation of separate cleaning circuits in 2006 which is expected to increase Fe:MgO ratio by 0.3 for no recovery loss. With these changes MKO is scheduled to produce a concentrate with an Fe:MgO ratio of 4.7 in the later years of operation consistent with enhanced smelter capability.

- b. Blending of available concentrate.

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Achievement of satisfactory smelter feed Fe:MgO ratio is assisted by optimising the use of available high Fe:MgO ratio concentrates. Specific initiatives include:

extension to planned production from KNC until 2010

extension of LNO production till 2018 with production from below 11 level

the commencement of production from Cliffs from 2007

focus on additional exploration targets including LNO satellites.

c. Alternate processing technology.

The use of a low pressure leaching process provides an alternative production pathway and allows some low Fe:MgO ratio concentrates to be processed by a non smelting route.

d. Increased smelter tolerance.

In concert with improvements rejecting MgO and controlling the variation in Fe:MgO ratios at the mine sites, the strategy has seen similar progress at the KNS smelter. The application of six sigma processes has continued to reduce variation thus allowing lower ratios to be maintained within the operating control limits.

Furnace operating temperature has to be raised to maintain slag fluidity at lower Fe:MgO ratios. Continued review of furnace design trends and local improvements in the design of furnace sidewall cooling has resulted in incorporation of improvements in the new No 3 Furnace that will permit the operating temperature to be raised by up to 50° Celsius, equivalent to lowering the Fe:MgO ratio constraint from 5.3 to 4.7.

AMC has included an expanded gravity circuit at MKO in both its scenarios. Although the impact on the NBU of failing to solve the MgO issue would be high, AMC believes the risk of failure is low. WMC has achieved significantly improved capability for higher Fe:MgO ratios at MKO. Expansion of the gravity circuit to 100% capacity will further improve the position. WMC has several years to implement further improvements including a lower Fe:MgO ratio capability at KNS.

As a contingency, additional potential solutions are:

the use of lime to provide further flexibility at KNS

further, yet to be defined, flotation modifications, with rejected concentrate ultimately reporting to the proposed LPL plant

acid washing of concentrate which also involves a recovery penalty. This is likely to have a higher capital cost than a gravity circuit.

### **3.9.3 MKO Achieving Planned Pit Size**

The mining of Stages G, H, I and J of the MKO pit could be affected by:

changes to overall pit slopes due to mine design and geotechnical factors

geotechnical failures limiting ultimate pit depth

reduced metallurgical recoveries once high grading ceases although this may be offset by recent recovery improvements

the possible marginal nature of these stages at certain combinations of nickel price and exchange rate.

Each stage of the MKO pit design contains a significant proportion of the nickel in Reserve and the impact of not mining one or more stages would be high, however, this would likely require the interaction of two or all of the above factors giving a low likelihood of occurrence. AMC has included all of the above stages in the Likely case and an additional five years of production in the Upside case.

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Given that the ultimate pit depth at Mount Keith for the Likely case will be approximately 550m, there is risk that geotechnical constraints which may result in either a requirement to flatten slope angles resulting in an increase of the stripping ratio or incorporate some form of limiting wall failure into the pit design at depth.

#### **3.9.4 LNO Mines Achieving Planned Capacities**

There is a medium risk associated with the schedule of LNO future production. In addition to affecting nickel output, loss of production at Leinster reduces concentrate available for blending with MKO concentrate for the smelter and thus ease of smelting. Risk areas are:

development of the Perseverance SLC between the 11 and 14 levels

ability to maintain tonnage and grade recovery factors from the SLC through effective draw management

effects of the high stress levels at Perseverance as mining increases with depth and the impact this has on ground conditions during development and mining

effect of the SLC cave zone on surface and haulage shaft facilities

achievement of planned production from the 1A and Progress orebodies using the proposed mining methods.

Whilst none of these individually is currently evident as a high risk, they could all be significant and it is the combination of two or more of them that is the real risk.

#### **3.9.5 Perseverance Shaft**

There is a very high risk that within the remaining mine life the SLC at Perseverance will impact on the integrity of the haulage shaft. WMC has carried out work to try and quantify the risk and develop strategies to mitigate it. Work to date has indicated:

mining of the HWL by SLC has the potential to extend the cave zone nearer to the main shaft

the probability of the SLC cave zone interacting with the main shaft will increase as mining progresses at depth

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the risk profile associated with the main shaft can be reduced by planning for the interaction of the cave zone and the shaft. This has already been applied by installing larger skips and reducing skip speed in the shaft

the impact of the cave zone on the main shaft may range from relatively minor which would require increased shaft inspection frequency and minor realignment of rigid guides resulting in reduced shaft availability, to a major disruption resulting in the shaft being unavailable for a period months while major repairs are carried out

there is a small probability of the shaft being lost entirely and this probability is likely to increase with time as mining progresses at depth.

### **3.9.6 Reduced Acid Sales**

The acid production from KNS was previously committed for the most part to the two laterite producers Cawse and Bulong. Although Bulong has ceased taking acid, other outlets have developed to take up the shortfall. Internal usage at the MKO concentrator has been in excess of 100,000 tpa and in the future will climb to 300,000 tpa when the Type B mill and the LPL plant come on stream to treat Yakabindie ore.

The Minara plant has purchased significant quantities of acid and further sales are projected for 2005 and 2006. Other sales have been to Coogee Chemicals and through them to other users. WMC does not anticipate any acid sales will be forced onto the export market.

AMC does not consider reduced acid sales to pose a downside to either the Likely or Upside scenarios at this time.

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#### **3.9.7 Increased KNS Operating Costs from Low Fe:MgO Concentrate**

Improvements in Fe:MgO ratio control demonstrated over the years 2001 to 2004 combined with the proposed ability to run the KNS furnace at a higher temperature have reduced the exposure to a penalty of high lime cost. WMC projected costs have been accepted by AMC for both scenarios considered. AMC considers this is a low risk.

#### **3.9.8 LNO Concentrator Achieving Planned Capacities**

Although the LNO concentrator has demonstrated a short-term peak capacity consistent with a target of 3.0 Mtpa at high plant uptime, this capacity has not been demonstrated on an annual basis. Given, however, the latest quarterly results achieved from the LNO concentrator, AMC considers this is a low risk.

#### **3.9.9 KNC Production Capacities**

Lack of control over ore production schedules from third party mines may impact on short-term concentrate availability and hence utilisation of available KNS capacity. Production from third party mines is also dependent on Ni price. These parameters may expose the smelter to more variable feed quality.

AMC considers the risk of non-achievement of the KNC production forecast to be of medium likelihood and low impact.

#### **3.9.10 Proposed Expansions and Additions to NBU Operations**

WMC is implementing a very substantial capital investment program within the NBU over the next five years. Total Enhance Capital for expansions and additions over the five year period total almost \$1.4 billion. Slippage of this program or escalation of costs poses a risk to the valuation of the NBU.

All key technical projects have dedicated client representatives appointed on behalf of the NBU to minimise slippage and provide an interface between the NBU and the various external engineering groups.

#### **3.9.11 MKOTalc Distribution**

At MKO, knowledge of talc distribution and its change with depth is limited as it seems to be structurally controlled. This was a medium risk but is reducing with increasing knowledge about the deposit. If not controlled, however, talc can have a significant negative impact on concentrator performance. The risk has not been considered as a sensitivity.

### **3.10 Production Forecasts and Scenarios**

#### **3.10.1 Overview**

AMC has prepared two scenarios for the NBU, broadly described as the Likely case and the Upside case. The key assumptions of each scenario are listed in Table 3.11.

The Upside case considers several major upsides to mining or processing and smelting or refining operations in comparison to the Likely case.

Major risks have been discussed in Section 3.9. In AMC's opinion the most important in a valuation sense in approximate order are:

control of Fe:MgO ratio

MKO achieving planned pit size, i.e. reserves

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LNO mines achieving planned capacity

Perseverance shaft integrity.

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**Table of Contents****WMC Resources Limited****Specialist s Technical Report****Table 3.11 Likely Case and Upside Case Scenarios**

<b>Operation</b>	<b>Likely Case</b>	<b>Upside Case</b>
KNC	Concentrator feed for six years	As for Likely case but includes:
	WMC Modified (reduced) ore feed from third party suppliers	ore feed as per estimates from third party suppliers, resulting in slight increase in total feed
LNO	Mine life 14 years	As for Likely case but includes:
	SLC 26.1 Mt at 1.8% Ni (including HWL, Progress and SLC to 14 level)	improved mining recovery factors applied to SLC operations
	Hoist capacity 22.6 Mtpa	satellite mine production extended for two more years 0.15 Mt pa at 2.5% Ni
	SLC 1.6 to 2.5 Mtpa	
	3 Mtpa mill capacity 0.2 Mt at 2.5% Ni	
	Satellite mine production over five years	
	EMW 0.4 Mt at 1.6% Ni	
	Cliffs 2.2 Mt at 3.1% Ni	
MKO	Mount Keith mine life 15 years	As for Likely case but includes:
	Gravity circuit expansion to 100% of mill production	Mount Keith mine life extended by five years



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	7 Mtpa Type B mill built in 2008 to process talc and low S:Ni ore (Mount Keith and Yakabindie ore)	LPL plant built as hydroxide plant rather than a mixed sulphide plant
	Mill expanded from 11.5 Mtpa to 19 Mtpa by adding 7.5 Mtpa Type A/B mill in 2010	increased Ni and Co recovery from LPL plant
Yakabindie	LPL plant producing mixed sulphide product installed in 2008 to treat concentrate from 7 Mtpa Type B mill. Commence production in 2010	As for Likely case but includes:
KNS	Mine life 14 years Capacity increased to 125 ktpa Ni in 2006	Mine life extended by two years As for Likely case but includes:
	Rebuild in 2008, no further rebuilds	additional 18 ktpa third party concentrates
KNR	Fe:MgO ratio operating target reduced from 5.3 to 4.7 Increase capacity to 80 ktpa, treating all matte	As for Likely case but includes:
	Reduce major maintenance time by installing additional boiler	capacity increase to 100 ktpa treating hydroxide feed from LPL plant as well as matte.

### 3.10.2 AMC Scenarios

#### 3.10.2.1 Likely Case

The Likely case assumes MKO expands to 26 Mtpa milled and KNR expands to 80,000 tpa refined Ni. It also includes the following:

Six years of feed for KNC based on forecast production from third party suppliers for an average production of 23,300 tpa Ni in concentrate and an average metallurgical recovery of 90.3%.

A 14 year mine life at LNO based on a maximum of 2.6 Mtpa from the Perseverance shaft (including Progress and 1A Shoots) supplemented by the EMW open pit, Satellite underground operations and Cliffs, for a production of between 19,000 tpa and 57,000 tpa of Ni in concentrate. Metallurgical recoveries range from 86.5% to 89%.

A 14 year mine life at MKO based on mining Stages G, H, I and J in the open pit and an overall mill expansion to 26 Mtpa comprising expansion of the existing plant to 19 Mtpa and construction of a 7 Mtpa (Type B) plant to treat talc and low S:Ni ore. These plants will

treat ore from both Mount Keith and

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Yakabindie open pits. Gravity circuit capacity is to be increased to 100% of mill capacity in 2005. An LPL plant will also be constructed to produce an intermediate product from the Type B plant output. External concentrate sales of 14,000 tpa contained nickel are scheduled to cease in early 2005.

Yakabindie production commences in 2010 at an average rate of 14 Mtpa. Ore is conveyed to Mount Keith and treated through either the expanded Type A plant or the new Type B plant.

KNS production varying between 126,000 tpa and 39,000 tpa nickel in matte depending on concentrate availability. The Fe:MgO ratio constraint will be reduced from 5.3 to 4.7 in 2015. Nickel recovery to matte is 98.7% beyond 2008. Matte sales are made according to existing WMC commitments and any remaining excess beyond KNR s capacity is assumed exported.

KNR operating at an initial capacity of 70,000 tpa increasing to 80,000 tpa in 2008 and recovery of metal to 98%.

#### **3.10.2.2 Upside Case**

As for Likely case but with the following changes:

SLC is assumed to have increased tonnage and grade recovery production from satellite deposits is extended for three years at 0.15 Mtpa. Extensions of the Cliffs deposit adding 40 kt of Ni in ore.

A 19 year mine life at MKO. The LPL plant is built to produce an hydroxide product which is refined at KNR. Capital for the hydroxide plant is \$70M less than for the mixed sulphide LPL plant included in the Likely case.

KNR capacity is increased from 70,000 tpa to 100,000 tpa in 2008. The additional capacity will treat hydroxide product from the LPL plant at MKO.

Yakabindie, as per Likely case but with mine life extended by 2 years.

KNS production is supplemented by the purchase of approximately 100,000 tpa of external concentrate containing 18 kt of Ni from 2012 to 2024.

## **4 FERTILIZER**

### **4.1 Introduction**

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The Fertilizer Business Unit ( FBU ) is a division of WMC which operates the Phosphate Hill project, located approximately 160 km south southeast of Mt Isa in the northwest of Queensland (Figure 4.1). The operation is managed through WMC Fertilizers Pty Ltd ( WMCF ) and produces high analysis fertilizer products, principally di-ammonium phosphate ( DAP ) and mono-ammonium phosphate ( MAP ). The FBU also owns a 33.33% share in HiFert Pty Ltd, a fertilizer distribution and marketing company operating in the domestic market.

The mine operates within a 3.5 km by 6.0 km area on a lease area of about 25 km by 10 km (Figure 4.2). Several distinct open pits mine the same sequence of phosphate beds as a single ore seam . Extraction of the phosphate ore and mining operations is by excavator and trucks without drilling and blasting.

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**Figure 4.1 Location Map of Phosphate Hill Mine**

**4.2 Geology, Mineral Resources, Ore Reserves and Exploration**

**4.2.1 Geology**

The Phosphate Hill deposit is hosted within the Duchess Embayment on the western margin of the 500 to 600 million year old Burke River Outlier (Figure 4.2). The ore body occurs within the Monastery Creek Phosphorite Member ( MCPM ). In the mining area, most of the formations overlying the MCPM have been eroded away, leaving shale and alluvium as the overburden material.

Locally, the MCPM is a gently folded seam, averaging 8m thick, of interbedded cherts, siltstone and phosphatic sandstones. In the northern portion of the deposit, ten sedimentary layers, alternating in chert and phosphorite content, are defined. In the south of the deposit, the geological character changes and several of the less phosphatic units are largely or completely absent (Figure 4.3). Overburden varies in thickness from nil to 100m, averaging around 45m.

The deposit is bound by the Mehaffey Creek and Russel Faults to the east. To the north and west, the deposit is controlled either by the Western Fault or by an unconformable topographic or alluvium surface. The southern limit is defined by barren drill holes.

Slumping combined with folding and faulting results in hangingwall and footwall contacts which can be quite complex, ranging from sometimes steeply dipping anticlines and synclines to gently rolling dome and basin structures. Acid dissolution of some surfaces can also give highly irregular contacts between overburden and the ore body.

Mineralogically, phosphate material at Phosphate Hill occurs as apatite (calcium phosphate). Quartz is the major gangue mineral, along with alumina and iron oxide. Iron oxide occurs as a secondary infill in joint and bedding planes and cavities or from in situ oxidation of pyrite, while alumina is found as clay silicates, also lining bedding planes and joint surfaces.

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**Figure 4.2 Phosphate Hill Geological Map**

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The Mineral Resource and Ore Reserve estimates as at 31 December 2003 as publicly reported by WMCF are stated in Table 4.1.

**Table 4.1 Mineral Resources and Ore Reserves Classification, December 2003\*\***

<b>Mineral Resources</b>	<b>Tonnes (M)</b>	<b>P<sub>2</sub>O<sub>5</sub> (%)</b>	<b>Fe<sub>2</sub>O<sub>3</sub> (%)</b>	<b>Al<sub>2</sub>O<sub>3</sub> (%)</b>	<b>Ore Reserves</b>	<b>Tonnes (M)</b>	<b>P<sub>2</sub>O<sub>5</sub> (%)</b>	<b>Fe<sub>2</sub>O<sub>3</sub> (%)</b>	<b>Al<sub>2</sub>O<sub>3</sub> (%)</b>
<b>Measured</b>	68.8	25.3	2.1	1.5	<b>Proved</b>	31.6	24.2	2.2	1.7
<b>Indicated</b>	26.5	22.9	2.2	1.8	<b>Probable</b>	58.3***	24.3	2.0	1.7
<b>Inferred</b>	40.6	20.1	2.7	2.0					
<b>Total</b>	136.4	23.2	2.3	1.7	<b>Total</b>	89.9	24.3	2.1	1.7

\* Resources are inclusive of reserves

\*\* Only tonnes and P<sub>2</sub>O<sub>5</sub> grades are published in the annual report to shareholders.

\*\*\* Refer section 4.2.2.3 for WMCF s application of modifying factors

**4.2.2.1 Drilling and Sampling**

Drill data used for the December 2003 Mineral Resource estimate includes data from seventeen drilling programs between 1967 and 2003.

Drill campaigns 1 to 7 were carried out using open hole rotary air blast ( RAB ) drilling techniques, employing an air track rig. The nature of the sampling and sample preparation is not known and there is no information on quality controls. All drilling since 1999 has been reverse circulation ( RC ) which would be expected to produce higher quality samples which is demonstrated by QA/QC programmes. There is a small

number of diamond drillholes although these generally returned poor recovery. All drillholes are vertical.

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WMCF has had concerns about the reliability of RAB data, which represent approximately 23% of the data used to estimate the resource. The concern centres on whether this type of drilling would representatively sample iron oxide ( $\text{Fe}_2\text{O}_3$ ), which occurs primarily as secondary infill in joint and bedding planes and cavities. WMCF has carried out repeat assay programs and is progressively drilling the resource with RC drillholes. RC drilling has continued during 2004 and results from this drilling will be included in the 2004 re-estimation of resources.

AMC has examined the distribution of drillhole types compared with the resource estimate and has concluded that there is only a very small part of the resource model classified as Measured or Indicated Resource that is estimated entirely with RAB drilling.

The 1998 air core program and the 1999 to 2003 RC programs appear to have been carried out to appropriate industry standards, with reasonable quality controls in place for the RC programs.

The drill spacing ranges from approximately 20m by 20m in the Brolga, Galah, Corella and Magpie pit areas, to about 80m by 80m over the Measured and Indicated Mineral Resource. The part of the Mineral Resource estimate classified as Inferred is drilled at about 200m by 200m spacing consisting almost entirely of RAB drillholes.

Sampling consultants examined the possibility that some sample bias may have been introduced when drilling below the water table and concluded that limited smearing or down-hole contamination may have occurred. Much of the area affected has been redrilled using RC drilling with expected higher quality sampling and QA/QC program in place.

A recognised commercial laboratory has carried out all assaying. Prior to 1998, an assaying technique that produced only a partial digest of the sample was used. From 1998 onwards, a total digest technique has been used. Studies indicated that the partial digest technique may bias  $\text{Fe}_2\text{O}_3$  assays low. WMCF reassayed many partial-digest pulps using the total digest technique and derived regression algorithms to adjust  $\text{Fe}_2\text{O}_3$  grades from RAB drilling. Much of the area affected has been redrilled using RC drilling and assayed using the contemporary method, including most of the Measured and Indicated Resources.

AMC has the opinion that the data quality issues caused by the older drilling and assay methods are being superceded by better quality data from RC drilling and total digest analysis and the data are appropriate for resource estimation.

#### **4.2.2.2 Mineral Resource Modelling and Estimation**

Grade modelling for the Phosphate Hill 2003 Mineral Resource estimate was carried out using 2D block kriging. The entire MCPM is modelled, with no attempt being made to estimate individual phosphatic units. Steps are taken to modify or exclude partial intercepts of the MCPM to ensure that no grade bias is introduced.

The volume model is developed using variable parent cell dimensions of 20 mE x 20 mN up to 120 mE by 120 mN depending on the estimation support provided by the drillhole spacing. Parent cells are uniformly split to 20 mE x 20 mN and each subcell extends to the full seam thickness.

