1.0 Introduction

1.1 Overview

The McArthur River Mining Joint Venture (MRM) is proposing a change in mining method of the existing McArthur River zinc/lead/silver mining and processing operation which is located approximately 45 km south-west of the township of Borroloola and 740 km south-east of Darwin, in the Gulf Region of the Northern Territory (NT) (Figure 1.1).

The current operations were established in 1995 and consist of an underground mine and processing plant which converts the mined ore into bulk concentrate. The concentrate is trucked from the mine to the port of Bing Bong where it is loaded onto ships for export to refineries around the world to be made into zinc and lead metal and alloys.

The proposed open cut project will result in a change in mining method from an underground mine to an open cut mine. This will enable the mine production to increase from 1.6 million tonnes per year (Mt/y) of zinc/lead/silver ore to 1.8 Mt/y. The project will also include improving the efficiency of the existing processing plant which convert the ore into a bulk zinc/lead/silver concentrate. The existing concentrate storage and transportation systems are adequate for the open cut project. The rate of concentrate production from the processing plant will reduce from 333,000 dry metric tonnes per year (dmt/y) to 320,000 dmt/y due to a lower grade ore from the open cut operation.

1.2 EIS Objective

The principal objective of this draft Environmental Impact Statement (EIS) is to identify and assess the environmental and related impacts that could occur as a result of the construction and operation of the expanded mine. Impacts are considered for relevant aspects of the natural, social, and economic environment. The draft EIS also outlines how these impacts will be managed.

The draft EIS has been prepared to provide:

- A source of information from which individuals and groups may gain an understanding of the proposal, the need for the project, the alternatives, the environment that it would affect, the impacts that may occur, and the measures taken to minimise those impacts.
- A basis for public consultation and informed comment on the project.
- A framework against which decision-makers can assess the environmental aspects of the project and have input to the environmental management and monitoring programs.

1.3 Proponent Details

The project proponent is the McArthur River Mining Joint Venture (MRM). MRM is operated as an unincorporated joint venture governed by the McArthur River Joint Venture Agreement dated April 1994

between Mount Isa Mines Ltd (75%) and ANT Minerals Pty Ltd (25%). Mount Isa Mines Ltd is a wholly owned subsidiary of Xstrata Queensland Limited. ANT Minerals Pty Ltd was established in Australia to hold the interests of the other shareholders who currently are Nippon Mining & Metals Co Ltd (15%), Mitsui & Co Ltd (5%) and Marubeni Corporation (5%). McArthur River Mining Pty Ltd acts as agent of Mount Isa Mines Ltd, the manager of the McArthur River Mining Joint Venture.

Xstrata plc (Xstrata), the ultimate holding company of Mount Isa Mines Ltd, is a major global diversified mining group listed on the London and Swiss stock exchanges. It is headquartered in Zug, Switzerland and has approximately 19,500 employees world-wide. Xstrata purchased Mount Isa Mines Ltd in June 2003 when it purchased that company's parent company, Xstrata Queensland Limited (formerly MIM Holdings Limited).

Xstrata maintains a meaningful position in six major international commodity markets: copper**,** coking coal**,** thermal coal**,** ferrochrome**,** vanadium and zinc, with additional exposures to gold, lead and silver**.** Its operations span four continents and six countries: Australia, South Africa, Spain, Germany, Argentina and the UK.

Xstrata Zinc manages all of the zinc operations of Xstrata plc and is one of the world's largest producers of zinc concentrates and refined zinc. Over half of all zinc currently consumed is used for galvanising steel, which is a highly cost-effective and environmentally friendly method of protecting steel against corrosion. Zinc also finds application in the manufacture of die-cast alloys (18%), brass (10%) and the production of zinc oxides and chemicals (7%).