Grades for  $P_2O_5$ ,  $Fe_2O_3$ ,  $Al_2O_3$ ,  $C_aO$  and  $SiO_2$  are estimated by 2D kriging, based on variograms and kriging parameters largely derived from 2003 and 2004 studies. A uniform tonnage factor of  $2.25 \text{ t/m}^3$  is applied to the model and is based on a 1996 study of reconciled tonnages. A weighbridge study in 2001 also indicated an average tonnage factor of  $2.25 \text{ t/m}^3$ . A limited weighbridge study in 2004 indicated average tonnage factors ranging from 1.99 to  $2.23 \text{ t/m}^3$ . Tonnage reconciliations between the mine and plant previously ran at about 98%. WMCF has, however, advised that during 2004, following a 2003 review of Beneficiation Plant losses and subsequent modification and recalibration of the primary weightometer that reconciliations have been about 92%. There is no apparent geological reason for a sudden change in density. Given WMCF's plant tonnages are correctly calculated, it appears that density has been overestimated and hence the resources and reserves estimates would need to be adjusted accordingly. WMCF has initiated a review team, which is evaluating density and reconciliation procedures, however AMC considers that it is appropriate to allow for the adjustment in the production scenario provided to Grant Samuel.

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AMC considers the procedures used to prepare the sample data and model the Phosphate Hill orebody to satisfy good industry standards. It notes that the modelling procedure incorporates current mining and planned mining practices, namely the complete extraction of the total MCPM. Although consistent with the current mining approach, it does not provide information relevant to the selective extraction of phosphatic units.

#### **4.2.2.3 Resource Classification and Reporting**

Classification of the Mineral Resource estimate into Measured, Indicated and Inferred Resource categories is based on confidence in the estimation of  $P_2O_5$  and reflects drilling density. In conversion from resource to reserve, confidence in the  $Fe_2O_3$  content is taken into account as higher grade  $Fe_2O_3$  material can be blended with lower  $Fe_2O_3$  material to produce an acceptable product. The  $Fe_2O_3$  content is a modifying factor as referred to in the JORC Code.

Measured Resources are identified where:

the geological framework is well known

the data quality is known

an area equivalent to one year s production has a relative precision of estimation of  $P_2O_5$  of  $\pm 10\%$ . This can correspond with drillhole spacing up to 120m by 120m. Most Measured Resources are drilled at 80m by 80m or closer.

Indicated Resources are identified where:

the geological framework is well known

an area equivalent to one year s production has a relative precision of estimation of between  $\pm 10\%$  and  $\pm 30\%$ . This can correspond with a drillhole spacing of greater than 120m by 120m. Most Indicated Resources are drilled at 80m by 160m or closer.

Inferred Resources are identified where:

the geological framework is not well known

relative precision of  $P_2O_5$  estimation is between  $\pm 10\%$  and  $\pm 30\%$ .

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WMCF subdivides the Measured and Indicated Resources into two sub-categories each, reflecting the level of confidence in  $\text{Fe}_2\text{O}_3$  estimation. Measured Resource with higher confidence  $\text{Fe}_2\text{O}_3$  estimation can be classified as Proved Reserve. Measured Resource with lower confidence  $\text{Fe}_2\text{O}_3$  estimation can be classified as Probable Reserve. All Indicated Resources (with high and low confidence  $\text{Fe}_2\text{O}_3$  estimation) can be classified as Probable Reserve.

A large proportion of the Measured Resource with low confidence  $\text{Fe}_2\text{O}_3$  estimation is also low  $\text{Fe}_2\text{O}_3$  grade (less than 1.6%) and located beneath the water table.

In AMC's opinion, the approach to Mineral Resource classification complies with the JORC Code and is reasonable providing that the  $\text{Fe}_2\text{O}_3$  confidence is reflected in reserve estimation. In the current scenario, Probable Reserves can be derived from Measured Resource-low confidence  $\text{Fe}_2\text{O}_3$ , Indicated Resource-high confidence  $\text{Fe}_2\text{O}_3$  and Indicated Resource-low confidence  $\text{Fe}_2\text{O}_3$ .

### 4.2.3 Ore Reserves

The 2003 Ore Reserves were estimated by WMCF and reviewed by an external consultant prior to public release. WMCF's process for the conversion from Mineral Resources to Ore Reserves involves the consideration of mining dilution and losses, economic factors, mining and processing costs and revenue, and scheduling issues to do with penalty elements and ore availability and access. AMC notes that reserve estimates are relatively insensitive to variations in the mining dilution and loss factors.

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Phosphate Hill resources and reserves as reported by WMCF, as at December 2003 are as presented in Table 4.1.

Without the constraints of penalty elements and access to ore below the water table, virtually the entire Mineral Resource could be considered to be economic. However the content of  $\text{Fe}_2\text{O}_3$  is a main limiting factor on conversion of resource to ore, depending on the type of fertilizer product being made.

The current process plant requires a maximum of 1.6%  $\text{Fe}_2\text{O}_3$  to produce DAP product and 2.3%  $\text{Fe}_2\text{O}_3$  to produce MAP product in campaigns. AMC is satisfied with WMCF s assurances that there are reasonable expectations that marketing strategies and mine dewatering will enable it to use higher  $\text{Fe}_2\text{O}_3$  grade ore for the production of 50% MAP. Also that higher  $\text{Fe}_2\text{O}_3$  grade ore may be able to be tolerated to produce 100% MAP when the market allows.

As discussed in Section 4.4.7.3, there is confidence of the source and security of process water supply for the next 20 years, however, it is apparent that the existing aquifer has a finite life. While noting that sufficient process water supply is needed to support reliability of the classification of Ore Reserves, AMC has accepted WMCF s view of the likelihood of adequate supply beyond the existing aquifer for the purposes of this report.

The WMCF reserve estimate uses the economics of current mining as the starting point of a LOM schedule. The schedule developed by WMCF in 2004 used orebody boundaries and mine scheduling software as a guide to the shape and sequence of the pit. The schedule used to guide the pit design was optimised using average \$312/t DAP, \$320/t MAP and \$332/t MAP-S product prices.

Based on its review of WMCF s estimates and other information, such as the density review and MAP market potential referred to above, AMC has provided a production schedule to Grant Samuel which AMC considers to constitute an indicative life-of-mine ( LOM ) scenario.

#### **4.2.4 Potential Additions to Resources and Reserves**

There appears to be a reasonable likelihood that most of the Inferred Resources could convert to Ore Reserves, although the main body of Inferred Resource in the model is high in  $\text{Fe}_2\text{O}_3$  grade (greater than 2.3%  $\text{Fe}_2\text{O}_3$ ).

The boundaries of the Phosphate Hill deposit appear to be well defined, and there are only very limited opportunities to add to resources, mainly on the western and northern boundaries.

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There are several other phosphate deposits or exploration targets within the WMCF tenements. Drilling has been carried out at some prospects indicating a substantial potential to add to Mineral Resources and Ore Reserves for the Phosphate Hill operation with continued exploration and evaluation.

However, because these prospects are at a preliminary stage of evaluation and their potential economic impact is relatively small, AMC considers that their value will be reflected in the range of values derived from the DCF model based only on the Phosphate Hill deposit.

### 4.3 Current Operations

#### 4.3.1 Mining

The current pits are Galah, Brolga, Corella and Magpie. Ultimately, all of the area around and between these pits will be mined as the ore seam extends widely under about 10m to 65m of overburden.

Mining activities involve contract loading and haulage using 3m flitches and 9m high benches and small-scale mining equipment. The open pit truck fleet includes six 85t capacity haul trucks. Other equipment includes one 180t and one 100t hydraulic excavator, two front-end loaders and ancillary fleet. The equipment fleet is generally in good condition with a proportion of new equipment and spare excavators and trucks on-site. In AMC's opinion, the mining contract terms are appropriate.

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Pit development is relatively simple and shallow and wall stability is good, allowing steep wall slopes and some degree of flexibility in accessing new ore. Backfilling with waste rock is planned whenever possible. Haulage distances are currently short and increases in the truck fleet utilisation can accommodate some longer hauls.

The current mining plan involves mining most of the reserve according to a schedule based on dilution, recoveries, grade (particularly Fe<sub>2</sub>O<sub>3</sub>), water table draw down and economic value. The depth of overburden to the ore seam largely determines the economic value.

AMC considers that the geotechnical aspects of the open pit operation have been suitably assessed and taken into account in the proposed pit designs.

The current five-year plan focused on the blending of ore sourced from separate pits to provide ore with appropriate grade and physical characteristics for the each specific fertilizer product.

#### **4.3.1.1 Mine Operating Costs**

Forecast mining costs are based on recent performance and on schedules of future material movement requirements and haulage distances. The WMCF 2004 ore production is forecast to be 2.1 Mt, with an average total cost per tonne of \$8.63/t.

The 2005 budgeted ore production of 2.3 Mt has an average cost per tonne forecast of around \$8/t. Long-term average cost per tonne of ore is about \$7.75/t up to 2023.

#### **4.3.1.2 Mine Capital Costs**

Some additional capital expenditure will be required over the life of the open pit to divert the creeks and backfill the final pit voids upon closure.

### **Processing and Fertilizer Manufacture**

This section deals with the processing chemistry of the fertilizer manufacturing and the non-mining operating costs.

#### 4.3.1.3 Process Description

In the Beneficiation plant, the ore is crushed and passes through a scrubber where low-grade clay minerals are liberated from the ore particle surfaces and disposed of in slime dams. The  $P_2O_5$  lost in the slimes throughout 2004 has been about 7% of that in the feed, hence recovery of  $P_2O_5$  in ore passing to the phosphoric plant was about 93%.

There is little upgrade of  $P_2O_5$  in the Beneficiation plant and the main function is to remove some iron and the clay minerals.

The crushed and scrubbed ore is ground in a ball mill to 80% minus 500  $\mu\text{m}$  and pumped to a flocculated thickener where the water content is decreased to 35% in the underflow. The underflow is further de-watered to 80% solids on two horizontal belt filters.

Sulphuric acid is delivered to site in 62t rail tanker wagons, either from the WMCF Mt Isa acid plant or from the Sun Metals acid plant at the zinc refinery in Townsville. The Mt Isa acid plant utilises  $SO_2$  from the burning of purchased sulphur and waste metallurgical gas from the Xstrata Mt Isa copper smelter and converters. In the Phosphoric Acid plant, the ore filter cake from the two horizontal belt filters is conveyed to agitated tanks where it is reacted with sulphuric acid to form phosphoric acid and gypsum.

The phosphoric acid is filtered from the gypsum and residual solids on four horizontal belt filters. The filters are divided into unwashed and washed sections. The phosphoric acid filtrate from the unwashed section is typically 40%

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$P_2O_5$  and that from the washed section 20%  $P_2O_5$ . Some of the 40%  $P_2O_5$  phosphoric acid is concentrated by evaporation of water to 52%  $P_2O_5$ .

The gypsum filter cake is conveyed to a re-slurry tank and disposed of in large gypsum stacks contained in HDPE lined dams. Approximately 2.6 tonnes of gypsum is produced per tonne of fertilizer product.

The gypsum filter cake is about 75% solids and contains some residual phosphoric acid at low pH (i.e. highly acidic). The  $P_2O_5$  loss by entrainment in the gypsum cake throughout 2004 has been about 7% resulting in a recovery of  $P_2O_5$  in phosphoric acid of 93%.

The overall recovery of  $P_2O_5$  from ore feed to fertilizer product in 2004 has been about 86.5%, which is approaching the original design of 90%.

There are currently no plans to neutralise the residual acid in the gypsum cake with limestone or lime. In AMC s view, alternative methods of dealing with residual acid will need to be considered if water resources are depleted, however the proposed methods for management of the gypsum have been accepted for inclusion in the production scenario provided to Grant Samuel.

Ammonia is required for fertilizer production and is produced in the Ammonia plant, by combining hydrogen from natural gas with nitrogen from air. The natural gas passes through a reformer stream and the resultant syngas (mainly hydrogen) combines with nitrogen in a catalytic converter producing 99.99% anhydrous ammonia. The natural gas is supplied by pipeline by a consortium led by Santos. There is an agreement between the gas consortium and WMCF for ongoing gas supply.

In the Granulation plant, the phosphoric acid is reacted with ammonia to form ammonium phosphate fertilizer, either DAP or MAP depending on the nitrogen to phosphorus (N:P) ratio. WMCF has developed with Shell Canada a novel method of producing a high sulphur MAP fertilizer for use on sulphur deficient soils (common in Australia). There is an agreement with Shell Canada whereby WMCF has exclusive rights to produce and sell this product in Australia and to sell the product in New Zealand without royalty payment. Sales outside Australia and New Zealand will suffer a small royalty payment to Shell Canada.

The ammonium phosphate product forms as spherical granules in a granulation vessel. A colouring agent can be added to the phosphoric acid. The fertilizer market requires a granule size between 2 mm and 4 mm and prefers an average size between 2.8 mm and 3.1 mm.

The granulator discharge passes across a series of angled screens (recently changed from single to double deck) that reject oversize and undersize granules. The undersize is returned to the granulator as seed material on which more ammonium phosphate grows and the oversize is ground and also returned to the granulator. The sized product is lightly oiled to minimize dusting and stockpiled under cover on site before railing to Townsville where another storage shed is located at the wharf.

The fertilizer product is shipped from Townsville to domestic and international markets. There is a shipping freight rate advantage with domestic sales and the sales focus is to sell as much as possible into this market.

#### **4.3.1.4 Current Process Performance**

The plant was designed to process 2.4 Mtpa of ore and produce approximately 1 Mtpa of DAP and MAP products. The ramp-up has been protracted and nameplate capacity of 975,000 tpa MAP plus DAP still has not been reached. Production of 922,000t in 2003 was a record and 2004 is expected to finish at 892,000t, due to some major disruptions earlier in the year.

The plant bottlenecks have progressively been addressed and removed and production in 2005 is projected as 978,000t.

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Although the plant is designed to produce both DAP (N:P of 18:46) and MAP (N:P of 10:50), only DAP had been produced to the end of October 2001. The first MAP production commenced in November 2001. WMCF has indicated that the previous market preference for DAP over MAP is changing with a growing demand for MAP.

A higher proportionate production of MAP, with its lower nitrogen content, results in a lower requirement for ammonia production and reduces the demand on the ammonia plant on site.

An increase in the proportion of MAP also eases the sensitivity of the circuit to  $\text{Fe}_2\text{O}_3$  content of the ore feed. Iron binds with nitrogen and the higher the iron the more difficult it is to achieve the required 18% nitrogen content in DAP product.

WMCF has experienced low nitrogen levels in the DAP product since start-up requiring the addition of urea (46% nitrogen) from a purchased stock on site on a few occasions when 17.5% N was not achieved. There is a limit to how much urea can be added to the granulator without causing operating problems and the increase in nitrogen content that can be achieved with urea is limited to about 0.1%. WMCF has found it appropriate to make sales contracts for DAP with as low as 17.5% N.

Progress on measures to improve recovery have been successful. In 2004, the overall  $\text{P}_2\text{O}_5$  recovery from ore to fertilizer has been about 86.5% compared with recoveries of less than 80% in the early years of operation. In 2004 the average  $\text{Fe}_2\text{O}_3$  content of the ore feed has been 1.71% and the average nitrogen content of the DAP product 17.7%.

The 2005 WMCF budget production is set out in Table 4.2.

**Table 4.2 2005 Budget Production**

<u>DAP</u>	<u>MAP</u>	<u>MAP-S</u>	<u>Total</u>
593,000t	217,000t	168,000t	978,000t
60%	22%	18%	100%

The budget is based on sales expectations. It will be important for WMCF to achieve 50% MAP sales in 2006 unless other means of iron control are successful.

#### 4.3.1.5 Sulphuric Acid Supply

Production at the WMCF Mt Isa sulphuric acid plant from Xstrata's copper smelter gas is about 700,000 tpa. The production rate varies day to day, as the smelter and converter operations change but tend to even out over a longer period. There is no formal agreement between Xstrata and WMCF for the ongoing supply of SO<sub>2</sub> gas to the acid plant (best endeavours to supply and take, respectively) but AMC accepts that there are environmental reasons for Xstrata to maintain the arrangement as long as the copper smelter is operating. The Xstrata Mt Isa copper smelter receives concentrate from both the Mt Isa and Earnest Henry mines. The ore reserves at both sites are finite. If either of these mines close early it would impact the smelter throughput and thus sulphur dioxide gas supply for acid production.

Extra acid production from sulphur burning was always proposed in the WMCF Mt Isa acid plant and can be generated at a sulphur burning rate of up to 25 t/hr (350,000 tpa acid). The plant has not been required to operate at this rate for a protracted period due to various production delays. Sulphur is imported from Canadian and Australian sources.

The total theoretical production capacity of the acid plant using Xstrata gas and burning sulphur is about 1.18 Mtpa. Following the completion of de-bottlenecking work by 2008 the target will be 1.2 Mtpa.

Acid is also currently being purchased from the Sun Metals zinc plant in Townsville and railed to Phosphate Hill. There is a contract with Sun Metals for the supply of acid up to 280,000 tpa and a separate arrangement for supply above this volume, with maximum availability of about 330,000 tpa.

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The potential combined acid supply from the Mt Isa acid plant and Sun Metals is 1.5 Mtpa. The acid required to produce 1.1 Mtpa fertilizer as 50% DAP and 50% MAP is 1.49 Mtpa and therefore should be achievable from the existing acid sources. WMCF have advised that the 5% additional acid required for 100% MAP production would only require \$1 to \$2 million capital.

#### **4.3.2 De-bottlenecking Project**

WMCF has initiated a de-bottlenecking project to increase the fertilizer production capacity from 975,000 tpa to 1.1 Mtpa over the next three years. It is anticipated that a total capital expenditure of \$21M will be required during 2005 and 2006 for specific projects in the Sulphuric Acid, Phosphoric Acid and Granulation plants.

Achieving this production increase is partly dependent on achieving higher MAP and MAP-S sales as the production rate through the granulation area of the plant is higher for MAP than DAP (e.g. 3,600 tpd vs 3,000 tpd). A significant portion of the increased production will comprise the new MAP-S product.

If the MAP sales targets are not met in the future, production will not be able to be made up entirely with DAP.

#### **4.3.3 New MAP-S Product**

The knowledge that most Australian soils are deficient in sulphur has prompted WMCF to start development of a new high sulphur MAP product in 2003 and commence test production trials in 2004. In September 2004, WMCF produced 5,000 tonnes, 9,000t in October and 12,000t in December.

An 8% sulphur content in MAP is achieved through the addition of a combination of sulphuric acid and sulphur in the pre-neutralization area, preceding granulation. It is known that high sulphur DAP could also be produced by the same method, but it is necessary to complete the business case before this would commence.

Shell Canada was co-developer of the manufacturing process for MAP-S and there is a technology agreement between WMCF and Shell Canada. WMCF anticipates receiving a premium for MAP-S compared with MAP. WMCF will not be required to pay Shell Canada royalty for sales in Australia and New Zealand and a nominal amount for sales to other countries.

WMCF expects MAP-S sales in Australia to increase to between 250,000 and 280,000 tpa in the next few years.

The typical composition of DAP, MAP and MAP-S is shown in Table 4.3.

**Table 4.3 Typical Composition**

<u>Product</u>	<u>%N</u>	<u>%P<sub>2</sub>O<sub>5</sub></u>	<u>%S</u>
DAP	17.5	47	2
MAP	10.5	52	1
MAP-S	12	45	8

#### 4.3.4 Process Operating Cost

Projected cash operating costs in 2004 have been around \$240/t fertilizer. In October, the cost was \$216/t with 81,200t produced, illustrating the benefit of high production rate on unit cost.

The cost of sulphuric acid varies depending on the ratio of supply sourced from Mt Isa metallurgical gas, sulphur burnt in the Mt Isa acid plant and Sun Metals acid (or acid purchased through the port of Townsville). Forecast 2004 sulphuric acid cost is \$90M.

The second highest cash cost item at \$48M is staff and labour (comprising approximately 400 full time equivalent employees). In the past year the number of contractors has been reduced, with a corresponding cost saving. The next

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largest cost of \$47M is for rail freight. This includes sulphur, acid and fertilizer product, between Townsville Mt Isa, Mt Isa Phosphate Hill and Phosphate Hill - Townsville, respectively.

#### **4.3.5 Process Plant Equipment, Productivity, Maintenance Costs and Capital Costs**

This section deals with the plant efficiency and maintenance cost, which determines the ongoing capital cost.