Xstrata's zinc and lead operations are located in northern Spain, northern Germany, Australia and the UK. They comprise the following:

- San Juan de Nieva zinc smelter and the Arnao zinc semis plant in Asturias, Spain;
- Hinojedo roasting plant in Cantabria, Spain;
- Nordenham zinc smelter near Bremerhaven in north Germany;
- Mount Isa George Fisher-Hilton zinc-lead mines in Queensland, Australia;
- McArthur River zinc-lead mine located in Northern Territory, Australia; and
- Northfleet lead refinery and lead recycling located in the UK.

MRM's contacts for the project and this draft EIS are as follows:

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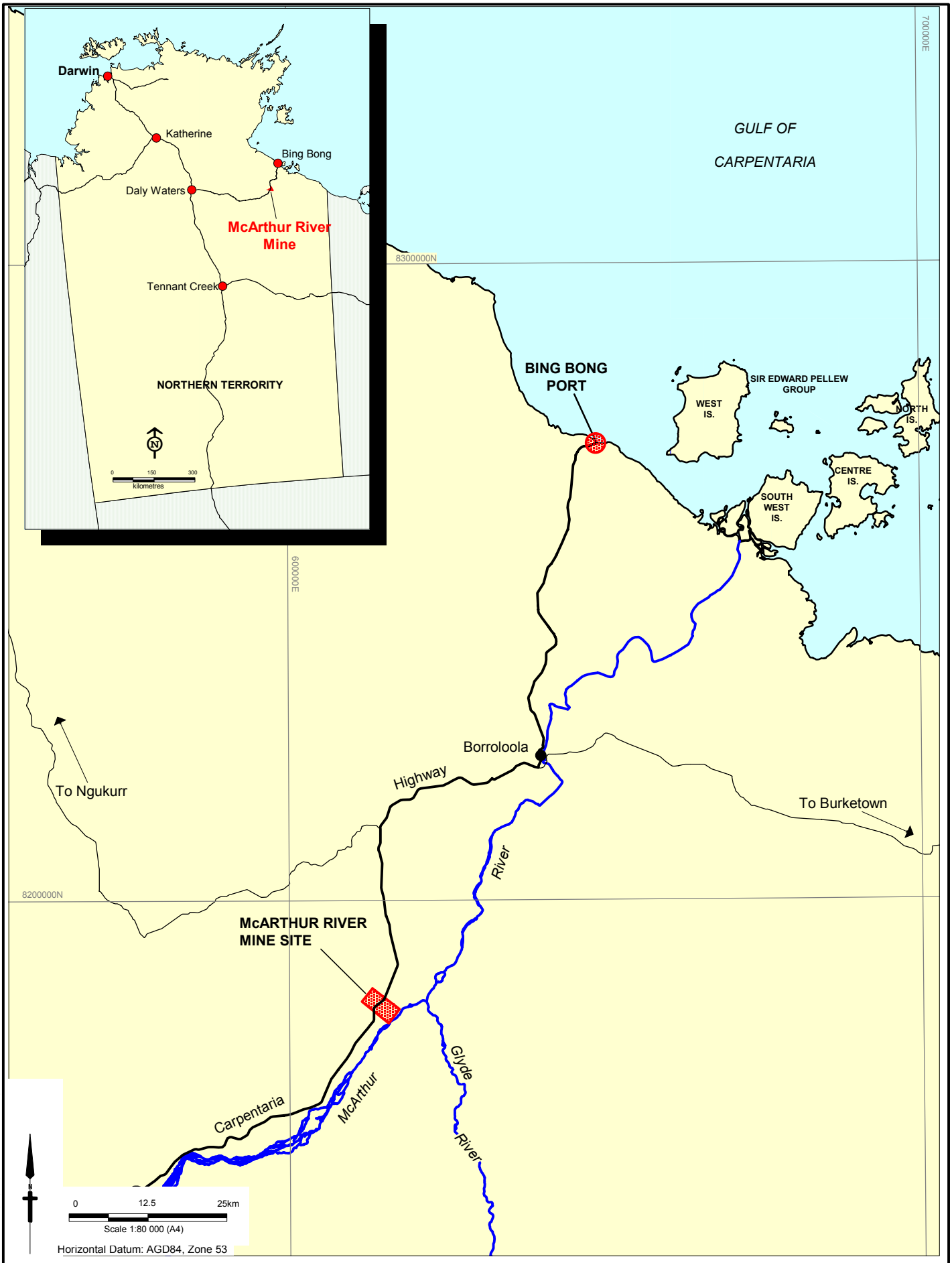