##### **4.3.5.1 Plant and Equipment**

Each of the main plant production areas has experienced problems in the past, which have been and are continuing to be, progressively addressed. Significant advances have been made in the past few years.

The plant design is basically a sequential process in four main stages with limited catch up capability if one stage stops.

To achieve and maintain the capacity increase to 1.1 Mtpa by 2008, operating and maintenance procedures and working efficiency will need to be well developed in order to minimise breakdown and downtime.

WMCF is resolving both the purchase and storage of critical spares that could impact severely upon plant on line time.

##### **4.3.5.2 Current Plant Productivity**

The record production of 922,000t in 2003 and an above budget 81,185t in October 2004 illustrates that the plant improvements are delivering results.

The plant is intended to operate for 310 days per year. From recent performance trends, there is no reason to believe that this target will not be achieved.

Interruption of sulphuric acid supply has caused production limitations in the past but it is assumed that WMCF will implement management strategies to minimise any impact in the future.

The benefits of experienced staff in a plant of this type are considerable. Fly-in fly-out operations sometimes result in relatively high turnover compared to operations close to a major labour centre. AMC has assumed that WMCF will be able to adequately manage staff turnover.

#### 4.3.5.3 Maintenance Costs

Maintenance costs showed a downward trend in recent years and maintenance expenditure in 2004 will be about \$31M. The budgeted expenditure for 2005 is \$34M.

#### 4.3.5.4 Capital Costs

Annual capital expenditure is budgeted to rise over the next two years, as shown in Table 4.4.

**Table 4.4 Annual Capital Expenditure**

<u>2004</u>	<u>2005</u>	<u>2006</u>
\$17M	\$33M	\$54M

The increase in expenditures is to cover significant projects such as de-bottlenecking, major shutdown overhaul in 2006, MAP-S facility installation and a new gypsum cell.

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There is always a risk that the projects will cost more than budgeted, thus impacting the project cash flow. WMCF includes contingencies in each project cost estimate, related to level of engineering completed, which is an industry practice.

AMC has adopted WMCF s capex estimates as being the most likely outcome.

#### **4.3.6 Site Infrastructure, Administration and Overhead Costs**

Significant expenditure is required to operate and maintain supporting infrastructure. The main cost areas include the accommodation village and camp, commute operations which together cost \$13M in 2004. Community relations, general management, health and safety, environmental management and security constitute other overheads.

AMC considers that, over time, projected overhead costs could be reduced. However, in providing the production scenario to Grant Samuel AMC has accepted the overhead costs in the WMCF model.

#### **4.3.7 Environmental, Rehabilitation and Closure Provision**

Four WMCF environmental professionals are employed on site at Phosphate Hill. WMC has a functioning Environment, Health and Safety Management System ( EHMS ), which is implemented at the operation. Internal management standards, environmental operating policies, formal procedures and control strategies have been developed to cover the majority of environmental issues relevant to the operations.

##### **4.3.7.1 Environmental Compliance**

The Mt Isa acid plant and the Phosphate Hill mine and fertilizer plant have the necessary environmental operating approvals, licences and permits in place.

WMCF has an Environmental Management Overview Strategy ( EMOS ) for Phosphate Hill mine (WMCF, 2002) and two authorities that cover Phosphate Hill mine (Environmental Authority No. MIM800012102) and the Mt Isa sulphuric acid plant (Integrated Authority No. NW50). These authorities contain the environmental management and monitoring conditions that have been issued under the Environmental Protection Act, 1994 (EP Act).

WMCF has provided the most recent available Annual Returns for these authorities. The Annual Returns indicate general compliance with the requirements of the relevant authorities. Regular six weekly meetings are held with the Environmental Protection Agency (EPA) to maintain

contact with EPA officers and discuss environmental issues as they arise.

An Environmental Management Program ( EMP ) has been developed to address non-compliance with receiving water contaminant limits at Railway Creek (Phosphate Hill). The Environmental Management Program - Railway Creek (WMCF - January, 2004) and EMP Railway Creek Update (WMCF - September, 2004) provide a program to address: the concentration of nitrogen, phosphate and fluoride in run off from the plant area, the capacity of stormwater ponds to contain potentially contaminated first flush runoff from the plant area and maintenance of the Railway Creek automatic sampler. The EMP covers the period from December 2003 to 30 April 2006 and the WMCF Environment and Health Superintendent has indicated that the EPA has accepted the documents. WMCF has a Plan of Operations for Phosphate Hill that describes how WMC will comply with the conditions of its Environmental Authority (MIM800012102). The current Plan of Operations covers the period October 2003 to October 2005.

#### **4.3.7.2 Gypsum Disposal - Method and Closure Strategy**

The gypsum storage cells contain regulated waste and are subject to specific management and monitoring conditions under the Phosphate Hill Environmental Authority, including a requirement to design, construct, repair, maintain,

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operate and decommission the gypsum cells in accordance with an acknowledged design plan that must comply with the standard environmental conditions in the Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste .

Groundwater quality is monitored at 14 bores around the gypsum storage cells in accordance with the requirements of the Phosphate Hill Environmental Authority. The WMCF Environment and Health Superintendent has advised that the groundwater monitoring results to date do not indicate that the gypsum stacks are adversely affecting the underlying groundwater quality.

Waste from the phosphoric acid plant comprises a semi dry gypsum cake, which is transported to the gypsum disposal facility (gypsum stack) by conveyor. The gypsum cake is then re-slurried with recycled water from the gypsum stack and waste water from the phosphoric acid and ammonia plants. The gypsum slurry is discharged via a moveable spigot to a bunded drain formed along the edge of the active cell of the gypsum stack. The coarse gypsum fraction settles out in the drain and the finer fraction flows out and settles in the central part of the active gypsum stack cell. The coarse material deposited in the drain is periodically removed by excavator and placed on the outer walls of the cell to provide increased storage capacity.

The base of the gypsum stack comprises a lined pad and underdrainage system to maximise water recovery and limit seepage to underlying groundwater. The liner comprises a 1.5 mm thick HDPE impermeable geomembrane. A wide lined collection drain has been formed around the toe of the gypsum pads and stormwater diversion drains have been constructed upslope of the collection drains and pad to divert upslope runoff away from the facility.

A lined evaporation pond has also been constructed integral with the stack for containment and evaporative disposal of excess waste water. The gypsum stack currently comprises four cells - one being used for water containment only. Further cells will need to be constructed in future to contain the 2.5 to 2.7 Mt of dry gypsum produced on an average annual basis. The currently built or planned cells are expected by WMCF to be sufficient to contain gypsum production over the next 10 years. A life of mine gypsum stack is also being considered on land to the east of the plant.

To date, the gypsum water management system has experienced water surpluses. Design and water management advice provided by WMCF consultants suggests ongoing excess water in the medium term.

WMCF has indicated that water balance modelling suggest that a further 20% reduction in water discharged to the gypsum stack would convert the water balance surplus into a negative and result in the current excess being drawn down over time. WMCF also advised that other investigations are planned to find ways of achieving this reduction including:

- reducing the amount of fresh water used for cloth wash, duct and belt sprays and increasing the average fluoride content of water discharged to the stack

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purifying water with lowest impurity content (e.g. from the ammonia plant) through reverse osmosis and re-use this water

precipitating fluorides from acidic water and remove other impurities as required to re-use into the phosphoric acid plant.

AMC's review of WMCF consultants water balance indicates that it is based on monthly average climate data and contains a number of other apparently sensitive but untested assumptions which may mean outcomes could differ from predictions. While AMC is not in a position to fully validate the WMCF consultants model, there appears to be a significant risk that predictions provided by the model could (depending to some degree on climatic conditions and actual water savings achieved in the processing operations over the next few years) underestimate the containment capacity requirement for water and/or the need for process upgrades or a treatment plant to facilitate increased re-use. WMCF has advised that if further dedicated evaporation capacity is required, that an estimated one off amount of \$3M will be funded by substitution from within the sustaining capex budget.

Previous assessments have indicated that environmental constraints associated with the rehabilitation of gypsum waste material include the unsuitability of the gypsum material as a plant growth media (due to extreme acidity) and

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the potential for the facility to produce acidic leachate for a considerable period (in the order of years) and the stability of the final landform. WMCF has prepared a draft document titled Closure Strategy - Gypsum Stack Facilities - Phosphate Hill Operations (WMCF, 2004) that provides background information and studies that relate to closure and rehabilitation of the gypsum stacks and proposes 10 rehabilitation trials using a variety of capping materials. WMCF has indicated that rehabilitation trials will commence in 2005. The proposed trials would cover an area of approximately 5,000 m<sup>2</sup> on the top of Cells 1 and 2 that will be built up above the level of stored process water.

The current Plan of Operations for the period from October 2003 to October 2005 includes a costing for the rehabilitation of the gypsum stack at its planned extent in 2005. A capital cost of \$10.7M has been allocated to rehabilitate the existing gypsum stack (cells 1/2, 3 and 4).

WMCF has a Closure Plan for the operations (WMCF, 2003), which provides cost estimates for demolition, civil and rehabilitation works as well as closure completion criteria for operational areas. The currently proposed concept for the gypsum stacks involves re-sculpting the final batters to a slope of 20 degrees followed by placement of 0.5m of acid neutralising rock material and 1m of rock on the surface prior to application of topsoil and seeding. The concept also includes contouring the top surface to shed water to the outer slopes. The Closure Plan includes a \$2.5M water treatment plant that would be used post-closure to treat all acid waters until there is no further acid leachate. The Closure Plan provides a total cost estimate of approximately \$29M for rehabilitating the stack based on a projected disturbance area of 240 ha. The stated accuracy of the estimate is  $\pm 30\%$ .

It is noteworthy that the Closure Plan costing for the gypsum stack is some \$10M lower than an earlier estimate. Similarly there has been a reduction in the allowance for the post closure water treatment plant from \$5M to \$2.5M and a reduction in the proposed thickness of the acid neutralising rock capping material from 1m to 0.5m. The Closure Plan provides limited explanation for these changes. However, it does acknowledge that further investigation and trials are required to confirm that the stated completion criteria will achieve a stable landform and that sufficient funds have been allocated for water treatment and disposal.

The WMCF Environment and Health Superintendent has advised that revision of the Closure Plan is being undertaken on an annual basis and that in 2005 a more significant triennial review will be undertaken.

***AMC Conclusion***

WMCF rehabilitation trials and further investigations of the suitability of including a water treatment system need to be completed to confirm the effectiveness and likely costs of the current closure concepts for the gypsum stack. AMC has accepted WMCF s cost estimates, however the expenditure has been timed progressively in the production scenario provided to Grant Samuel.

**4.3.7.3 Water Supply**

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For a LOM of almost 40 years and a long term demand of 4 giga litre per annum, the total volume of water supply demand is about 160 giga litre. The long term process plant raw demand is currently met from a series of bores from an aquifer that has an estimated resource size of at least 110 giga litre. WMCF quotes a groundwater resource size of 200 giga litre in the 2003 Aquifer Position Paper but this value is not considered reliable, for reasons discussed below.

A numerical groundwater model has been developed by consultants to WMCF since 2002. The model is reasonably consistent with best practice approaches, and has been accurately calibrated to groundwater abstraction of around 4 to 5 giga litre per annum since 1999, including appropriate allowance for aquifer recharge from the local creeks. Model predictions have indicated that 4 giga litre per annum could be supplied for a period of about 23 years from 1999, totalling a volume of about 110 giga litre. This is predicted to lower groundwater levels from about 233 mAHD to 205 mAHD (levels are currently around 229-230 mAHD), which would still leave substantial volumes of groundwater below that level. However, these projections do not account for the current advanced dewatering program (pumping an additional 5 giga litre per annum, for up to five years), which would reduce the aquifer resource life by about five years, as well as remove much of the low chloride source. It is uncertain whether there

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would enough aquifer resource to supply the mine until the end of the LOM schedule, because the aquifer properties and the response to pumping below about 200 mAHD is not well known. Further modelling scenarios are planned but have not yet been undertaken and would need to be supported by investigations to confirm conditions in the deeper aquifer units.

WMCF is confident that the life of the aquifer will not be a limiting factor in achieving or expanding the 1.1 Mtpa production rate and has ongoing investigations and forward plans to improve the aquifer resource assessment and determine deep aquifer characteristics. It is likely that the water resource is larger than 110 giga litre and it may possibly be as large as 160 giga litre but it is considered unlikely to amount to 200 giga litre. Further, there is currently no ability to confidently predict the aquifer s behaviour, or even to be sure that it would be possible to effectively extract water below levels of about 200 mAHD. In summary, while it is considered likely that the groundwater resource quantity is adequate probably to around 2025, there is a significant risk to the project regarding the very long term water supply to LOM. AMC has reviewed the ongoing and planned investigations and considers them appropriate going forward.

The above assessments of aquifer volumes also need to consider the variable groundwater quality. There is also a risk that very poor quality from adjacent aquifers could be drawn towards the wellfield in the long term, as groundwater levels are lowered. Simple volume calculations, based on the groundwater model layer structure, indicate that the relatively good quality water (generally potable at <750 mg/litre TDS) in the siliceous or weathered unit of the Monastery Creek Phosphorite Member (which hosts the ore), comprises around one third of the total. The other two thirds are made up more or less equally of the carbonaceous or unweathered unit and the Lower Siltstone Member (generally up to 3,000 mg/litre TDS). However, this lower quality water is believed to be suitable as brackish feed to a water treatment plant.

The process needs about 1.5 giga litre per year of low chloride water and the remainder of the water supply can cope with much higher chloride sources. The low chloride water is currently supplied by two bores and monitoring data over five years shows no significant trend in the chloride levels. However, with ongoing water supply pumping and advanced dewatering concentrated on the low chloride zone, it is very likely that higher chloride water will be eventually drawn into the pumped zone. At some (currently undetermined) time, these water quality issues will require the commissioning of a water treatment plant, taking sub-potable water as feed and involving the need to use (or discharge to the gypsum stack) a waste stream of high chloride water. It would be prudent to plan for such a plant within about 10 years.

WMCF advises that access to groundwater from the Great Artesian Basin (GAB) is also being investigated, through the Adopt a Bore program, where corporations cap inefficient bores to offset their usage. Precedents are currently being set in Roma with cattle feed lots capping bores to the equivalent of their allocation. WMCF advises that capping a bore could cost around \$100,000, and should result in a yield of approx 1 giga litre (or about one quarter of the water demand). The cost of access to GAB water is low, and it is considered that this initiative could be undertaken in the near future. It would be particularly beneficial if some of the annual savings in water could be banked by the project for use in the later project years, when there is likely to be a need to augment the water supply. Also, if it is implemented soon, then WMCF could argue that, while it may be dewatering the orebody aquifer, it is contributing to savings in another water resource. Depending on the actual details of arrangements, it may be worthwhile undertaking more than one adoption of a GAB bore.

A surface water supply scheme would require grant of water use entitlements either purchased from existing entitlement holders or new entitlements granted by the Department of Natural Resources, Mines and Energy ( DNRM&E ). A Water Resources Plan has recently been enacted for the Georgina and Diamantina (Lake Eyre Basin) area - including the Phosphate Hill area (Water Resource (Georgina and Diamantina) Plan 2004), under the Water Act (2000). The plan, in part, regulates access to water in the basin and provides for allocation of an additional (i.e. currently unallocated) 12 giga litre per annum for any use and an additional 1.5 giga litre per annum for a project of State

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significance . A project of State significance is defined in the Plan as a project declared under the State Development and Public Works Organisation Act, 1971 to be a significant project .

The DNRM&E advised WMCF in October 2004 that a Resource Operations Plan (ROP) should be finalised in 2005. The plan will define the rules by which the Water Resource (Georgina and Diamantina) Plan, 2004 will be implemented and how the water will be allocated. If a surface water supply scheme were needed and depending on

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its configuration, WMCF may be required to modify its existing Environmental Authority and/or obtain the required Water Licences under the Water Act (2000). Either of these processes is likely to require a comprehensive environmental impact assessment to demonstrate the proposal does not adversely affect water resources and associated values/users.

#### **4.3.7.4 Mine Dewatering**

Groundwater pumping has been proceeding at around 4 to 5 giga litre per annum over the last few years, resulting in water levels lowering consistently and extensively by about 1m per annum. WMCF has recognised the need for advanced dewatering over the next five years to provide access to parcels of ore currently below the water table. It has also been recognised that this will slightly deplete the nominal water supply resource and unfortunately, deplete the source of low chloride water. The advanced dewatering essentially doubles the current dewatering rate and there is no readily available method to effectively store the water for later water supply, thus reducing the water supply life by about 5 years. The main option for storage would involve a scheme for Aquifer Storage and Recovery ( ASR ). However, as ASR investigations can take years to complete and achieve approvals, it is most likely that the excess dewatering volumes from the advanced dewatering program will need to be discharged to the creek. The ASR investigation is thus unlikely to yield additional long term water supplies (unless it can be greatly accelerated).

Additional bores have been commissioned and while the advanced dewatering program is in the early stages, WMCF is confident that the overall dewatering program will avoid ongoing delays in mining and AMC considers that the investigations, achievements and forward plans are adequate.

WMCF has obtained a licence under the Water Act (2000) from the DNRM&E to extract up to 16 giga litre per annum (licence expiry 31/12/08) from the aquifer and an amendment of the Phosphate Hill Environmental Authority to permit the release of excess water generated by the dewatering operation to Kolar Creek. In accordance with Condition C1-4 of the Phosphate Hill Environmental Authority, a Creek Ecology Monitoring Program (WMCF, 2004) for Kolar Creek has been developed and implemented.

#### ***Creek Diversions and Mine Voids***

Significant reserves underlie Dead Horse and Galah Creeks. Because the current mine plan does not require a diversion to be in place prior to about 2010, planning and approvals for the diversion are still in the early stages of formulation. AMC s view is that there is a possibility that unless planning and approvals are advanced in concert with mine planning, there could be a sub-optimal economic outcome in regard to resource extraction.

The mine areas are within or adjacent to the flood plains of Dead Horse, Galah and Kolar Creeks. Flood bunds have been constructed to isolate these mine areas from the estimated 1 in 100 year flood. Whilst mine waste stripping ratios are relatively low, there appears to be opportunity to backfill the mine voids to at least the level of the original groundwater table. Until the rehabilitation planning and objectives are agreed with the regulatory authorities, there is a possibility that unexpected/unaccounted closure costs could be incurred in, say, backfilling the mine areas to levels above the creek (as opposed to above the final groundwater level) or that substantial long term isolation bunds may be required around the

void areas that will be below creek flood levels.

With respect to mine voids, the EMOS states The extraction of overburden and the ore body will create large open cut voids which are not a natural landform in the Phosphate Hill area. These voids will capture and collect surface water flows and expose the aquifer in some locations . Condition F4-1a) of the Phosphate Hill Environmental Authority requires that residual voids comply with the following residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority .. .

WMCF environmental and mine planning personnel have advised that the general intention is to progressively backfill at least the majority of mine voids to above the natural groundwater table and minimise out-of-pit dumping. The current Closure Plan (WMCF, 2003) notes that the issue of backfilling and/or rehabilitation within the mine pits is to be included in future reviews but does not currently include any costing for pit backfilling. At this stage, no

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definitive work has been done to determine whether leaving some residual voids that expose the groundwater table would comply with Condition F4-1 a) of the Phosphate Hill Environmental Authority.

#### ***Flooding of Mine Infrastructure***

A flood study was conducted by consultants to WMCF in 2002. The study appears to have been competently carried out using conservative parameters. At the time, however, there was only one recorded event to check/calibrate the model with and the model was found to significantly over predict measured flows from that event. Flood bunds were constructed around mine pits to protect mine areas from flooding up to a 1 in 100 year event level (as predicted by the model) plus some freeboard. There is an issue of whether the 1 in 100 year ARI flood immunity is appropriate for the plant and gypsum stack areas. Risks of moderate to large floods affecting critical infrastructure appears to be low. The risk and consequences of the plant area or gypsum stack area being inundated by extreme events however appears to be currently unknown and may be economically and environmentally significant.

AMC believes the flood study should be reviewed in light of the additional events observed since the original study. The flood study should also be expanded to include extreme events, up to the Probable Maximum Flood so that flood immunity of critical infrastructure such as plant area and gypsum stockpiles can be assessed.