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McARTHUR RIVER MINE
OPEN CUT PROJECT
ENVIRONMENTAL IMPACT STATEMENT

PROJECT LOCATION

Drawn: VH	Approved: CMP	Date: 12-11-04	Figure: **1.1**	Rev: A
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1.4 Project

1.4.1 Project Title

The title of the project is the McArthur River Mine Open Cut Project.

1.4.2 Project History

Lead ore was first discovered at McArthur River in 1888. Mining of lead surface outcrops commenced in the region in approximately 1910. The Northern Territory Mines Department explored the area in 1911 and an assay office was set up in the Barney Hill area to research the mineralisation in the area.

The "Here's Your Chance" (HYC) deposit was discovered in 1955 and established as a significant deposit after an intensive drilling program in the 1960s. In 1977 the first feasibility study was commenced on the deposit with the construction of a pilot plant and temporary camp accommodation. A detailed feasibility and environmental report was submitted to the NT Government in 1979. The feasibility study concluded that the project should be deferred due to the high capital costs.

In 1989 the project was re-evaluated on the basis of producing a single high grade bulk zinc/lead/silver concentrate suitable for feeding the Imperial Smelting Process smelters. Mining was to be carried out by an underground operation removing only the high grade ore-bodies. Infrastructure development was reduced from the previous concepts by introducing a fly-in/fly-out operation with camp accommodation and provision of a load-out facility at Bing Bong instead of a deep water port. A full environmental impact assessment was undertaken and submitted in May 1992 (Hollingsworth Dames & Moore, 1992).

Mine production commenced at the end of 1994, using a dip access room and pillar mining method. The planned production was 1.0 Mt/y of ore producing approximately 270,000 tonnes (t) of bulk concentrate. The concentrate is trucked to the port of Bing Bong and barged to ships anchored offshore in the Gulf of Carpentaria. Power for the operation is provided by a gas fired power station fed by a gas pipeline from the central Australian gas fields. Water is from a borefield and from de-watering the underground mine.

The layout of the existing operations is shown on Figure 1.2.

1.4.3 Open Cut Project Plans

The mine plan for the McArthur River Mine was to initially selectively mine the No 2 ore-body followed by the No 4 and No 3 upper ore-bodies.

By mid-2000 the advanced level of extraction of the No 2 ore-body required commencement of mining the lower grade overlying ore-bodies. The move to lower grade ore mining has presented challenges for the mine, and although considered technically successful, the financial return to MRM has been inadequate.

A scoping study was commissioned in 2001 to investigate ways to improve the long-term viability of the project, including options for downstream processing within the Northern Territory. Studies considered

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McARTHUR RIVER MINE
OPEN CUT PROJECT
ENVIRONMENTAL IMPACT STATEMENT

SITE LAYOUT
EXISTING OPERATIONS

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Figure: **1.2**

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increasing the scale of the operation to reduce unit costs of production and investigated technology options to increase resource recovery. As a result, a feasibility study commenced in 2002 which considered an open cut mine (4.8 Mt/y), rechannelling of the McArthur River, a weir on the Glyde River, an on-site zinc refinery, and a 350 megawatt (MW) power station. In 2003, MRM submitted a Notice of Intent to the Northern Territory Government in accordance with the requirements of the *Environmental Assessment Act (1982)* seeking Terms of Reference for an Environmental Impact Statement for the project including the zinc refinery, weir and new power station.

Since then, further reviews undertaken by MRM have resulted in the scale of the project being reduced. This reduction has resulted in a significant decrease in the project's environmental impact while it still remains viable due to the changed global market dynamics for bulk concentrates.

The current proposal that forms the subject of this EIS, is to replace the current underground operation with an open cut operation with a mining rate of 1.8 Mt/y. Open cut mining provides access to significant additional ore which is uneconomic to mine by underground methods. The existing processing plant and materials handling and transportation systems have sufficient capacity to match the proposed open cut mining rate.

The changes from what is now proposed compared with the project's Notice of Intent lodged in 2003 include the elimination of the Glyde River Weir, the on-site zinc refinery, and the 350 MW power station as well as reduced mining and production rates. Furthermore, the current project has the zinc/lead/silver concentrate leaving the site whereas the product leaving the site in the 2003 proposal was zinc metal which would have resulted in the lead and silver content remaining on-site in the waste rock and tailings.

Table 1.1 summarises the main differences between the project as described in the 2003 Notice of Intent and as currently planned.

Table 1.1

Main Differences between 2003 Project and Current Project

Project Component	2003 Project	Current Project
Mining Capacity	4.8 Mt/y	1.8 Mt/y
Product	450,000 t/y zinc metal	320,000 t/y zinc/lead/silver concentrate
Water Supply	Glyde River weir	Existing bores
Power Supply	350 MW on-site power station	Existing power station
Refining	On-site refinery	No on-site refinery
Construction Employment	Peak of 1,000 over a 3 year period	Peak of 150 over a 2 year period
Operational Employment	700	270

1.4.4 Proposed Open Cut Operations

The mining method proposed for the MRM operation is to replace the underground mine with an open cut operation. Ore production will be optimised at 1.8 Mt/y. The move to open cut will increase the reserves to a total of 43 million tonnes (Mt) and increase the mine life to 25 years.

Conventional drilling, blasting, loading and hauling methods will be used in the open cut mining operations. Mining would be by a fleet of conventional hydraulic excavators and haul trucks.

An overburden emplacement facility will be established to hold 185 Mt of overburden rock material from the open cut.

To enable the open cut to be developed it will be necessary to realign a section of the McArthur River and part of two local creeks (Surprise and Barney Creeks). A 5.5 km long channel will be constructed to realign the McArthur River around the southern side of the open cut, while a shorter channel (2.5 km) will realign the local creeks around the northern side.

Run of mine (ROM) ore will be trucked from the mine to the processing plant where it will be crushed and ground. The ground ore will be slurried with flotation reagents and pumped to flotation cells and a leach circuit where the zinc and lead bearing minerals will be recovered in the form of a concentrate. This is the same processing operation as is currently used on site.

The fine wastes from the processing operation (tailings) will be disposed of into an upgraded tailings dam facility. As is currently the case, the concentrate will be trucked to the port at Bing Bong for export. The undercover storage facilities at Bing Bong have adequate capacity for the current and future operations.

1.4.5 Open Cut Project Schedule

It is proposed to undertake the construction works for the flood protection bund and realigned drainage channels over the 2006 and 2007 dry seasons. Details of the proposed construction work program are given in Section 4.6.