#### **4.3.7.5 Rehabilitation and Closure Provision**

By June 2005, WMCF is required to submit a report to the administering authority proposing acceptance criteria to meet specified rehabilitation outcomes outlined in the Phosphate Hill Environmental Authority. The results of rehabilitation trials and analogue site and rehabilitation monitoring being conducted by WMCF may assist with determining suitable rehabilitation methodology and acceptance criteria.

The WMCF model includes provisions totalling \$56M for expected rehabilitation and closure costs. These appear to be generally sufficient for the currently known required measures. However, as stated in Section 4.4.7.2 above, there are still uncertainties associated with the rehabilitation and closure of the gypsum stack, which may warrant consideration of some additional contingency costs.

#### **4.3.7.6 AMC Conclusion**

The groundwater investigations performed by WMCF to date have been reviewed by AMC and are considered to be consistent with normal industry practice in terms of the ability of the hydrogeological models to predict the behaviour of the aquifer.

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The management of groundwater is unlikely to achieve the fine balance between sufficient water supply and effective mine dewatering throughout the life of the project without a cost impact. In fact, the dewatering effort effectively reduces the long term water supply resource, such that it is likely that alternative water sources may need to be developed by about 2025. Additional process water may have to be imported from off-site and excess mine water will have to be discharged in the short term. The Adopt a Bore program could provide cost-effective access to long term water supplies for the later years of the project, as well as offsetting the impacts of advanced dewatering. Water treatment will be required at some unknown time to provide low chloride to the process, but probably within 10 years.

AMC has adopted WMCF's view that sufficient water could be sourced from a new borefield and re-use of water from gypsum stacks when the current aquifer is unable to support the processing plant. WMCF's estimate of \$10M has been included to obtain such supply in the production scenario provided to Grant Samuel.

AMC understands that there has not been any allowances made for the costs of creek diversions and believes that WMCF's indicative estimate of \$6M would be an appropriate allowance, based on a diversion being constructed across backfilled pits, with another \$6M upon closure to restore alignment.

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For the purposes of this engagement, WMCF provided AMC with a detailed model of physical schedules and capital and operating costs for the operating scenario at Phosphate Hill. Following site visits and investigations by AMC, the models were adjusted where considered necessary by AMC before being provided to Grant Samuel.

The key model parameters for the Grant Samuel production scenario are summarised in Table 4.4.

**Table 4.4 Key Model Parameters for Grant Samuel Production Scenario**

<b>Parameter</b>	<b>Description</b>	<b>Units</b>	<b>LOM average</b>
1	DAP production	%	50 to 0
2	MAP production	%	50 to 100
3	ROM ore mined	Mtpa	2.6
4	Mining	\$/t ore	7.75
5	Mining	\$/t product	18.31
6	Sulphuric Acid Supply (incl freight)	\$/t product	77.43
7	Ammonia Plant	\$/t product	32.89
8	Total cash cost ex-Phosphate Hill	\$/t product	210.64

**4.5 Risks and Opportunities****4.5.1 Sulphuric Acid Supply and Cost**

The production model parameters show that sulphuric acid is a significant component of WMCF s production cost. The risks associated with sulphuric acid supply and cost are summarised below:

the low cost Mt Isa metallurgical gas supply is susceptible to major disruption in the smelter operation which is outside WMCF s control. Also, the life of the Mt Isa and Ernest Henry mines and Xstrata s ability to source alternative concentrate supply determines the long term availability of that gas. All alternative sulphuric acid sources are more expensive

the WMCF Mt Isa acid plant is vulnerable if a major failure required prolonged shutdown. There are no other viable sulphuric acid sources able to quickly substitute and sustain full capacity operations at Phosphate Hill

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the international market price of sulphur, for burning at WMCF's Mt Isa acid plant, may escalate causing increased cost

the Sun Metals sulphuric acid supply agreement, which is to be renegotiated in 2009, has some risk of a significant price escalation

sulphuric acid purchased from other sources, which occurred in 2004 with high cost penalty, increases acid cost if required in large quantities.

For its production scenario, AMC has adopted a reduction of Mt Isa metallurgical gas supply at the end of Ernest Henry mine and cessation of supply at the end of Mt Isa mine. The sulphuric acid is assumed to be replaced by burning sulphur. Sun Metals sulphuric acid supply is assumed to continue at an increased cost.

However, there is an opportunity to reduce the assumed sulphuric acid price if Xstrata obtains replacement concentrates for Ernest Henry, or extends the life of Ernest Henry and/or Mt Isa mines.

### **4.5.2 Increased MAP Production for LOM Fe<sub>2</sub>O<sub>3</sub> Grade Increases**

The LOM schedule Fe<sub>2</sub>O<sub>3</sub> grade relies upon the achievement of low Fe<sub>2</sub>O<sub>3</sub> grades from mining below the water table.

It is now reasonably well established that the nitrogen level specifications for DAP and MAP are met by control of Fe<sub>2</sub>O<sub>3</sub> in ore feed to the Beneficiation plant.

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The production scenario that AMC has provided to Grant Samuel requires 50:50 MAP:DAP sales, eventually increasing to 100% MAP.

However there is an opportunity to reduce the risk of increasing Fe<sub>2</sub>O<sub>3</sub> ore grades by producing greater than 50% MAP earlier than assumed, provided there is sufficient market demand.

#### **4.5.3 Gypsum Stacks**

There continues to be significant technical risks associated with the containment of acidic gypsum waste and meeting rehabilitation criteria for the gypsum stacks. A significant project risk is the operational and environmental consequences of a failure to contain acidic water, which then leads to contamination of the groundwater aquifer. This risk is present during operation and after project completion while the gypsum stacks continue to retain acidic water (i.e. it will survive closure). The consequences could be early closure and remediation costs during LOM or remediation if the project is already complete. Regulatory penalties would also likely apply.

AMC has not formed a view about the risk or consequences of such an event.

#### **4.5.4 Natural Gas Price**

The natural gas supply to the plant for use in ammonia production and power generation is a major cost item. WMCF s current usage is about 27 Tera Joules/day.

The gas price appears to be competitive at this time of high world energy prices. It seems some form of renegotiation is required in 2008 and there is a risk of price escalation. This is offset by the possibility of new entrants into the Queensland gas market.

AMC has not formed a view about the risk or consequences of the Queensland gas market.

#### **4.5.5 Greenhouse Gas**

WMC is a member of the Greenhouse Challenge Program. WMCF has advised that the current CO<sub>2</sub> emission rate is approximately 570 kg per tonne of product fertilizer. There is some risk a production cost increase would be incurred if a greenhouse gas emissions trading scheme is implemented in Australia. WMCF has made no specific assumptions with respect to costs of future greenhouse gas emissions, as it believes that some form of price adjustment would occur in the industry, should a greenhouse gas emissions trading scheme be implemented in the future.

AMC has not formed a view about the risk or consequences of greenhouse trading schemes.

## **5 CORRIDOR SANDS**

### **5.1 Introduction**

The Corridor Sands ( Corridor ) project is based on a very large mineral sands resource near Chibuto in Mozambique which is about 180 km north of the capital Maputo and about 60 km inland from the coast (Figure 5.1). The project is owned by Corridor Sands Limited ( CSL ) a 100% owned subsidiary of WMC. The Industrial Development Corporation of South Africa Limited ( IDC ) has exercised an option to acquire a 10% interest in the project for US\$10M, together with about US\$1M in costs.

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#### **Figure 5.1 Location**

In November 2000, WMC paid to Southern Mining Corporation Ltd ( SMC ) an option fee of US\$15M for the right to carry out a Bankable Feasibility Study ( BFS ) in respect of the project. Prior to that date, other costs and payments totalled US\$2.8M. The BFS was completed in July 2002 at a cost of US\$11.9M. Under the original agreement, completion of the BFS gave WMC the right to acquire a 60% interest in a new company which would own the project, subject to IDC s option. In January 2003 WMC paid to SMC an amount in two tranches totalling US\$87.5M and, with completion of the IDC payment, will own 90% of the project. Under the previous agreement WMC needed to provide disproportionate funding of project development to acquire its ultimate interest and to pay other small amounts to SMC until commencement of production. The latter obligations no longer apply. Since purchasing SMC s equity, WMC has spent a further amount of about US\$8M.

The project is held under one exploration licence and the mineral sands occur in elevated dunes which were formed as strand lines behind a pre-historic coast line at the mouth of a then much more extensive Limpopo River system. AMC has been provided with a copy of the Prospecting and Research Licence which is valid to 17 October 2005.

## **5.2 Geology, Resources and Reserves**

There are several potentially mineable parallel strand lines but work to date has focussed on one large deposit called Deposit 1. Potentially economic mineralisation occurs from surface to a depth of 30m to around 140m. Within the mineralised zone there are several horizons of different grade. The distribution of grade in the planned Initial Mining Area ( IMA ) permits scheduling of higher grades in the early years.

Most of the original exploration drilling focussed on two areas within Deposit 1, the West and East areas. WMC drilling during the BFS focussed only on the West Block.

The present resource and reserve estimate is listed in Table 5.1. The total Measured and Indicated Resource of nearly 2.7 billion tonnes is within the West and East areas. The West Block resource is the basis for the reported Proved and Probable reserve estimate of 807 Mt at 4.7% ilmenite. Other higher tonnage reserve estimates have been completed.

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**Table of Contents****WMC Resources Limited****Specialist s Technical Report****Table 5.1 Corridor - Mineral Resources and Ore Reserves**

<u>Estimate</u>	<u>Mt</u>	<u>% THM</u>	<u>% Ilmenite</u>
<b>Mineral Resource:</b>			
Measured			
West Block	1,000	8.48	4.71
East Block	593	7.65	4.05
<b>Total</b>	<b>1,593</b>	<b>8.2</b>	<b>4.5</b>
Indicated			
West Block	764	6.17	3.39
East Block	315	6.29	3.33
<b>Total</b>	<b>1,079</b>	<b>6.2</b>	<b>3.4</b>
Inferred	13,920	4.9	N/A
<b>Total Mineral Resource</b>	<b>16,592</b>	<b>5.3</b>	<b>N/A</b>
<b>Ore Reserve:</b>			
Proved	685		4.8
Probable	122		3.7
<b>Total Ore Reserves</b>	<b>807</b>		<b>4.6</b>

- Notes: 1. THM = Total heavy minerals; THM not stated by WMC for Ore Reserves  
2. Source: WMC Annual Report 2003 and BFS  
3. Resources include reserves.

The Inferred Resource of nearly 14 billion tonnes is based on SMC estimates, modified by CSL. Some five billion tonnes surrounds the Measured and Indicated resources. The remainder is in a northern extension of West Block and in two deposits south of Deposit 1. The Inferred Resource estimate has not been reviewed by AMC.

The main mineral of economic interest is ilmenite. Other minerals of economic significance are rutile which in West Block grades 0.02% and zircon which grades 0.15%. Other heavy minerals include magnetite, other spinels and amphiboles.

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The resource estimate is based on two major periods of aircore drilling, one by SMC prior to the commencement of the BFS and one carried out during the BFS, together with information from limited diamond drilling and samples from a trial pit and from downhole geophysical logging.

65,000m of aircore drilling was carried out in the first phase to a density of 250m by 125m. A further 12,680m was completed for the West Block during the BFS and in the IMA the drillhole density was reduced to a nominal 100m by 100m. 1153m of diamond drilling was completed to validate the aircore sampling and provide better geological information as well as density data.

For the first phase of drilling, samples were collected at 3m intervals and analysed for silt and THM. A composite analysis for ilmenite was carried out for each hole. In the BFS 3m samples were analysed for THM and also for ilmenite using dense liquid separation and magnetic separation. There were limited analyses for zircon and rutile and assays were assigned to sample intervals by ratio. The 3m samples from the first phase of drilling were recovered during the BFS and analysed for ilmenite. There was limited QA/QC work in the first phase of drilling but a considerable amount during the BFS which lent support to the quality of the sample and analytical information for that phase of drilling and indirectly for the second stage of the first phase of drilling.

The geophysical logging provided a good indicator of THM grade. In addition it assisted in the geological interpretation which enabled the identification of six different domains with varying content of heavy minerals and of silt. Those domains can be correlated throughout the deposit and their boundaries have been used to constrain the geostatistical interpolation of grade in the resource.

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West Block trends northeast-southwest with a shallow dip to the southeast. The highest grade domains are Domain 1, a red silty sand layer of aolean origin; Domain 3, a red-brown, partly indurated high silt layer and Domain 5, a grey sandy horizon with the highest THM. Some 60% to 70% of the resource THM and ilmenite is in Domains 1 and 5 combined, most being in Domain 1. Most of the East Block Measured and Indicated Resource is interpreted to be in the equivalent of Domain 1.

The lower limit of the West Block resource is the top of Domain 6, an interpreted marine sand bank with depleted THM. The nominal cut-off is around 2.5% THM. The cut-off for East Block is 4% THM which also defines a lower surface of the unit. Laterally the limits of both deposits are defined only by drillhole density.

The depth of the water table was established with a dip meter, confirmed by some geophysical logging and resource blocks were tagged appropriately. About 20% of West Block is below the water table.

Dry densities have been estimated on the basis of measurements from samples from the trial pit and from diamond drilling and extended by a formula using THM and silt analyses. Densities of the deeper domains are higher than those of the more shallow domains. Moisture content is assigned by a global adjustment.

A program of consolidation and validation during the BFS included surveying of drillhole collars, additional sampling and twin hole drilling. As a result, data from the first 232 holes of the earlier programme were considered very unreliable and excluded from the resource estimation database. The remaining information then indicated acceptable correlation between the two aircore drilling programs. Diamond drilling, supported by other information include geophysical logging and pit sampling, suggests that THM and ilmenite grades, and by extension rutile and zircon grades, are conservatively estimated and higher than indicated by the aircore holes. Because the bias is variable both laterally and vertically it has not been included in the estimate of grade in the mineral resources. AMC agrees with that approach.

Data analysis has shown high variability in ilmenite, zircon and rutile distribution through the deposit but it is strongly controlled by the geological domains. In addition there is a small degree of variability in the crude ilmenite chemistry and mineralogy. Other work indicated that a considerable part of the contained titanium dioxide in the non-magnetic fraction of the heavy minerals is not rutile but other minerals, some of which is saleable leucoxene and some which do not report to a saleable product.

Levels of calcium, magnesium and manganese are not unusual but Domain 5 has higher levels of silica in the ilmenite than acceptable for smelter feed and will need to be blended. The crude ilmenite has a high chromium content which can be removed by roasting and magnetic separation. There is some induration particularly in Domains 2 and 3 but plant design includes adequate crushing facilities.

The resource grade was estimated by ordinary kriging constrained by the interpreted geological domains, with a modification of the process for Domain 1. Grades were separately interpolated into resource blocks for THM, ilmenite, rutile and zircon and density was assigned from silt and THM estimates. Block sizes were 250m x 125m x 12m and in the IMA, 125m x 2.5m x 3m.

AMC has discussed the resource database and estimation process with WMC staff and thinks that the database and estimating process is to good industry standard. The limit to Measured and Indicated Resource is 250m from an adequately supported drillhole. WMC considers that the underestimation of grade is acceptable in the context of a Measured classification but, in a stricter interpretation of the JORC Code, the evidence that resource grades are not reliable, albeit understated, means that, in AMC's opinion, the Measured classification is not appropriate.

Ore Reserves have been estimated by application of industry standard optimisation procedures to the Measured and Indicated resource in the West Block of Deposit 1. Pit design utilised process recoveries, costs and revenues derived from the BFS and nearly all resource blocks within the first 20-year mine plan were included in the reserve. Pit design criteria, including pit slopes, were estimated after geotechnical work on each of the main geological domains and utilised the identified position of the water table. AMC is satisfied that the approach used to estimate ore reserves is of proper industry standard but, for classification, has the same reservation about that part called Proved. AMC understands that changes in revenue and cost assumptions since the completion of the BFS would not significantly impact on the ore reserve estimate.

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There are limited risks of significance in the resource and reserve estimates and there is clearly reasonable upside, perhaps 10% to 15%, in the average grade assigned. There is some mining risk related to the level of the water table for West Block but this is not thought to be of any significance given the magnitude of the resource in the area. In an overall economic sense the project has low sensitivity to resource and reserves.

The ore reserve represents more than 20 years of production according to the most likely scenario but utilises only part of the Measured and Indicated resource and a very small part of the total resource. The limitation on exploration value of Corridor is not so much in quantifiable potential but in the impact of time on value, given most of the resource cannot be mined within a meaningful time period for valuation.

### **5.3 Marketing**

#### **5.3.1 Industry Overview**

Over 90% of the world s annual titanium dioxide production is used for pigments in the paint, plastics and paper industries. Pigment demand growth has historically averaged the growth in GDP and is forecast to grow at approximately 2.5% to 3% per annum long-term. There are two processes used to produce pigment, the sulphate process and the chloride process. In recent decades the industry has gradually moved away from the sulphate process to the chloride process. Currently pigment capacity is estimated to be growing at around 3% pa with a greater growth potential for the chloride process than sulphate although the growing Chinese market is mainly sulphate based.

Ilmenite is the primary source of more than 90% of the feedstocks. Traditionally it has been used as a direct feedstock to the sulphate process however new pigment plants have been designed on the chloride pigment process which requires upgraded ilmenite products such as synthetic rutile and titanium dioxide slag. The production of slag is favoured in situations where there are large quantities of moderately low-grade ilmenite with relatively low-level impurities and adequate supplies of inexpensive electricity for smelting.

The contemplated titanium products from Corridor are titanium dioxide slag for the chloride process (more than 80%) and the sulphate process (up to 20%) plus rutile and leucosene. All of these are used as feedstock to the pigment industry. Corridor will also produce high purity pig iron ( HPPI ) used in the foundry industry and zircon that is used primarily as an opacifier in the ceramics industry.

Recently there has been an oversupply of pigment feedstock and prices have been softening. The market opportunity for Corridor is anticipated to be around 2009 but there is strong competition from other sources, both titanium dioxide slag producers and natural titanium mineral producers. Sales by CSL, and the pace of production ramp up, will be dictated by the level of slag sales, the dominant contribution to potential revenue.

Potential development of Corridor is capital intensive because of its location, infrastructure requirements and the high costs of building the smelter and other process facilities. Consequently the project will need to achieve substantial contract quantities both to economically justify the initial capital and to enable, by subsequent expansion, an adequate return on invested funds.

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Currently CSL plan initial production from three smelter furnaces in the order of 125,000 tpa slag capacity each, then building up furnaces incrementally, ultimately to a total slag production capacity approaching 1 Mtpa.

WMC commissioned a special marketing report on the project from internationally recognised consultants specialising in the mineral sands industry and a separate consultants report on the pig iron industry. These were prepared in 2001 and included in the BFS. More recently, specific updated reports have been prepared and these also have been reviewed by AMC.

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#### **5.3.2 Chloride Slag Market**

Chloride slag has been in oversupply with significant idle capacity and a recent history of declining prices. However in view of recent production difficulties for some existing suppliers, the situation may be corrected and prices stabilised. Chloride slag represents more than 50% of projected revenue from Corridor and therefore is critical to the financial success of the project.

The largest existing producer has idle capacity. While CSL will have to fight existing industry suppliers to some extent to win market share, the opportunity for it to enter the market as planned in 2008/2009 has recently improved because of the production difficulties referred to above. Even in the face of aggressive price competition it is likely that CSL would achieve market entry as the majority of current consumers wish to promote greater competition.

CSL has been negotiating marketing arrangements with major pigment producers for both chloride slag and slag fines and has had letters of intent which it expects to renew or convert into formal off-take agreements. This will be a delicate negotiation process. The slag market is dominated by medium term supply contracts and there is not really any spot market available. Therefore success in finalising sales contracts for substantially the whole projected production of slag will be crucial to meeting the financial projections. The BFS targets 65% of total slag production being covered by off-take agreements prior to construction but this will have to be increased by the time construction is completed.

One of the largest pigment producers has a market cost advantage in its ability to directly process low cost chloride ilmenite. Low chloride slag prices are more beneficial to its competitors and CSL s market entry could therefore act to depress chloride slag prices. That effect could be offset by higher chloride slag demand if this pigment producer is unable to fully implement its ilmenite strategy. Once CSL is established it is likely that this producer will take an appropriate percentage of the output so it is able to influence future developments.

A declared program of furnace expansion by CSL may assist in deterring other projects from commencing production. On the other hand a discount to market is probably expected by the major pigment producers upon CSL s entry into the market.

Until the most recent supply reductions, decreasing chloride slag prices in real terms were forecast until 2006 with price stability thereafter at a level of around US\$340/t in 2004 dollars. In view of recent developments, AMC thinks that it is reasonable to project an average price level of US\$355/t in 2004 dollars, within a range US\$340/t to US\$370/t, from 2008/09.

#### **5.3.3 Slag Fines Market**

Slag fines are currently an oversupplied product with significant inventories, a heavily contracted market and a recent history of declining prices.



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Slag fines are produced as a by-product of the chloride slag production process with a minimum of 15% of total slag production being too fine to be acceptable feedstock for the chloride process. This fine fraction is sold into the sulphate pigment market.

The sulphate process has experienced low growth since the advent of the chloride process and this trend is expected to continue with the exception of China. Longer-term forecasts show an overall sulphate feedstock supply deficit from 2006 onwards but a market which is forecast to be finely balanced until around 2015. This means that CSL may have to take market share from current suppliers or create higher demand by substitution. The potential for demand from China may alleviate that situation.

The production of sulphate pigment by batch chemical process is sensitive to feedstock variation. Low cost ilmenite is often the feedstock of choice and the use of slag fines is based on reducing waste products, increasing production and reducing processing costs. These attributes are attractive in developed economies but of less importance in emerging markets. China leads growth in sulphate pigment at the expense of older sulphate plants in developed countries.

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Slag fines produced from the smelting process is also in competition with sulphate slag which is a co-product in a specific Canadian operation. Although the latter has a lower titanium content (75%-80% compared to Corridor s slag fines of approximately 85%) it has a better size distribution making it easier to handle with superior chemical properties for the sulphate process. Sulphate pigment producers currently using sulphate slag may be reluctant to change to slag fines without a significant price incentive because of the process changes required although the impact is offset to some extent by the higher titanium contents of the fines.

Sulphate pigment producers who currently use ilmenite are much more likely to switch feedstocks if the cost of slag fines is competitive. A current comparison will typically produce a competitive slag fines price significantly below US\$200/t in emerging economies. The upside price potential is that increasingly strict regulations on waste disposal may force sulphate producers to switch from ilmenite to the lower waste slag fines feedstock. Increased emphasis in environmental standards in China gives promise of improved markets and pricing outlook.

CSL has letters of intent from established sulphate pigment producers covering substantially the whole production of slag fines and this may well be very helpful in enabling them to achieve higher prices, closer to historic sulphate slag prices.

Slag fines that cannot be sold to the major pigment producers can be marketed in China as a substitute for low cost sulphate ilmenite but the pricing level is likely to be lower than in other markets. At present, a discount would be expected for slag fines to be competitive unless there is significant pressure for environmental improvement in China but, in the longer term, the amount of discount may reduce.

Adequate allowance has been included in the planning schedules for slag in process as the cooling process and milling mean that there must be a reasonable level of inventory.

Slag fines 2008 prices are forecast between US\$255/t and US\$285/t in 2004 dollars. However if fines are sold into the Chinese market as a substitute for sulphate ilmenite then a lower price of US\$220/t to US\$250/t would be expected for this tonnage.

#### **5.3.4 Rutile and Leucoxene Market**

These high-grade feedstocks are alternatives to chloride slag for pigment production but are also used in the welding electrode industry and in manufacturing titanium metal. CSL s production at 6,000 tpa in total by 2011 is insignificant in market terms.

The indications are that these products are of satisfactory quality and selling them into the pigment, welding electrode or titanium metal markets should not be problematic and market prices are likely to be achieved. These products have experienced price increases in the last year.

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Rutile 2008 prices are forecast at US\$400/t to US\$430/t in 2004 dollars suggesting a 2008 leucosene price range of approximately US\$360/t to US\$395/t in 2004 dollars.

### 5.3.5 Zircon Market

Production is forecast at 15,000 tpa by 2011 with the majority being prime grade suitable for the ceramic market. The total zircon market is approximately 1 Mtpa and supply shortages are forecast from 2005 onwards. The supply deficit is forecast at approximately 190,000t by 2010. Supply shortages have already been experienced in 2003 and 2004 and pricing has risen dramatically to approximately US\$600/t.

Zircon has a history of volatile prices with extreme peaks and troughs and this pricing is nearing historic highs. Primary zircon pricing in 2008 is forecast at around the US\$575/t mark in 2004 dollars which appears reasonable. A discount of approximately US\$20/t to US\$30/t would be expected for secondary zircon.

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It is likely that CSL will be able to sell its whole zircon production at market prices and that secondary zircon will achieve prices close to prime grade zircon.

#### **5.3.6 High Purity Pig Iron ( HPPI ) Market**

Production of iron is forecast to be nearly 210,000t by 2011 of which 185,000t will be HPPI and the balance sold as scrap. The total market for HPPI is estimated at almost 4 Mtpa by 2010 therefore CSL s production will not significantly affect the market and market entry should be straightforward.

HPPI is used in the foundry industry as a quality-improving additive and directly competes with high quality scrap. The foundry industry has experienced supply shortages over the last year due to high demand and a shortage of high quality scrap. This has led to significant price increases although it is notoriously difficult to forecast HPPI prices and these may be subject to downward correction.

The market entry of CSL into the HPPI market is likely to be uneventful and market competitive prices would expect to be realised. The market has experienced high prices in 2003/04 but these have decreased recently. The cost of coke is also expected to decrease in the future and this will make competitive products cheaper. However HPPI is expected to maintain considerable price strength and a long-term price of US\$235/t in 2004 dollars is expected.

#### **5.3.7 Sales Forecasts**

The achievement of an annual sales level approaching 300,000t of chloride slag and 75,000t of slag fines is reasonable over a three year term starting in 2008/2009 but the sales necessary to expand to further furnaces will depend on market conditions at the time. Both of the new existing slag producers have the ability to expand their operations by another two furnaces assuming adequate supply of suitable feed so there is some risk is that at least one of them will do so before 2015. This will make CSL s expansion more challenging. Also, there is high risk from other new projects with substitutable products such as synthetic rutile and rutile and upgraded slag ( UGS ).

As discussed, sufficient growth in the chloride pigment market is also necessary. There is currently a shift in pigment industry growth to China which is currently almost exclusively sulphate based. This expansion has met internal pigment demand growth and also replaced higher cost European and US sulphate plants. If China acquires chloride pigment technology then the prospects for chloride feedstock demand is healthier.

#### **5.3.8 Significant Risks and Opportunities**

##### *Off-Take Agreements*

Substantial off-take agreements for both chloride slag and slag fines are essential to the success of the project. Both products are essentially medium-term contract dominated and CSL must negotiate agreements in order to benefit from the contract renegotiation windows. One significant potential customer may not support the project and there is a risk that it may not sign a contract even after Corridor is established. This would make achieving sales volume requirements difficult.

Also slag fines sales into China will require a local agent and substantial lead-time.

***Competing Projects***

Two existing slag producers have the potential to expand production by a total approaching 500,000t pa. This is unlikely but an additional 250,000 tpa of chloride slag production is a possibility. This would damage CSL's sales volume depending on timing. There are also potential new projects or expansion projects to produce significant additional volumes of synthetic rutile, UGS and natural rutile that could reduce CSL's potential slag sales volumes.

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#### ***Aggressive Pricing***

There is a risk of aggressive price discounting by the feedstock market leader to maintain market share and deter new competition. Depending on timing, this could reduce CSL s revenue expectations significantly as most sales contracts will have market pricing clauses in them and pigment producers will be likely to pass up higher margins to support new feedstock production.

#### ***Lower Pigment Growth***

If pigment industry growth is lower than expected then CSL will take longer to achieve sufficient sales volume and expansion will be more protracted.

#### ***Political Instability***

Actual instability or even the perception of instability in Mozambique could make customers limit their contractual commitments to CSL in favour of producers in other countries. Instability in South Africa where the three main competitors plants are situated would also increase the risk in Mozambique but is a possible countervailing positive for CSL.

#### ***Exchange Rates***

Product sales are priced in US dollars while a large part of the costs are in Rand. However CSL s competitors are exposed to the same risk.

#### ***Chinese Market Developments***

The growth of Chinese manufacturing is both an opportunity (for slag fines sales and, possibly in the future, for chloride slag sales) and a risk if it develops its own feedstock beneficiation industry.

### **5.3.9 Conclusions**

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The sales volume to support a three-furnace operation under the proposed ramp-up schedule commencing significant production in 2009 looks reasonable and achievable.

CSL will have to take market share from current producers to attain their desired production level of over 350,000t with only three furnaces. Furnace expansion will depend on growth in the chloride route pigment industry and the strength of competition from other high-grade feedstocks such as SR, UGS and rutile.

CSL's ability to convert letters of intent into and/or negotiate firm off-take agreements is crucial to the success of the project and will determine whether it can achieve its financial goals.

Pricing will be a major risk area and once CSL has established the project and production is approaching 200,000 tpa CSL can expect a much harder line on pricing from the pigment majors. Approximately two years into the proposed sales contracts will therefore be another crucial phase for the project's financial success.

### **5.4 Feasibility Studies and Development Decision**

At the time WMC acquired an interest in the project, an initial feasibility study had been completed. The production rates, proposed mining operation and proposed treatment route were essentially the same as incorporated in the BFS completed by WMC in July 2002. The proposed mining and processing operations and supporting infrastructure are described below.

Initially it was planned to link to existing rail facilities and the existing Matola port facilities but in completing the BFS, it was decided that a preferable alternative was the construction of a new road from site to, and establishment

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of a 1 km long jetty near, Chongoene. It has been proposed to source power from the Eskom grid in South Africa although there has been some consideration of using gas supplies in the region as a fuel source for power generation.

In the period since completion of the BFS, there have been several changes which require that the study be updated. WMC plan a validation exercise for completion in late 2005, shortly after which it plans to appoint a project management contractor. Apart from inflation which needs to be considered because of a now planned later start-up date, it has been necessary to consider lower slag prices in the initial period of production offset to some extent by higher pig iron prices. It has also been necessary to adjust for changes and projected changes in the exchange rate between the Rand and the US dollar. Increases in power prices and coal prices require specific adjustment.

Taxation and royalty agreements have been finalised and the necessary environmental and other permits obtained for mining and plant operation on site. An environmental impact assessment for the amended export facility has been approved in principle and environmental approvals have been received for the BFS power supply route. It is planned to finalise all relevant agreements early in 2005. Liaison with the local community continues, particularly in regard to the need to re-settle people currently living in the planned operating area.

### **5.5 Potential Operation**

Final production plans will depend on ongoing investigations, the major factor being the timing and amount of market penetration. In the following sections AMC describes and comments on the planned operational parameters and the estimated costs and physical performance. AMC s descriptions and comments are based on a review of the BFS, discussion with WMC staff and on its own industry experience. This review is not to the detail, for instance, of a definitive re-assessment of costs to take into account the impact of exchange rate changes since completion of the BFS.

#### **5.5.1 Mining**

The mining operation is planned on the western area of Deposit 1. A high-grade core of mineralisation exists in a parallel orientation to the strike of the orebody. Mining of high-grade mineralisation is planned in the initial years of mine operation with ore mining rates increasing to 17 Mtpa. Ore feed grade declines after year 5 towards the average grade of the deposit. At the lower grades, the planned ore mining rate is in the order of 60 Mtpa to 70 Mtpa, as the production of titanium slag increases towards 1 Mtpa. There is no overburden identified in the BFS (apart from topsoil) and only a minor part (<1%), of the total material planned to be mined is below the cut-off grade.

The grades for the production plan assessed by AMC have been increased over reserve grades by a factor of 10% to account for the observed underestimation from air core drilling. AMC accepts the reasonableness of this assumption and considers that the projected high grades in the early years are achievable.



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The estimated reserve in West Block is sufficient to support the proposed 20-year project. Approximately 700 Mt of additional resource would be available in this area to continue plant feed for approximately nine years. No other resources or deposits have been considered in the project investigations to date.

A strip mining strategy was employed in the BFS to enable coarse tails from the process plant to be returned to the mining void after processing. The IMA is developed close to the ROM pad and is extended down dip to the southeast for the full width of the orebody. Successive strips are then mined to progress the pit towards the northeast.

Coarse tailings are planned to be used to construct a tailings dam during the IMA development period. Fine tailings are planned to be placed in the tailings dam for the life of the project.

The BFS mining plan involves conventional open pit truck and shovel mining. The first five years are planned to be conducted by a mining contractor utilising relatively small equipment (100t haul trucks and 15m<sup>3</sup> diesel hydraulic shovels). At the end of this period, scaling up to larger equipment (190t haul trucks and 28m<sup>3</sup> electric-hydraulic shovels) is anticipated either with continuing contract mining or as owner mining.

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Based on geotechnical investigations, recommended pit slope design specifications are:

25° for the first 5m and then 30° below 5m depth for undisturbed material

26° for backfill material

Maintenance of a minimum open space of 160m between the toes of the operating face and the backfill slope to provide sufficient area for operation of dewatering equipment and to provide a buffer in case of slumping of the tails surface.

The backfilling strategy assumes a 1 to 1 ratio between the volume of in situ material mined and the volume of coarse tails produced from processing that material which is consistent with mineral sands industry practice.

While induration is not considered to be a significant issue, use of a truck/shovel mining strategy in the early years of operation provides flexibility and will enable the impact on other potential mining methods to be assessed.

It is planned that ore would be delivered to the ROM pad will be tipped directly to the preparation circuit. An emergency stockpile would be maintained on the ROM.

For this assessment, expected production from the mine has been scheduled to satisfy the slag sales targets discussed above, while allowing for stockpile build-up in the early years of the mine life. Slag sales build up progressively until a peak of 962,500 tpa is reached in year 16 of slag production. Figure 5.2 shows the build-up of slag production. Figure 5.3 shows the scheduled Primary Concentrator Plant ( PCP ) throughput and ilmenite grade over the 20-year life of the project.

**Figure 5.2 Life of Mine Slag Sales**

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**Figure 5.3 PCP Throughput and Feed Grade**

Risks to the mining schedule and cost estimates are:

**In-pit trafficability** Some in-pit roads may be affected by high rainfall or groundwater, affecting access and productivity of the mining fleet. Mitigation of this risk is planned through the use of strategic emergency mining areas close to the surface; the use of smaller trucks/shovels in early period of the mine life; allowances in the mine operating cost for an increase of 5% for ore mined below the water table and for costs of pit dewatering ahead of mining; and reduction in pit ramp gradients from 8% to 6%.

**Pit dewatering in advance of mining** Limited test work has been carried out on the saturation levels of materials below the water table within the proposed pit. As such, the assumptions used for the permeability of different ore zones, the ease of water removal by pumping, and the time required to achieve effective dewatering below the water table are in a preliminary form. This risk can be mitigated through adequate hydrological investigations prior to start-up.

**Ore blending** A degree of ore blending is assumed as the annual ore feed is sourced from a series of advancing mining benches. Daily production would be sourced from up to three mining areas. While some targeted blending can occur, it may be limited by the requirement for the overall face advance to continue in a uniform manner to create a mined out void for coarse tailings backfill. The risk of inadequate blending can be mitigated through detailed mine planning prior to start-up to ensure the mining sequence maintains the ore feed within the plant specifications.

**Mining costs** documented in the BFS have been derived from budget quotations obtained from a range of mining contractors. These quotations require validation to account for escalation that may have occurred since the BFS report was completed. Significant changes to currency exchange rates may also have impacted on the mining costs. Review by AMC has identified that applicable mining cost increases from mid 2002 to mid 2004 could be 10% to 15%.

AMC considers the BFS estimate of mine operating costs to be reasonable at the time and it has been escalated to 2004 for valuation purposes.

It was assumed in the BFS that the mining contractor would supply all mine equipment, maintenance facilities and support services to run the mine. Therefore no mine capital allowance was included in the project financial analysis. AMC has reviewed this approach and considers it to be reasonable.

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#### **5.5.2 Processing**

The planned site processing facility includes a Mineral Processing section and an Ilmenite Beneficiation section.

##### **5.5.2.1 Mineral Processing**

The design and development of the processing plants PCP and Mineral Separation Plant ( MSP ) were based on extensive on-site pilot plant campaigns at Chibuto together with testwork conducted at a well-respected mineral laboratory in Australia. CSL have conducted much detailed metallurgical testwork related to the PCP and MSP processing circuits which is considered an adequate basis for the BFS document.

##### ***Primary Concentrator Plant Process Description***

The PCP circuit consists of three separate sections:

Initial screening of ROM ore and stockpiling of 50 mm ore.

Screening, crushing of oversize and desliming of 3 mm ore.

Gravity concentration of deslimed ore to produce a heavy mineral concentrate ( HMC ).

The PCP operations can be further described by the process flow diagram in Figure 5.4.

The overall PCP circuit capacity has been designed for 3200 tph of feed for the 0.375M tpa slag case. At design grade of ilmenite, it produces 1.34 Mtpa HMC. It is considered that the PCP circuit will be capable of operating at these levels. The equipment used in the circuit is industry proven and the concentration equipment was extensively tested during pilot plant campaigns.

The ROM ore contains 16.3% slimes and is considered as medium level slimes in current mineral sands processing. A thickened slime underflow will be pumped to a separate tails area using central discharge technique for slime tails deposition. Pilot plant trials revealed that an acid pH (3.8 – 4.6) environment is required for effective slimes settlement in the thickeners at flocculant addition rates up to 180 g/t. It is proposed to add sulphuric acid to adjust thickener pH and use lime to neutralise both thickener overflow and underflow. The thickener circuit and slimes handling system are considered adequate. The practices described in the BFS in relation to slimes handling are now proven in the mineral sands industry.

At a production rate of around 1.0 Mtpa slag, the PCP operation will process 8000 tph of ROM ore through three production units. While in total this is a very large mineral sands operation, processing issues can be addressed prior to the ramp-up to full tonnage.

***Mineral Separation Plant - Process Description***

The MSP processes the HMC to produce:

Crude ilmenite for roasting/smelting

Rutile product

Leucoxene product

Primary and secondary zircon product.

The MSP operation is summarised by the process flow diagram in Figure 5.5.

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**Figure 5.4 PCP Flowsheet**

The overall MSP circuit capacity for the 0.375 Mt slag case has been designed for 240 tph. At a projected process rate of 1.34 Mtpa (184 tph) of feed HMC, the MSP product output rate is stated as:

Crude ilmenite	954,330 tpa
Rutile product	5,053 tpa
Leucoxene product	2,669 tpa
Prime zircon product	17,889 tpa
Secondary zircon product	3,578 tpa

AMC considers that the individual circuits and stages nominated will be capable of producing such products from the HMC. The separation equipment and the techniques used to provide the mineral separation are industry proven.

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**Figure 5.5 MSP Flowsheet**

Testwork conducted in the BFS to assess processing issues gives added confidence that the MSP will perform as required. In particular MSP processing issues which have been addressed are:

attritioning of HMC to reduce surface coatings aimed at reducing  $\text{SiO}_2$  levels in ilmenite product

Hot Acid Leach ( HAL ), an industry proven technique to reduce  $\text{Fe}_2\text{O}_3$  levels in zircon product

wet tabling of rutile and leucoxene products to reduce  $\text{SnO}_2$  to acceptable levels for pigment consumers

further development of concentrates 1 and concentrates 2 separate processing in dry circuits to increase MSP overall efficiencies and rationalise equipment selections.

At around 1.0 Mtpa slag, the MSP operation will process 500 tph. Again, this is a large mineral sands operation but it involves two staged units. Operation initially at lower rates will allow any processing issues to be addressed prior to ramp-up to the larger rates.

***Capital Costs***

For the 0.375 Mtpa slag case the size of the plants (PCP and MSP) are similar to a number of existing mineral sands plants which assists AMC s cost review.

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WMC has not published the capital cost estimate for individual areas of the processing plant. However AMC has reviewed the estimates and, on the basis of its experience of similar plants, considers that the BFS estimates for the 0.375 Mtpa slag case are appropriate and adequate as a basis for adjustment to 2004 dollars.