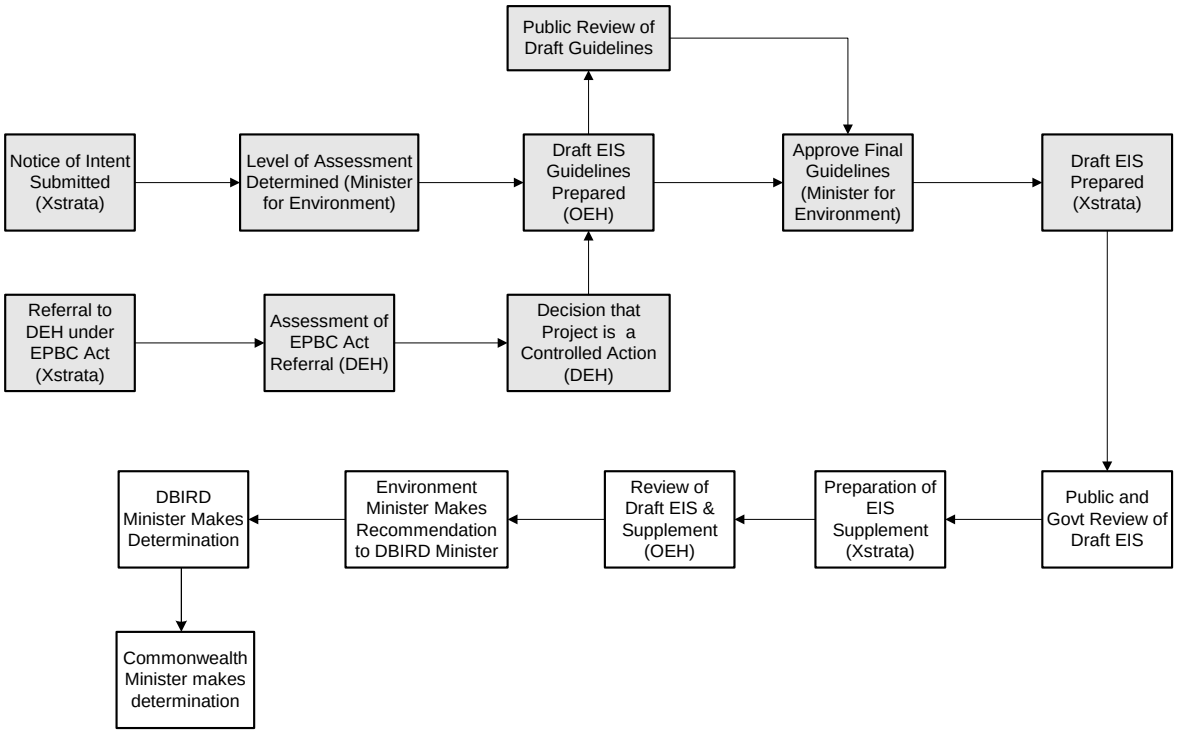
The open cut mine will be developed in six stages with work on Stage 1 commencing in 2006. Details of the timing and scope of each of the six stages are given in Section 4.2.2.

1.5 Environmental Assessment Process

1.5.1 Northern Territory

This draft EIS has been prepared in accordance with the requirements of the *Northern Territory Environmental Assessment Act (1982)* and the Environmental Assessment Administrative Procedures under which the Act is implemented. An overview of the process is shown in Chart 1.1.

Chart 1.1 - EIS Process



OEH – Northern Territory Office of Environment and Heritage
DBIRD – Northern Territory Department of Business Industry and Resource Development
DEH – Commonwealth Government's Department of Environment and Heritage
= Tasks completed to date

There are seven key phases in the NT environmental approval process:

1. **Notice of Intent (NOI).** A NOI for the project was submitted to the Northern Territory's Office of Environment and Heritage (OEH) on 7 January 2003. The NOI outlined the scope of the open cut project and enabled the Minister to determine what level of assessment was required. The information within the NOI and consultation with relevant agencies also assisted the preparation of EIS Guidelines concerning matters to be addressed in the environmental assessment.

2. **Level of Assessment**. Of the two levels of formal assessment defined under the NT assessment process, a Public Environmental Report may be required to assist in assessing environmental impacts which are considered significant but limited in extent. An Environmental Impact Statement (EIS) may be required to assist in assessing environmental impacts which are considered significant, either in terms of site specific issues, off-site issues and conservation values, and/or the nature of the proposal. On 10 February 2003, the Minister advised that an EIS should be prepared for the open cut project.