Compared with some other operations the MSP does not utilise a dry ilmenite circuit as the crude ilmenite (roaster feed) is produced direct from wet magnets and there is no need for drying/heating of HMC. However, for zircon production a 10 tph HAL circuit is nominated and both rutile and leucoxene products are re-wet for further concentration. The main rutile/zircon dry circuits operate on a double circuit concept requiring additional dryer/materials handling. For a 240 tph MSP of this complexity, AMC is of the opinion that the BFS estimate may be low and for its model, it has increased the MSP capital cost.

#### ***Operating Costs***

To allow comparisons with existing plant operations, the 0.375M tpa slag case in the BFS was reviewed in detail. WMC has not published its cost estimates for these areas and considers that information sensitive. However AMC has reviewed the 0.375 Mtpa case in the BFS relative to comparative operations in South Africa. It considers the PCP estimate to be appropriate but, for its model, has increased the estimated costs for the MSP.

#### ***Mineral Recoveries***

##### **a) Ilmenite**

The details of the estimated BFS recovery of ilmenite mineral from ROM to roaster feed are considered sensitive. AMC has reviewed the information relative to other operations and, for its model, considered a PCP recovery of 91.7% and a MSP recovery of 96% as appropriate.

##### **b) Rutile/Leucoxene**

AMC has used for its model a rutile recovery of around 87% for the PCP and 85% for the MSP. These recoveries are achieved elsewhere in the mineral sands industry. The leucoxene product is determined as a proportion of the rutile product tonnage. This is consistent with mineral sands techniques.

##### **c) Zircon**



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Due to losses in the dry mill circuits the overall recovery of zircon from ROM to ceramic (primary) grade product is less than normal mineral sands practice (which achieves plus 70% to 75%). Based on the test work conducted, AMC has accepted a figure of 50% with a further 10% recovered in lower grade zircon products.

### *Risks*

The pilot plant campaigns at Chibuto and the testwork conducted have reduced the technical risks for the PCP and MSP process circuits. The issues which could impact on mineral recoveries and operating costs are considered as:

**Slimes handling** – the slimes settlement in the PCP thickeners requires an acid pH. While technically this has worked on pilot scale, its implementation at high flow rates is a challenge. If the acid addition/lime neutralisation rates increase, operating costs will be affected.

**Composite mineral particles** – the PCP process incorporates crushing of oversize lumps to recover additional valuable mineral. Some test work has been already conducted to ensure this does not influence mineral product qualities. However, this crushing of oversize can contribute to composite particles, higher in SiO<sub>2</sub>, reporting to ilmenite product. During the project implementation stage, this aspect should be further addressed.

Overall, it is considered that the BFS has addressed the major issues in a technically sound manner.

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#### **5.5.2.2 Ilmenite Beneficiation**

Ilmenite from the MSP will be processed into high grade titania slag using a conventional electric smelting operation. High purity pig iron and carbon monoxide gas are the co-products from this process. This type of smelting technology has been used successfully by other companies and Corridor s scale (at 1 Mtpa of slag) matches the largest producer in the industry.

The ilmenite from the Corridor resource contains around 4% Cr<sub>2</sub>O<sub>3</sub> (referred to as chromite) and this is far too high to meet the specifications for acceptable titania slag products. An ilmenite roasting step has therefore been included to remove the chromite and upgrade the quality of ilmenite being fed to the furnaces. The key components of the complete ilmenite beneficiation process are ilmenite roasting, anthracite drying, electric smelting, iron treatment, slag treatment and energy recovery. These process areas are related as shown in the ilmenite beneficiation flow diagram (Figure 5.6) and the project proposals for each of these plant areas are discussed below.

#### ***Ilmenite roasting***

Roasting ilmenite for the removal of chromite is a process that has been used successfully in other production plants. An oxidizing roast is conveniently carried out in fluid bed units and the CSL project envisages using four, 80 tph fluid bed roasters. The BFS flow sheet is based on the three-stage fluid bed system which has been used in many metallurgical processes. It is typified by a high-energy efficiency and has over 25 years practical experience in ilmenite roasting.

The three-stage fluid bed roaster has been used to process ilmenite at rates up to 250 tph. The 80 tph roasters are therefore small by comparison, but by having several units available for production and coupling these to a 50,000t storage shed, the reliability of the ilmenite supply to the furnaces is effectively secured. There is still some potential to rationalise the selection of the roaster capacities to improve the project returns.

The very high level of chromite is over ten times the amount that is normally encountered in Southern African ilmenites. CSL have carried out an extensive series of pilot scale trials to ensure that the roasting and magnetic separation process can produce the correct quality ilmenite needed for smelting. The results of these tests have been examined and it certainly appears that the very high Cr<sub>2</sub>O<sub>3</sub> rejection rates which are needed (in excess of 97%) can be achieved in a full-scale plant using conventional magnetic separation equipment. The quality of the ilmenite product from the roaster is certainly comparable to other ilmenites that have been used for titania slag production. Other important compounds in the ilmenite specification include TiO<sub>2</sub>, CaO, SiO<sub>2</sub>, MgO and V<sub>2</sub>O<sub>5</sub> and all of these appear to be within acceptable limits.

The proposed ilmenite roasting plant uses the furnace carbon monoxide gas as a fuel, improving the overall energy efficiency of the process and reducing operating costs.

The yield of smelter ilmenite from the roaster is quoted at 74% and this is supported by information from the testwork reports. Other roasters using a lower  $\text{Cr}_2\text{O}_3$  ilmenite feed have been able to obtain much higher yields than this and there is some potential to increase the roaster yield in future.

*Anthracite drying and screening*

Coal drying and screening is a fairly common operation in the metallurgical industry and the reliability of this type of equipment is usually very good. The dryer forms a necessary part of the flow sheet because any moisture introduced into the furnace increases the electric power consumption significantly. Dry anthracite is also screened to remove fines from the furnace reductant and these fines can be used without difficulty in the iron injection process. No technical or operating problems are anticipated in this part of the plant and capacities appear to be sufficient to match the reductant requirements of the smelting furnaces.

At this stage of the project, the coal contracts still have to be developed. Secure supplies of good quality coal are essential to support the project and it is good to see that facilities have been provided to handle coal deliveries from different suppliers.

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**Figure 5.6 Ilmenite Beneficiation Flow Diagram**

*Smelting furnaces*

The project has selected the Direct current ( DC ) furnace for ilmenite smelting and continues to follow a trend that has been evident in South Africa for the last ten years. With the current status of knowledge and technology for smelting cold ilmenite, a 40 MW DC furnace can produce in excess of 125,000 tpa of titania slag. The eight furnaces in the CSL plan will therefore allow the plant to reach its target of around 1 Mtpa slag production.

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The project mass balance indicates a slag yield from ilmenite of 553 kg/t and an iron yield of 306 kg/t, both of which are consistent with the quality of the ilmenite feed material. The consumption rates for the key consumables, which are coal and electrodes, are also in line with current levels of performance in the business.

The project has adopted very similar equipment to other slag producers who use DC furnace technology. Features such as hollow electrode charging, single gas plant operation, conductive hearth and spray cooled roof have all been used successfully for ilmenite smelting. The selection of proven technology has been a cornerstone of the CSL strategy to reduce the process and operating risks.

Power consumption is probably the most important aspect of the process and the CSL smelting operation is based on a specific power consumption of 1100 to 1200 kWh/t of ilmenite processed. This value reflects the performance that can be achieved by a DC furnace of this particular size working under optimum conditions but it remains higher than the power consumption that is expected on the larger AC furnaces. WMC has indicated that the smelter layout is capable of accommodating a process change to ilmenite pre-heating and when this is implemented in future, it has the capability of lowering the furnace power consumption to a level that competes favourably with other producers.

The quality of the slag and iron products that can be produced by the DC furnaces is basically determined by the raw material characteristics. Current information shows that the titania slag will contain between 85% and 87% TiO<sub>2</sub> and meets all of the chemical requirements for chloride and sulphate products. No difficulties are envisaged with the quality of the tapped iron. Samples of slag and iron were produced on a pilot furnace and evaluated by potential customers. Product tapping facilities in the smelter appear to use the standard equipment and practices that have evolved in ilmenite smelting.

The preliminary design of the furnace and the building indicates that the facilities are in place to clean the process waste gas and emissions will comply with local standards. Fume and dust extraction facilities should also meet the environmental standards for the workplace.

Ilmenite smelting technology is not readily available and CSL is relying on securing experienced personnel to support the development of the smelting operation. Some preliminary smelting work using CSL ilmenite has been carried out in Sweden but that has only provided sufficient information to support the technical viability of the project. WMC will ultimately have to develop its own brand of ilmenite smelting technology but there are sufficient resources around to guarantee that this strategy will be successful.

#### ***Iron treatment***

Iron treatment is an important aspect of ilmenite smelting and the revenue from attractive iron products is essential for the business. The CSL project has focused on the production of high purity pig iron which is well priced in the ductile iron industry.

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Tapped iron from the furnace is very low in residual elements because of the high FeO content in the titania slag and this characteristic forms the basis of the high purity iron product. However, tapped iron is low in carbon and high in sulphur and the metal treatment process is needed to produce an attractive product for the market.

The CSL metal treatment plant includes facilities for carburising the iron, de-sulphurising the iron, de-slagging and pig casting the product. A silicon treatment option has also been included to meet the requirements of specialised sections of the market.

Iron treatment uses equipment and practices which are well established in the iron and steel industry. It is therefore possible to select equipment which is extremely efficient, very reliable and matches the highest levels of productivity in the business. The information in the BFS indicates that this approach has been adopted and that CSL is moving in the direction of an efficient and low risk iron treatment operation.

The de-sulphurising part of the process includes facilities for both calcium carbide and magnesium treatment in order to meet the highest standards for sulphur removal.

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Information from the mass balance shows that the metal treatment is expecting an 88.3% yield of saleable pig iron from tapped iron. There is a high rate of skull production in this estimate and normal production yields should be higher. This demonstrates a fairly conservative approach for the early years of operation.

Metal treatment is a batch operation and at full production, the iron produced from eight furnaces amounts to a 60t iron tap every hour of the day. The plant design has recognised that, at some point in the expansion program, a second iron plant will definitely be needed to support the furnace production. The precise timing of the second plant will be influenced by the developments in the productivity of the first metal treatment plant. It is envisaged that the metal treatment plant should never constrain the slag production from the furnaces.

#### ***Slag handling and treatment***

The proposed CSL slag handling and treatment process is based on a series of activities that are very similar to the practices used by other titania slag producers. At the furnaces, the slag is cast into steel slag bowls and the 20t slag block is taken away for water spray and air-cooling. This practice has been used over the years to meet the insoluble TiO<sub>2</sub> specifications for the sulphate slag fraction.

Cold slag blocks are broken by primary breaking equipment and crushed to a manageable size using jaw crushers. All of this equipment is fairly standard in the industry.

The primary aim of the slag treatment plant is to produce the maximum amount of chloride slag, which is the 850/+106 micron fraction of the milled product. The remaining 106 micron fraction is sold as sulphate fines. One of the most important parameters in the slag milling operation is the chloride slag yield and in various sectors of the industry, there have been claims to be able to produce an 85% to 90% yield of the chloride slag product. A high yield such as this requires careful selection of milling and screening equipment and lengthy optimisation of the plant. CSL has recognised the difficulties in the milling operation and opted for an 80% plus chloride yield over the life of the project. This is a conservative approach and one would expect to see improvements in the yield over time.

The proposed milling plant is based on the Loesche mill which has been used in recent titania slag projects. There is a great deal of practical experience associated with this equipment and it should be possible to draw on this experience to shorten the learning curve. However, other slag milling plants have demonstrated that there are difficulties to sort out and such issues should be investigated intensely during the project design phase.

One of the problem areas that have emerged is related to the screening and separation of the two slag products. Combinations of screens and air classifiers have been used to achieve the best separation performance but the final results are very sensitive to the plant running time. CSL has chosen to install the same type of equipment and this decision will now have to be backed up by good solutions supporting plant reliability.

*Energy recovery*

The BFS has indicated that the carbon monoxide gas from the furnaces will be recycled for energy recovery. The gas will be used at the roasters, anthracite dryer, slag dryer and other general plant applications. This intention is in line with best practice in the industry and is consistent with the strategy of a low cost producer.

*Conclusions*

The previous sections illustrate how the ilmenite beneficiation section is based on established technology and that this has been a conscious decision in order to minimise the process and operating risk factors. The yield and process efficiency factors that have been used are well supported by the operating experience in the industry and some additional test work carried out on the CSL ilmenite. The physical components of the project plant therefore appear to be sound.

One of the main risk areas for the ilmenite beneficiation plant is in the roaster magnetic separation area which up until now has not been required to treat ilmenite with such high chromite contents. However, the test work has indicated that a good quality smelter ilmenite can be produced from the CSL resource. A second risk area is in the

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performance of the slag milling plant but here the targets are fairly conservative and there is still sufficient time to ensure that the engineering for this plant is handled well.

The application of ilmenite pre-heating has not been incorporated into the project production or costing plan and from that point of view does not represent a project risk. However, the project should continue to recognise the competitive advantages that can result from including this process step and make provision for the incorporation of such a process in future. Generally speaking, the process and operating risks in the ilmenite beneficiation plant could be considered to be low.

*Operating costs*

WMC has not published its detailed operating cost estimate and considers that information sensitive. In assessing the reasonableness of the estimate, AMC has reviewed percentage contributions to costs against industry knowledge and concluded that the cost estimates are appropriate.

**Table 5.2 Ilmenite Beneficiation Plant - Percentage of Total Conversion Cost**

	<b>Roasting &amp; Magnetic Separation</b>	<b>Smelting including Anthracite &amp; Off-gas</b>	<b>Slag Handling</b>	<b>Iron Processing</b>
% of total conversion cost	3%	85%	3%	9%

For the ilmenite smelting process, it is normal to see that the smelting furnace accounts for over 80% of the operating cost. Iron processing ranks second in the cost structure and usually accounts for over 10% of the operating cost.

In a typical plant producing titania slag, the key cost drivers are always power, coal and electrodes. Maintenance, mobiles and consumables combine in the next largest group and the labour related costs usually make up the balance. As an approximate distribution (which is always region sensitive), one would expect to see the conversion cost of ilmenite broken down per Table 5.3 and these indicative values can be compared with the CSL project estimates.

**Table 5.3 Main Contributors of Operating Cost for Ilmenite Beneficiation**

	<u>Industry estimate</u>	<u>CSL project</u>
Power	±40%	38%
Coal + electrodes	±30%	31%
Consumables + maintenance	±20%	24%
Labour and balance	±10%	7%

It is therefore concluded that the costing split for the CSL project appears to be fairly similar to the experience in other plants. As a check on the reliability of the values that have been used, it is fairly easy to assess the cost contribution of the major items. These are power, coal and electrodes.

***Power***

Typical power consumption for the entire beneficiation plant, including motive power, is 1500 kWh/t of ilmenite or 2.7 MWh/t of slag. Based on the estimate in the BFS cost of power, the total estimate per tonne of slag is considered realistic.

***Coal***

Typical coal consumption in the process is around 150 kg/t of ilmenite or 270 kg/t of slag. If the cost of coal is around \$US80/t, the contribution to costs would be \$US22/t of slag, generally consistent with the BFS estimate.

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##### *Electrodes*

Typical electrode consumption rates in the process are around 2.5 kg/t of ilmenite or 4.5 kg/t of slag. With a cost of graphite electrode around US\$4/kg, the contribution to costs would be US\$18/t of slag. Again the BFS estimate is considered reasonable on this basis.

This snapshot of the key cost components in ilmenite smelting shows that the BFS estimate for the operating cost is realistic. Furthermore, the BFS documentation shows that the operating costs have been investigated and broken down in great detail. The accuracy of the final value was quoted at  $\pm 10\%$ . All of the numbers used were expressed in Dec 2001 US dollars and have been updated for escalation for this assessment.

##### *Capital costs*

The ilmenite beneficiation plant represents less than 20% of the capital cost of phase 1 for Corridor. Most of the capital items for the ilmenite beneficiation plant appear to be sourced in South Africa. AMC has reviewed the capital cost estimation document for the BFS and concludes that the procedures used for obtaining quotes should have ensured an estimate accurate to around 10%.

### **5.5.3 Product Transport and Export Facility**

Current planning is that the products will be transported by road to Chongoene where it is planned to establish a 1 km long jetty. This will avoid the need to transport product across the Limpopo River floodplain as well as perceived capacity limitations at Matola, the original choice of export facilities. Transport will be by road train for about 80 km from the mine to the export facilities. Water depth will be adequate for Panamax vessels and the jetty can be extended to handle expanded production.

Since completion of the BFS, cost estimates for constructing the jetty have been tightened to a plus or minus 15% accuracy and updated estimates, adjusted to 2004 dollars, have been included in AMC s valuation model. Environmental permitting of the jetty has been completed and the road option has been approved. Final government permitting is awaited.

AMC has discussed the plans with WMC management. The cost estimating procedures are thought to ensure a reliable capital and operating cost estimate which, after updating to 2004 dollars, has been used by AMC in its model.

### **5.5.4 Engineering and Infrastructure**

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The Corridor Sands site is close to the border with South Africa and to major infrastructure in that country. Power supply is a critical item and presently it is planned to draw on existing grid power sourced from South Africa's Eskom which would be wheeled to a sub-station close to the Mozal aluminium smelter at Maputo, from where a new power line would be built to Chibuto. Negotiations continue both in regard to unit costs and the balance between leasing and ownership of capital facilities. Other potential sources, including one based on gas from an existing pipeline, are being considered.

Power for Chongoene can be sourced from a local grid or from a line from Chibuto.

The smelting facilities also require import to site of substantial quantities of anthracite coal. Several potential sources are being considered.

Water for processing and for site usage will be sourced from nearby rivers supplemented by a dam to be built by CSL and by annual releases from an existing dam. Approval of extraction and storage is in place.

Construction materials will largely be sourced either from Maputo (aggregate and cement) or South Africa.

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Infrastructure is a large proportion of initial capital costs. AMC has discussed the infrastructural requirements and their cost estimation with management and no significant issues of feasibility, cost variance or permitting have been advised.

#### **5.5.5 Management and Labour**

Total employment at the 375,000 tpa slag level is estimated at around 1,100 people including 300 mining contractors. It is planned that 650 of the workforce will be Mozambiquan nationals. At 1 Mtpa slag the respective figures are 1400 and 1200.

There is an existing Chibuto township which will be expanded by over 600 houses when the operation reaches full production, about 200 of those being built for the first phase of 375,000 tpa slag.

An action plan for training has been established.

It is planned that the project manager will be located on site with small supporting offices in Johannesburg and Maputo.

AMC notes that planning in this area is appropriate and that areas of risk will relate to training, absences due to malaria and AIDS and re-settling existing households from site. The BFS includes action plans to address these risk areas.

#### **5.5.6 Environment and Community**

##### **5.5.6.1 Summary**

Environmental and community issues have been thoroughly addressed and, based on review of the BFS and discussion with AMC and WMC personnel, it is considered that there are no fatal flaws or unmanageable major environmental risks to the project. Statutory environmental approval has been obtained for all project elements, including notification of approval for the Alternative Export Facility. Mine rehabilitation, focussed on re-establishment of agricultural productivity, has been well planned, and provides for incorporation of inert processing wastes in backfill operations. Rehabilitation costs are considered reasonable in comparison with Australian experience, and are based on contractor estimates and third-party review. Closure costs for the tailings storage facility and plant have not been developed, as these activities would take place several decades into the future.

##### **5.5.6.2 Environmental Impact Assessment and Statutory Approval**

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The previous owner of the project conducted an extremely thorough environmental impact assessment ( EIA ) for the project, easily meeting best-practice and international standards, and equal to the most exacting statutory requirements in Australia. Environmental Management Plans ( EMPs ) have also been developed, based on the impact identification and risk assessment elements of the EIAs. The result is a robust basis for monitoring impacts during construction and operations, and for carrying out impact mitigation activities on a progressive basis over the life of the project.

The EIAs are particularly notable for their balanced assessment of environmental risk on an issue-by-issue basis which has allowed ranking of risks and thus the development of EMPs which direct resources to monitoring and mitigation in an efficient manner.

A crucial element of the project is community impact, with large numbers of people needing to be relocated. Much effort has been directed to identifying logistical and socio-political challenges, and a sound program of communication and assistance has been developed. All such relocation programs carry risks of social disturbance, but CSL has identified risks and developed thorough programs to practicably manage those risks. Importantly,

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considerable effort has been directed to liaison and consultation with government at all levels, and with communities themselves. It is difficult to argue that a more rigorous approach to this sensitive challenge could have been developed.

There appears to be no basis for technical environmental threat to complete statutory environmental approval, including licences and permits. This view is supported by the fact that an environmental fatal flaw study has revealed no cause for concern that biophysical factors might hazard the project s development. Socio-political factors will be a constant challenge but, as noted above, CSL could not be better prepared to manage that challenge.

#### **5.5.6.3 Provision for Rehabilitation and Closure**

The BFS and related documents identify the elements of a progressive rehabilitation program: backfilling of mined-out pits with coarse tailings; mixing of fines into the top 3m of the reconstructed soil profile to improve water and nutrient retaining properties and thus agricultural productivity; trialling various crops.

Costings for these rehabilitation activities have been developed from quotations from prospective mining contractors, and from a comparative study by a consultant. The resultant costs have then been incorporated into project budgets. Both the quantum and the unit rates for rehabilitation are considered reasonable, based on comparison with Australian costs.

Rehabilitation of the tailings storage facility ( TSF ) has not yet been provided for, as it is an operation that will occur several decades into the future. At full development, the TSF will have an area of 12 km<sup>2</sup> (1,200 ha). Given that rehabilitation is a relatively uncomplicated operation involving minor landscaping and drainage, mixing of coarse tailings in upper layers and ploughing and revegetation, a cost of \$5,000/ha is considered reasonable a total of \$6M.

Similarly, closure of plant and infrastructure has not been considered, as it will occur several decades into the future. A figure of say \$50M (2004 dollars) might be considered, although WMC suggests a lesser figure is appropriate.

#### **5.5.6.4 Waste Management**

In addition to the inert wastes from the PCP (essentially unaltered soil constituents) being returned to the mine pits as backfill, the BFS identifies other streams as suitable for backfill or placement in the tailings storage facility: HMC dust from dust-control equipment; tailings from the rutile spirals circuit; rejects from the ilmenite circuit; magnetic rejects from the rutile circuit; tailings from the wet zircon circuit; magnetic waste from the dry zircon circuit; ilmenite roaster dust; smelter materials handling off-gas dust; clarifier sludge; roaster magnetic separation waste (high chromite, but unaltered from its natural state in the soil).

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A number of other streams are identified as requiring at least initial storage prior to assessment of leaching risks. These streams include sludge and effluent from the hot acid leach circuit; magnesium oxide and alumina refractory wastes; desulphurisation slag from iron treatment; fume extraction dust; domestic waste; sewage and laboratory waste. The BFS properly notes that, based on leaching potential, some of these materials may need storage in lined facilities, which would be relatively inexpensive to construct and operate, as the volumes are relatively small.

### **5.6 Economic Potential**

The BFS includes a number of financial analyses based on various projections for market penetration and product prices. Clearly sales and price assumptions are a major sensitivity.

These analyses take into account agreed royalties and tax. The main imposts are a royalty of 3% on nett revenue from the sale of heavy mineral products and a corporate tax of 17.5% for the first 10 years after full production thereafter 35%. The royalty calculation for ilmenite revenue is assessed on an agreed transfer pricing basis. For corporate tax, depreciation is based on a 10-year straight line method. Other minor taxes are also applicable.

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For AMC s review, it established a 20-year market projection for chloride slag. WMC has updated the BFS estimates as noted below and produced a model to fit AMC s projections. AMC then made changes consistent with its review mainly in areas of product pricing and mining schedules and MSP costs. WMC s updates to the BFS are:

Exchange rate. The Rand:US\$ rate is projected to increase to 10:1 by 2011 and for analysis is thereafter considered constant. AMC has not considered this issue.

Capital expenditure has been increased by 15% to account for both inflation and changes in exchange rates.

Power prices have been increased by about 13% in line with changes experienced in Southern Africa. Actual prices are being negotiated.

Coal prices having been increased from US\$75/t to US\$95/t.

All other operating costs except labour have been escalated by 15% for Rand-based costs or 5% for costs in other currency. Labour costs were not escalated as it was felt that earlier estimates were high.

The potential economics for Corridor Sands are driven by the ability to gain market penetration and the rate at which that can be increased and are sensitive to commodity price assumptions more than to cost assumptions. After its review, AMC recommended a base case for consideration by Grant Samuel for valuation. Inputs to the base case are summarised in Table 5.4. All revenues and costs are expressed in terms of 2004 US dollars.

Capital costs used by AMC are not significantly different from those updated from the BFS. Because WMC has requested commercial sensitivity, the operating cost estimates are not included.

AMC observes that a valuation based on this model should take into account sensitivities particularly of product prices; that the value should be weighted for the significant marketing risk and for sovereign risk; and that the value should consider the very large resource available to ongoing mining after the 20 years considered.

**Table 5.4 Inputs to Base Case Valuation Model**

Production ramp up:	First full production year 2009 from one furnace (126,339t slag), increasing to three furnaces in 2011, four in 2012, five in 2015/16 (550,000t in 2017), six in 2018, seven in 2020/21 (825,000t) and eight (962,500t rate) from 2023 to 2027
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ROM ore treated:	622 Mt at 5.32% ilmenite, grade decreasing from 8.1% in 2009 to 4.5%; 0.026% rutile/ 0.173% zircon	
Product Prices:		
Chloride Slag	US\$350 initially then US\$355	
Slag fines	US\$260 initially then US\$270 (US\$225 then US\$235 into China)	
Rutile	Initially US\$400, then a steady US\$420	
Leucoxene	Initially US\$360, then a steady US\$380	
Zircon	Average US\$571 with allowance for some secondary zircon	
HPPI	US\$235	
PCP Recovery	91.7%	
MSP Recovery	96.0%	
Roasting Yield	78.0%	
Slag Yield	55.3%	
Other losses	2%	
Capital Costs US\$M	Initial	Life of Mine
PCP and MSP	US\$171	US\$251
Roasting Smelting and Handling <sup>1</sup>	US\$403	US\$577
<b>Total</b>	<b>US\$574</b>	<b>US\$828</b>

<sup>1</sup> Including infrastructure

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#### **5.7 Risks**

After its review, AMC summarises the risk issues for a potential Corridor Sands project as follows.

Markets and product prices: Significant risks as discussed in this report.

Technical (mining, processing, infrastructure): Limited risks as discussed in this report.

Sovereign risk: A moderate risk associated with the project location.

#### **5.8 Opportunities**

The very large resource base provides an opportunity both for a very long life operation and for expansion beyond the levels considered in AMC s model, if justified by market growth.

The modular nature of the planned ilmenite beneficiation provides flexibility for a future CSL operation to respond efficiently to changes in demand for its slag production.

#### **5.9 Valuation**

In addition to the valuation which can be derived from a consideration of the potential economics, other information and benchmarks that can be taken into account include:

WMC s costs including acquisition which total around US\$115M, nett of IDC s option exercise.

The option exercise fee for IDC s 10% interest which, together with associated cost, implies a value for WMC s 90% of US\$99M.

The acquisition in 2001 by Tigor of 40% of the Hillendale project in South Africa for \$230M at a time when the estimated remaining capital cost was about \$500M.

## **6 TECHNOLOGY**

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Technical Delivery is a division charged with developing technical improvements and with assessing and introducing new technologies across the mining and processing activities of the company. Technology developments for exploration are managed by the WMC Exploration Group.

The group reports to a General Manager Technology and develops an annual Technical Plan which consolidates site, business unit and corporate technical portfolios to support business objectives defined in the strategic plans.

The individual technical improvement projects are grouped in the three operational Business Units and also in a unit referred to as Business Strategy and Development. The latter contains Exploration Group projects as well as projects applicable to the Business Units, partly individually and partly across the board.

At the time of the report, some 207 individual projects are listed, 63 of them in CUD, 16 in FBU and 60 in NBU. Of the balance of 68 in Business Strategy and Development, 19 pertain to the Exploration Group, 13 pertain to Group Projects and the remainder to Technical Delivery, of which 19 represent collaborative sponsorship projects.

In assessing these projects internally WMC projects the potential value that might be derived by successful research and implementation of a technical improvement and applies success factors to reduce those values to what is called an Expected Monetary Value ( EMV ). Of the 207 projects listed, about half currently have an EMV assigned to them.

In assessing a value for Technology, AMC has reviewed the list for projects whose potential is already included in one of the production scenarios provided to Grant Samuel for the Business Units. No separate value has been assigned to such projects. Of the remainder, a few projects have been identified to have an estimable market value in the context of (i) potential sale of the technology for cash, licence fee or the like and/or (ii) for commercial use of the

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technology through fees, licences or royalties and/or equity earned in other projects and/or (iii) specific value to a potential acquirer of WMC given perceived willingness to attribute value for past work on a business improvement not otherwise available to the acquirer.

Projects AMC has assigned value to in this way include:

Exploration databases and systems.

WMC s proprietary EM System.

Re-treatment of uranium tailings at Olympic Dam.

Olympic Dam smelter Taphole and concentrate burner developments.

Of around 30 remaining projects which have been assigned an EMV and are not otherwise assessed through the production scenarios, most are judged by AMC to be initiatives which may have significant value if ongoing work generates a successful result but for which at present, no probability of success is obvious and for which no value can be quantified in the sense of value to the market as a whole or to a potential acquirer. AMC has considered the previous and budgeted expenditure on this general technical initiative work and assigned a nominal value of for it.

The total value assigned to technology in this way is \$15M to \$25M.

## **7 EXPLORATION**

As part of its engagement by Grant Samuel, AMC has provided Grant Samuel with comments on WMC s exploration activities and assessments of the technical value of WMC s non-mine exploration interests for the purposes of Grant Samuel s assessment of the overall value of WMC.

AMC has assessed the technical value of WMC s non-mine exploration interests, including Yeelirrie, to be in the range of \$225M to \$370M. It should be noted that these are assessments of Technical Value as defined in the Valmin Code and hence do not take into account any share market premium or discount which may currently be implied. Given that value range compared with the current share market capitalisation of WMC, AMC does not consider that these exploration properties are material to the overall value of WMC.

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There is no information contained in the comments on exploration activities and on technical values provided by AMC to Grant Samuel which WMC has advised it considers to be commercially sensitive in relation to its exploration strategies and its joint venture relationships.

On the basis of these concerns and the immateriality of the exploration properties with respect to the overall value, WMC has requested and Grant Samuel has agreed, that details of AMC's comments on exploration activities and on technical valuation of the exploration interests not be included in this report.

### **8 SOURCES OF INFORMATION**

The assessments reported herein are based on numerous documents, reports, correspondence, plans and sections and other information provided to AMC by WMC and reviewed by AMC on the WMC sites and in its offices. Much of the information was available in electronic data rooms set up by WMC, electronic copies of which were provided to AMC for its engagement. Information was also obtained via site inspections and communications with WMC site and head office management personnel.

A list of material references used by AMC is presented in Appendix B. This list is not exhaustive.

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Diagrams included in this report have been sourced from WMC, as have resource and reserve estimates and past performance data.

**9 QUALIFICATIONS**

AMC is a firm of mineral industry consultants whose activities include the preparation of due diligence reports and reviews on mining and exploration projects for equity and debt funding and for public reports.

The contributors to this report included:

<u>Name</u>	<u>Qualifications</u>	<u>Affiliation</u>	<u>Involvement</u>
<b>Copper Uranium Division</b>			
PA Balka	BEng (Mining)	AMC Principal Mining Engineer	Team leader and conducted mining and engineering review
P Stephenson	BSc(Hons)	AMC Principal Geologist	Assessed resource, reserve and exploration areas
CR Johnson	BSc(Hons)	Subconsultant - Metallurgist	Conducted the metallurgical processing review
PL McCarthy	BSc(Min), MGeoscience (ME)	AMC Managing Director	Review of AMC s assessment of CUD
<b>Nickel Business Unit</b>			
P Cunningham	BEng (Mining)	AMC Principal Mining Engineer	Acted as a team leader on the later studies updating the report for the NBU and assessed underground mining and general engineering issues
D Carville	BSc (Hons) Geol	AMC Principal Resource Geologist	Assessed resource, reserve and exploration area
P Smith	BEng (Mining)	AMC Senior Mining Engineer	Assessed open pit mining and related aspects.
P Hunt	BChemE (Hons) Grad Dip Bus Admin	Subconsultant - Process Engineer	Conducted process review
D Hall	BSc (Technology)	Subconsultant - Metallurgist	Conducted smelter and refinery review
C John	BSc (Agric) (Hons) PhD	Subconsultant -	Conducted environmental review

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Environmental affairs and management

**Fertilizer Business Unit**

P Fisher	BEng(Mining)	AMC Principal Mining Engineer	Team leader and reviewed mining, ore reserves and gypsum disposal
D Carville	BSc (Hons) Geol	AMC Principal Resource Geologist	Assessed resource, reserve and exploration areas
Dr J Reid	BSc (Hons) Metallurgy	Subconsultant -	
	PhD (Met Eng)	Mineral Processing	
	MBA		Carried out the processing and plant operating cost review
H Middlemis	BEng (Civil)	Principal of Aquaterra	
	M.Eng.Sc (Hyd)		Provided specialist consulting advice on ground water issues
L Gilbert	BEng (Civil) MEngSc	Principal of Gilbert and Associates	Provided specialist consulting advice on surface water issues
C Joyce	BEng (Civil)	Managing Director of Resource Strategies	Conducted environmental review

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<b><u>Name</u></b>	<b><u>Qualifications</u></b>	<b><u>Affiliation</u></b>	<b><u>Involvement</u></b>
S Bartlam	BEng (Civil)	Project Manager of Resource Strategies	Provided specialist consulting advice on environmental issues
<b>Corridor Sands</b>			
GR Appleyard	BSc (Hons),BA	AMC Director	Team leader and reviewed geological, resource, reserve and exploration aspects
M Chesher	BSc Dip Ed	AMC Senior Mining Engineer	Carried out mining review and prepared production scenarios
G Randall	BTech Metallurgy	Subconsultant - Metallurgist	Provided specialist consulting advice on processing aspects
N Dawson	BSc (Metallurgy)	Subconsultant - Metallurgist	Provided specialist consulting advice on processing aspects
D McLeod	BCom, MBA, CPM & AAIM, CA, FCA	Subconsultant - Marketing Professional	Provided specialist marketing input
C John	BSc (Agric) (Hons) PhD	Subconsultant - Environmental affairs and management	Carried out environmental review
<b>Exploration and Technology</b>			
GR Appleyard	BSc (Hons),BA	AMC Director	Assisted with coordination of AMC s overall review and assessed and valued the Exploration and Technology Divisions
R Adrian	BSc (Chem)	Principal of Project Advisory Services	Provided specialist consulting advice on Yeelirrie metallurgical and process plant aspects
<b>Coordination and General Review</b>			
LJ Gillett	BEng (Mining), Dip Geoscience (ME)	AMC Director	Coordinated AMC s review and participated in overall review

AMC has completed assignments of a similar nature to this one for Grant Samuel. AMC and its subconsultants have also carried out technical consulting assignments for WMC and for many of its operations and projects. Neither AMC nor its sub-consultants have any business relationship with either Grant Samuel or WMC other than the carrying out of individual consulting assignments as engaged.

In the past two years, AMC has completed approximately 50 technical consulting assignments for WMC and its operations in the areas of:

Geotechnical measurements and reviews

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Benchmarking of costs and performance

Backfill planning and reviews

Review of mining contracts and equipment

Assistance with safety standards and audits

Ventilation surveys

Mine planning and design.

Similarly, subconsultants used by AMC on this assignment, in some instances, have recently undertaken consulting assignments or are undertaking consulting assignments on WMC operations or projects, but AMC is satisfied as to their independence based on enquiries made of WMC and the subconsultants concerned as to their roles.

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#### **Specialist s Technical Report**

AMC has provided a number of Specialist s Technical Reports to Grant Samuel in recent years, including those in relation to the mineral assets of Normandy Mining Limited (2001), MIM Holdings Limited and subsidiaries (2002) and Abelle Limited and subsidiaries (2004).

In all of the above assignments, AMC and its subconsultants have acted as independent parties. While some employees of AMC and its subconsultants may have small direct or beneficial shareholdings in WMC, neither AMC nor the contributors to this report nor members of their immediate families have any interests in WMC that could be reasonably construed to affect their independence. AMC has no pecuniary interest, association or employment relationship with WMC or with Grant Samuel.

AMC is being paid a fee according to its normal per diem rates and out-of-pocket expenses in the preparation of this report. AMC s fee is not contingent upon the outcome of the transaction subject to this report.

In a letter relating to our engagement, WMC agreed to comply with those Obligations of the Commissioning Entity under the Valmin Code as set out in paragraphs 27 to 29 of that Code, including that to the best of its knowledge and understanding, complete, accurate and true disclosure of all relevant material information has been made.

In preparing this report, AMC has relied on information provided by WMC and AMC has no reason to believe that information is materially misleading or incomplete or contains any material errors. WMC has represented in writing that to the best of its knowledge, it has provided AMC with all material information relevant to the operations and projects described in this report. WMC has been provided with drafts of our report to enable correction of any factual errors and notation of any material omissions. The views, statements, opinions and conclusions expressed by AMC are based on the assumption that all data provided to it by WMC are complete, factual and correct to the best of WMC s knowledge. To a limited extent, AMC s assessments and projections have relied on commercially sensitive information which, at WMC s request and Grant Samuel s agreement, AMC has not detailed in its report.

Such information concerns:

KNC s direct cash operating cost breakdown and total costs per pound of nickel including third party ore purchase costs. Similarly, other NBU operating cost breakdowns and some forward capital expenditure projections

WMC s rail freights and sulphuric acid and natural gas supply cost projections for fertilizer production

WMC s assessment of the market for Corridor Sands product

Details of AMC s assessment of WMC s exploration properties and AMC s technical valuation of those properties.

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We have also, at WMC's request, not included in our report, breakdowns of total resource and ore reserve estimates for LNO and Yakabindie into individual deposits or operations as publishing of such information would not be consistent with WMC's reporting practice.

This report and the conclusions in it are effective at 21 December 2004. Those conclusions may change in the future with changes in relevant metal prices, exploration and other technical developments in regard to the projects and the market for mineral properties.

WMC has provided AMC with an indemnity in regard to damages, losses and liabilities related to or arising out of our engagement other than those arising from illegal acts, bad faith or negligence on our part or our reliance on unauthorised statements from third parties.

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This report has been provided to Grant Samuel for the purposes of its valuation. AMC has given its consent for its report to be appended to Grant Samuel s report and to be included in the Target s Statement and has not withdrawn that consent before their lodgement with the Australian Securities & Investments Commission. Neither this report nor any part of it may be used for any other purpose without written consent.

The signatories to this report are corporate members of the AusIMM and bound by its Code of Ethics.

/s/ GR Appleyard  
**GR Appleyard**  
**F AusIMM, CP Geo, MCIM**  
**Director**

/s/ LGillett  
**LGillett**  
**M AusIMM (CP), MMICA**  
**Director**

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\$	Australian dollar
\$M	dollars million
2D	two dimensional
A\$	Australian dollar
A\$/t	Australian dollars per tonne
A\$M	Australian dollars million
Al <sub>2</sub> O <sub>3</sub>	alumina
AMC	AMC Consultants Pty Ltd
ARI	average recurrence interval
As	arsenic
CAF	cemented aggregate fill
CaO	calcium oxide
CCD	counter current decantation
Co	cobalt
Corridor	Corridor Sands Project
Cr <sub>2</sub> O <sub>3</sub>	chromium trioxide
CSBP	CSBP Limited
CSL	Corridor Sands Limited
Cu	copper
CUD	Copper Uranium Division
DAP	di ammonium phosphate
DC	direct current
DNRM&E	Department of Natural Resources, Mines and Engineering
EL	Exploration Licence
EM	electromagnetic
EMOS	Environmental Management Overview Strategy
EMP	Environmental Management Program
EPA	Environmental Protection Authority
ER	electrorefined
ESP	electrostatic precipitator
EW	electrowinning
FBU	Fertilizer Business Unit
FCF	flash converting furnace
Fe:MgO	iron:magnesia ratio
FeO	iron oxide
Fe <sub>2</sub> O <sub>3</sub>	ferrous oxide
FOB	free on board
FSF	flash smelting furnace
GIS	Geographical Information System
Gl	giga litre
g/l	grams per litre
Grant Samuel	Grant Samuel & Associates Pty Ltd
GRIP I	Group Improvement Project Phase One

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GRIP II	Group Improvement Project Phase Two
GRIP III	Group Improvement Project Phase Three
HAL	Hot Acid Leach
HDPE	high density polyethylene
HMC	heavy mineral concentrate
HWL	hangingwall limb
ID <sup>3</sup>	inverse distance to the power of 3

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JORC Code	Australasian Code for Reporting of Mineral Resources and Ore Reserves, Prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC), September 1999
kl	kilolitre
km	kilometre
km <sup>2</sup>	square kilometre
KNC	Kambalda Nickel Concentrator
KNO	Kambalda Nickel Operations
KNR	Kwinana Nickel Refinery
KNS	Kalgoorlie Nickel Smelter
kt	thousand tonnes
ktpa	thousand tonnes per annum
lb	pound
LHD	load-haul-dump
LME	London Metal Exchange
LNO	Leinster Nickel Operations
LOM	life of mine
LPL	low pressure leach
m	metre
M	Million
m <sup>3</sup>	cubic metre
mAHD	metres Australian Height Datum
MAP	mono ammonium phosphate
MAP-S	mono ammonium phosphate sulphur
maxam	coarse ammonium sulphate product
Mbcm	million bank cubic metre
MCPM	Monastery Creek Phosphorite Member
mg	milligram
MgO	magnesia
MIM	Mount Isa Mines
Minara	Minara Resources Limited
MKO	Mount Keith Operations
MI	million litres
ML	Mining Lease
mm	millimetre
MPI	MPI Nickel Pty Ltd
mRL	metre Reduced Level
MSP	Mineral Separation Plant
Mt	million tonnes
Mtpa	million tonnes per annum
MW	megawatt
N	nitrogen
N:P	nitrogen:phosphorous ratio
NBU	Nickel Business Unit
Ni	nickel
NNW	north northwest
NPV	Nett Present Value
ODBC	Olympic Dam Breccia Complex
OMG	Outokumpu Mining Group
Oz	ounce
P <sub>2</sub> O <sub>5</sub>	phosphate
pa	per annum



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PCP                    Primary Concentrator Plant  
pH                    measure of acidity and alkalinity

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PL	Prospecting Licence
PLS	pregnant liquor solution
PMs	precious metals
QFO	Queensland Fertilizer Operations
RAB	rotary air blast
RAB	rotary air blast
RC	reverse circulation
ROM	run of mine
S	sulphur
S:Ni	sulphur:nickel ratio
SiO <sub>2</sub>	silicone dioxide
SAG	semi autogenous grinding
SDR	stope design reserves
SLC	sub level caving
SLOS	sublevel open stoping
SMC	Southern Mining Corporation Ltd
SMR	stope mined reserves
SO <sub>2</sub>	sulphur dioxide
Specialist	As defined in the Valmin Code (D34), a Specialist must be an independent and appropriately qualified and experienced mining engineer, geologist, metallurgist or other appropriately experienced technical professional and be a corporate member of a relevant, recognised professional association having an enforceable code of ethics
SX	solvent extraction
t	tonne
t/hr	tonnes per hour
TDS	total dissolved salts
Technical Report	As defined in the Valmin Code (D35, C12), a report which deals with aspects of a technical assessment of the actual or potential economic production from a mineral asset and includes geological, mining and metallurgical reports but does not address matters such as a Valuation Report (D40) where mineral assets or securities are valued or the fairness and reasonableness (D16, C12, C13, C14) of a transaction relating to mineral assets
TiO <sub>2</sub>	titanium dioxide
tpa	tonnes per annum
tpd	tonnes per day
tpvm	tonnes per vertical metre
U <sub>3</sub> O <sub>8</sub>	uranium oxide
V <sub>2</sub> O <sub>5</sub>	vanadium oxide
US\$	United States dollar
Valmin Code	Code and Guidelines for Technical Assessment and/or Valuation of Mineral and Petroleum Assets and Mineral and Petroleum Securities for Independent Expert Reports (The Valmin Code), March 1998
WA	Western Australia
WHB	waste heat boiler
WHIMS	wet high intensity magnetic separator
WMC	WMC Resources Limited
WMCF	WMC Fertilizer Pty Ltd
Xstrata	Xstrata plc

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**APPENDIX B**

**REFERENCES**

AMC was provided with copies of, or given access to, electronic data rooms set up by WMC for the purposes of AMC s engagement. In addition to the items listed below, AMC s assessments relied on numerous emails, memos, spreadsheets, charts, plans, sections and presentation material provided for its review and visits to sites.

**COPPER URANIUM**

***General***

Copper Uranium: Capex (WMC internal document: amc20041123 capex 23 Nov 04.pdf )

Copper Uranium: Overview - Strategic Plan Likely Case (WMC internal document: amc all final.pdf )

Extra information provided to AMC on November 251.ppt

Increasing Value to Olympic Dam Operations: A Collaborative Review to Identify Additional High Quality Ore, 18 - 21 May 2004. (WMC internal document: Increasing Value to Olympic Dam Operations.pdf )

James, B. ODO Recovery Opportunities Report. Doc number TDG100 (WMC internal document: Recovery Document Rev2.pdf )

ODO Cost reduction program: CU Business Improvement Team, 24 November 2004 (WMC internal document: Cost Reduction Program (final) ver3.pdf )

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Olympic Dam: Capability and Uptime Performance, November 2004. (WMC internal document: ODO Cap & Uptime V3.pdf )

Process Plant Order of Magnitude Capital Cost Estimate (+/\_40%). ( Process Capex Schedule.pdf )

SAP expenses 2000 by element.xls

SAP expenses 2001 by element.xls

SAP expenses 2002 by element.xls

SAP expenses 2003 by element.xls

SAP expenses 2004 by element.xls

Young, John. Internal WMC memorandum dated 2223 November 2004. 2004 Strategic Plan Likely Case Capex. ( Capex 23 Nov 04 v1.doc )

### ***Environment***

AMC presentation Infrastructure Environment.ppt

Environmental Management and Monitoring Report, 1 January 2003 to 31 December 2003. Report ODCENV17 ( 2003 EMMR.pdf )

Olympic Dam Water Management Strategy Report No. 2, October 2001. ODE 3000 RPE 0004. ( Water Strategy 2001.pdf )

Water and Tailings, November 2004. (WMC internal document : Water and Tailings\_AMC November 2004.ppt )

WMC Olympic Dam Operation: Closure Plan. ( closure plan and appendix1.pdf )

*Mining*

Beighton Mining Consultants. Olympic Dam Mining Method Desktop Study Summary Report ( Mining Desktop Summary.doc )

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Mine Operating Plan Likely Case - WMC internal document. (MOP - Likely Case - AMC241104.ppt)

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*The Market for Uranium*

**The Market for Uranium:**

**Supply, Demand and Prices 2004-2025**

***International Nuclear, Inc. Background** - Founded in 1995, International Nuclear, Inc. (iNi) is an independent consulting organization focused on the front end of the nuclear fuel cycle. Its principal activities include forecasting of uranium supply-demand-price trends, analysis of uranium production costs, and evaluation of potential uranium development projects. Key personnel include: Thomas C. Pool, Mining Engineer and Chairman with 30 years experience in the uranium industry mainly as a technical and economic analyst, and Dustin J. Garrow, MBA and President with 25 years experience in the industry mainly in marketing and business development. Based in Golden Colorado, USA, iNi is the leading independent analysis firm in the uranium industry and serves a wide variety of clients including nuclear utilities, uranium producers, governments and intermediaries. This is an independent report, prepared in its entirety by iNi. It is largely based on our latest multi-client report titled *Uranium Supply / Demand Analysis and Price Forecast: 2004 - 2025* which was released in October 2004.*

**Introduction**

Uranium is currently sold only for use as nuclear fuel. This is in contrast to most other metals which have, typically, multiple uses and multiple markets. Uranium's market is small; a total of perhaps 100 buyers worldwide. Yet it is a very important market as nuclear power accounts for almost 20 percent of the world's electricity supply.

After reaching historic lows in the 1990s, uranium prices have risen substantially in the past 18 months from approximately US\$10.00 per pound U<sub>3</sub>O<sub>8</sub> in early 2003 to over US\$20.00 per pound U<sub>3</sub>O<sub>8</sub> by late 2004.

Major factors influencing this rapid increase include: a weak US dollar compared to currencies in the major uranium producing countries; recent disruptions in the uranium supply chain; waning commercial uranium inventories; Russia's withdrawal from the uranium concentrates market; and increasing uranium requirements. On a more fundamental basis, the outlook for nuclear power has changed dramatically toward the positive since 2000. Global warming concerns, an excellent safety record, increasing efficiency, competitive costs, progress on waste disposal issues, and continuing new reactor installations have all contributed to an atmosphere of healthy growth for the nuclear industry in general.

As a result of these influences, the market for natural uranium concentrates has evolved from a market driven by excess secondary supplies to one driven by primary production. This change is not fleeting, but fundamental; it is the foundation of the future and must be recognized by both producer and consumer alike.

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**Historical Uranium Prices**

**Recent Uranium Spot Market Prices**

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**Table of Contents***The Market for Uranium***Nuclear Generating Capacity Is Increasing**

According to the World Nuclear Association (WNA), as of October 2003, there were a total of 441 operable commercial nuclear power plants (NPP) with an aggregate installed generating capacity of 361,330 Mwe. Another 30 NPPs (totaling 25,258 Mwe) are under construction. New construction is presently centered in Asia with China, South Korea and India in the forefront.

Substantial gains in net capacity factor are being registered throughout the world. These gains simply mean more operating time for reactors and, hence, more fuel consumption. This trend is expected to continue well into the future.

**Average Load Factors 1990-2002, By Region (%)**

<b>Region</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Americas (ex USA)	60.1	69.9	63.6	65.2	64.5
USA	66.4	77.2	88.3	86.8	87.1
EU (ex France)	72.5	77.8	84.6	86.1	84.9
France	64.4	72.7	74.1	72.8	77.5
Non-EU Europe	78.7	74.1	77.5	73.7	79.6
NIS (FSU)	65.5	54.7	67.1	71.2	71.7
East & SE Asia (ex Japan)	76.6	80.5	84.9	84.7	84.7
Japan	71.8	75.9	82.2	79.1	77.3
South & West Asia, Africa	52.1	55.8	62.1	69.6	66.4
World Average	68.1	73.5	75.5	76.6	77.1

*Source: World Nuclear Association*

In the U.S., since March 2000, a total of 19 reactors have been granted operating license extensions, adding 20 years to the typically-anticipated plant life of forty years. Operating license extension applications have been filed for another 15 reactors while an additional 17 units are expected to submit applications during 2003-2007.

U.S. NPP operators continue to apply for license amendments allowing for plant uprates. According to the USDOE/EIA, a total of 22 units applied for uprates during 2001 and an equal number is expected through 2003. The total incremental capacity increase could reach 1900 Mwe during 2001-2003.

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European nuclear generators are implementing capacity upgrade programs ranging from Finland (Olkiluoto capacity increased by 23%), Spain (national program to rise nuclear capacity by 11%) and Switzerland (capacity of its five reactors being increased by 10%).

Extending fuel cycle lengths helps to reduce the average outage time and improve load factors. Increasing the fuel cycle length from 12 months to 18 months increases uranium consumption by 7% while stretching the cycle length to 24 months can result in an increase in uranium consumption of up to 18%.

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**Global Uranium Requirements to Increase**

All of the foregoing factors increase the amount of uranium required for reactor fuel. Still, increasing uranium prices encourage efforts by utilities to minimize uranium requirements by balancing the economics of the uranium enrichment process to use less uranium. Even so, iNi expects global uranium requirements to rise from the current level of about 175 million pounds  $U_3O_8$  per year to 185 million pounds per year by 2010 and further to approximately 200 million pounds  $U_3O_8$  per year by 2018. This base case estimate is a modification of the World Nuclear Association's forecast published in October 2003 which is somewhat more conservative because it incorporates lower uranium requirements due to optimization of the enrichment process.

**INI Reference Case Composite**

**World Uranium Requirements**

**Uranium Supplies Are Under Stress**

Uranium supplies for nuclear fuel are provided by a mix of primary production and secondary supplies. Primary production accounted for only 54 percent of uranium requirements in 2003; the remainder derived from various secondary sources which are now declining. This decline as well as increasing requirements must be filled with new production.

From the dawn of the nuclear era in the late 1940s through 1989, primary uranium production exceeded uranium consumption, military and civilian, by a substantial margin. That excess in the form of nuclear weapons and a variety of uranium inventories created a huge overhang of uranium supply. The dissolution of the former Soviet Union in 1991 provided the impetus to monetize this overhang. Large quantities of uranium in various forms entered the market on an ongoing basis and drove prices to record lows. These secondary supplies peaked during the

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period 2000 to 2004 and are projected to decline progressively. As a consequence, additional primary production will be needed to meet uranium requirements.

**Supply - Demand Balance**

**Secondary Uranium Supplies Declining**

Secondary supplies of uranium in various forms including reprocessing, down-blending of highly-enriched uranium (HEU) from nuclear weapons, and commercial inventories currently account for over 40 percent of current total uranium supply. This proportion has reached its maximum and is expected to decline to less than 25 percent by 2011 and to about 17 percent by 2025. Most of this decrease is attributable to a decline in inventories, but reprocessing of spent fuel is also projected to lose some of its market share.

Dissolution of the USSR unleashed a flood of accumulated inventory into the western market and Russia is currently downblending approximately 40 percent of its nuclear warheads into nuclear fuel under U.S. Russian treaty extending through 2013. These supplies had a devastating impact on the western market but that impact is declining as Russia is increasingly focused on its growing uranium needs both domestically and for nuclear reactors it supplies to other countries.

When the U.S. Enrichment Corporation was privatized in 1998, it was endowed with almost 75 million pounds of U.S. government uranium inventory. That material was aggressively sold into the market and depressed prices for several years, but now that most of that material either has been delivered or is now committed to future delivery, there is little current impact on the market.

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**Secondary Uranium Supply**

**Primary Uranium Production Needs to Expand**

As secondary supplies decline, additional primary production will be required in order to satisfy increasing global requirements. Current production of less than 100 million pounds  $U_3O_8$  per year must expand to some 160 million pounds per year by about 2018. **iNi** divides future production into two categories: scheduled and additional required. Scheduled production includes those facilities already in operation and their projected life as well as new facilities that can reasonably be expected to come on line in the future. Ranger continuing to produce through about 2012 and Cigar Lake initiating production in 2007 are examples of scheduled production. This type of production is generally economic at current prices and is reasonably well-defined in terms of schedule and output. With regard to Olympic Dam, given that WMC has not yet completed the feasibility study for expanding the mine, we have maintained its scheduled production at its current rated capacity of 10.5 million pounds  $U_3O_8$  per year for the duration of the forecast period.

Additional required production will be derived from a pool of generally higher-cost projects, the output and schedules for which are not yet well defined.

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**Additional Production Required**

This additional production will come only with higher uranium prices as most lower-cost projects are already in production.

iNi also assesses future production in terms of production capability. Overall production capability is a measure of 1) scheduled production, plus 2) the pool of generally higher-cost undeveloped projects already identified, as well as 3) a component for future discoveries. Each project is evaluated for earliest possible start-up date, available resources, probable output, and production cost. In comparing production capability to production required to meet demand, we note that sufficient capability to meet expected demand is likely to be available at any point in time provided that sufficient financial incentive is provided. Please note the apparent shortfall in production capability post 2020 is more than covered by excess unused capacity prior to that date. In practice, actual construction of this additional capacity will be delayed until triggered by a rise in uranium prices sufficient to justify that construction.

Additional production necessary to balance supply and demand amounts to 25 million pounds  $U_3O_8$  per year in 2010 and rises gradually to 90 million pounds per year in 2025 due to increasing uranium requirements as well as mine closures from reserve depletion. Thus, ample market opportunities are seen to exist for any potential expansion at Olympic Dam.

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*The Market for Uranium*

**Production Capability**

**Future Uranium Prices**

iNi's uranium price forecast methodology is based on the concept that prices are a function of the break-even production cost of the marginal producer which is taken as the equivalent of the spot market price.

Required primary production for each year is developed by subtracting secondary supply from total requirements as described previously. That primary production requirement is then progressively filled with production at the lowest possible estimated production cost. This process of requirements filling takes into account the annual production capability and production cost of each specific existing or potential uranium production source. Our modeling work shows Olympic Dam to be the world's lowest-cost uranium producer, a position that could be further strengthened if the mine is expanded.

These data sets of production capability and associated cost have been developed based upon an extensive analysis of each individual production center and its specific set of circumstances. After developing these data sets on an individual basis, they can then be combined into an overall price/production relationship. An example of this type of analysis is set forth below.

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**Production Capability vs. Price - 2015**

This analysis indicates in 2015, for example, that a sustained price of approximately \$15 per pound  $U_3O_8$ , would generate uranium production on the order of 100 million pounds  $U_3O_8$ . Further, at sustained prices of \$20 per pound  $U_3O_8$ , we would expect production of 160 million pounds  $U_3O_8$ .

iNi also recognizes that actual buying activity in the spot and long-term markets has a very strong influence on spot market prices and that this activity, or lack thereof, can drive prices above or below the fundamental supply-demand balance point for some period of time. Analysis of the degree to which purchasing activity might impact prices is necessarily somewhat judgmental, but so too is the purchasing process wherein buyers must weigh a perception of the future market and their requirements against current market conditions and commitments.

The overall approach taken by iNi is to utilize marginal production costs as a strong indicator of prices, but to factor those indicated prices in the near term by forecast anomalies in purchasing activity.

**Uranium Prices to Rise but Then Moderate**

iNi expects that uranium prices will continue to rise through 2006 but then begin to moderate beginning in 2007 with relative stability over the period 2010-2018 as new primary production facilities fill the anticipated supply gap and the market attains reasonable balance. Depletion of some of the lower-cost deposits and increasing requirements will push prices higher in subsequent years.

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**Uranium Price Forecast**

**Risk Factors**

iNi recognizes that all forecasts involve uncertainty. This forecast is no exception. Substantial deviations, both positive and negative, are possible in uranium requirements. Global warming, for example, could spur additional nuclear capacity in replacement of greenhouse gas generating fossil fuels. Exchange rates have played a major role in the recent price increase. A strengthening U.S. dollar would dampen future price increases. Supply disruptions have the potential for short-term price spikes. Large inventories of weapons-grade uranium and depleted uranium exist in the U.S. Entry into the market of these materials would reduce future prices. There are many imponderables in the future of the uranium industry. iNi has attempted to capture the middle ground in this forecast, but makes no warranty as to the potential accuracy of the published result.

*Note: The information contained in this report was accumulated by iNi from a variety of sources and includes judgments and opinions made by iNi based upon its interpretation of the information furnished to it, both as to the accuracy and usefulness of the information of the information itself and as to its relation with the other information. iNi makes no warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, nor that the use of any information disclosed in this report does not violate privately owned rights of others. In addition, iNi assumes no responsibility for any liability or damages which might result from the use of any information disclosed in this report.*

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**Corporate Directory**

**WMC Resources Ltd**

ABN 76 004 184 598

**Officers**

Mr Tommie C-E Bergman Chairman

Mr Andrew G Michelmore Chief Executive Officer

Mr Alan K Dundas Executive Director

Professor Adrienne E Clarke AC Non-Executive Director

Mr Peter J Knight Non-Executive Director

Mr Graeme W McGregor AO Non-Executive Director

Mr David E Meiklejohn Non-Executive Director

Mr G John Pizzey Non-Executive Director

Mr Ian E Webber AO Non-Executive Director

Mr Peter J Horton Company Secretary

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Allens Arthur Robinson

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**Financial Advisers**

UBS AG

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PricewaterhouseCoopers

Level 14

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### **WMC Shareholder Information Line**

If you have any questions in relation to Xstrata's Offer, please call the official WMC Shareholder Information Line on the following numbers:

Within Australia: 1800 067 505 (toll-free)

Outside Australia: +61 3 9415 4198

Please note that, as required by the Corporations Act, calls to these numbers will be recorded.