3. **Public Review of Guidelines.** Draft guidelines covering issues to be addressed in the EIS were released for public comment on 15 February 2003 for a 28 day period. In March 2003, final

guidelines were issued taking into account comments received from the community and Government agencies (included as Appendix A). While these guidelines were for the originally proposed project that included components that have since been deleted (Glyde River weir, zinc refinery, 350 MW power station and a reduced production rate), they remain relevant for the remaining project components. There is no statutory time limit imposed on the life of EIS guidelines.

4. **Preparation of the draft EIS.** Work began on the preparation of the draft EIS in March 2003. Following the purchase of MIM Holdings Limited by Xstrata in June 2003, work on the draft EIS preparation was put on hold pending a further review of the project's feasibility. In August 2004, work on the draft EIS continued on the basis of the revised project scope in accordance with the EIS guidelines.

5. **Submission of the draft EIS and Public Review.** The draft EIS has now been released for review to enable the public and government agencies to comment on the project. Notification of the display centres, submission procedures, and purchasing details have been advertised in local newspapers. The public and government agencies have six weeks from the date of submission of the draft EIS to submit comments to the OEH.

6. **Preparation of EIS Supplement.** Any comments received by the close of the public review period will be addressed in an EIS Supplement which will be prepared by MRM and submitted to the OEH. The draft EIS together with the Supplement will constitute the final EIS which will be reviewed by the OEH.

7. **Government Review and Decision.** Following review of the Supplement, the OEH will prepare an Environmental Assessment Report and Recommendations on the project's acceptability for the Minister's consideration. Following this, the Minister for Environment will make a recommendation to the Minister for Business, Industry and Resource Development regarding the project's environmental acceptability and its compliance with the requirements of the *Environmental Assessment Act (1982)*. Because the project is a mining activity, approval for the open cut is given by the Minister for Business, Industry and Resource Development under the requirements of the *Mining Management Act (2001).*

1.5.2 Commonwealth Government

In addition to the EIS procedures of the Northern Territory Government, under the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act (1999)* (EPBC), developments require assessment if they have the potential to affect one or more of six matters of National Environmental Significance (NES), namely:

- world heritage values of a declared World Heritage property;
- ecological character of a declared Ramsar wetland;
- listed threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat;
- listed migratory species or their habitat;

- Commonwealth marine areas; or
- Commonwealth land.

A referral under the EPBC Act was submitted to the Commonwealth Department of the Environment and Heritage (DEH) in relation to the McArthur River Mine Open Cut Project in February 2003. A decision was made on 4 March 2003 that the proposed development constituted a Controlled Action under the following sections of the Act:

- Sections 18 and 18A (listed threatened species and communities); and
- Sections 20 and 20A (listed migratory species).

On 27 May 2003 notification was received from the DEH that the project would be assessed through accreditation of the NT assessment process under the terms of the Bilateral Agreement between the Commonwealth and Northern Territory Governments.

1.6 Relevant Government Legislation and Policies

1.6.1 Legislation

The Northern Territory Government has jurisdiction over environmental and other legislation relating to the siting, construction and operation of the MRM open cut project.

Preparation of this draft EIS for the open cut project is being undertaken in accordance with the requirements of the *Northern Territory Environmental Assessment Act (1982)* and its implications for the development are discussed in Section 1.5.1.

Another significant piece of legislation for the project is the *Mining Management Act (2001).* An Authorisation to Operate the existing mine has been received in accordance with the requirements of this Act. This Authorisation to Operate requires the mine to operate in accordance with an approved Mining Management Plan that is reviewed and updated on an annual basis, or when significant changes are proposed to existing approved operations. Approval for the proposed open cut mine will be sought under this Act and, if granted, a revised Authorisation to Operate will be issued. Approval will be granted after consideration of a recommendation from the Minister for the Environment under the provisions of the *Environmental Assessment Act (1982).*

The following is a list of the other Northern Territory legislation that may be relevant to the McArthur River Mine Open Cut Project:

- *Mining Act (1980)*
- *Water Act (1992)*
- *Soil Conservation and Land Utilisation Act (1980)*
- *Dangerous Goods Act (1981)*
- *Northern Territory Aboriginal Sacred Sites Act (1989)*

- *Territory Parks and Wildlife Conservation Act (2001)*
- *Heritage Conservation Act (1991)*
- *Aboriginal and Torres Strait Islander Heritage Protection Act (1984)*
- *Aboriginal Land Rights (Northern Territory) Act (1976)*
- *Waste Management and Pollution Control Act (1999)*
- *Weeds Management Act (2001)*

Relevant Commonwealth Government legislation includes the *Environment Protection and Biodiversity Conservation* Act *(1999).* The relevance of this Act is discussed in Section 1.5.2.

1.6.2 Policies

MRM's Environment Policy

Xstrata operates under the following Business Principles:

- "We work ethically: We are committed to the highest standards of personal and professional ethical behaviour.
- We work responsibly: We are committed to the highest standards of health, safety and environmental performance.
- We work openly: We are committed to the maximum transparency that is commercially possible in our business.
- We work together and with others: We are committed to co-operating with employees, local communities and other stakeholders."

These Business Principals underpin all of Xstrata's operations including those at McArthur River. They are committed to the highest standards of health, safety and environmental performance, community co-operation and to the principles of sustainable development. The environmental component of this commitment is achieved by adherence to MRM's Environment Policy which is presented in Chart 1.2.

Australian Minerals Industry Environmental Code of Management

MRM is a signatory to the Minerals Industry Code for Environmental Management. Key components of the Code include a requirement to publish an environmental report each year, to report annually on compliance to the Code, and to conduct three-yearly independent audits on compliance to the Code. MRM has met all of these key requirements since signing on to the Code and continues to work towards achieving a high standard for all Code requirements.

Chart 1.2

Environment Policy

McARTHUR RIVER MINING
ENVIRONMENT POLICY

McArthur River Mining's Environmental Policy is to maintain a high standard of environmental protection. In maintaining this standard, MRM will take appropriate precautions to minimise any potentially adverse impacts of its activities on the environment, the community and its employees.

MRM operates with the belief that strong environmental management is essential to a sustainable business specifically:

- Conducting operations using the Xstrata HSEC Policy and Management Standards, and in compliance with relevant laws, regulations and standards;
- Ensuring all employees are accountable for their environmental performance;
- Advising and training employees and contractors as necessary to meet our environmental requirements;
- Assessing the potential environmental effects of our activities and integrating environmental considerations into all aspects of our planning, operational decisions and processes;
- Communicating with our employees, the community, regulators and other stakeholders in relation to environmental issues;
- Ensuring the efficient use of resources and the minimisation of waste generation and disposal;
- Progressively rehabilitating areas no longer required for efficient operation using the most practical methods;
- Maintaining an effective, integrated environmental management system;
- Ensure continual improvement in environmental performance incorporating advances in environmental, community and technology;
- Taking appropriate actions to correct any deficiencies identified.

McArthur River Mining acknowledges its environmental responsibilities and ranks them equally with its other business objectives. Environmental management plans are an integral part of the overall planning and management process, and will be reviewed continuously.

Brian Hearne

GENERAL MANAGER

20th January 2005

1.7 Land Tenure

1.7.1 Mining Tenements

The operation spans seven individual mineral leases as detailed in Table 1.2.

Table 1.2

McArthur River Mineral Leases

Lease Type	Name	Lease Number	Area (ha)	Term (years)	Expiry Date
Mining	HYC	MLN1121	372.4	25	5/1/2018
Mining	Glyde	MLN1122	3,348	25	5/1/2018
Mining	Buffalo	MLN1123	3,884	25	5/1/2018
Mining	Emu	MLN1124	3,283	25	5/1/2018
Mining	Emu East	MLN1125	656.8	25	5/1/2018
Mining	Bing Bong Port	MLN1126	900	25	5/1/2018
Mining	Batten	MLN582	16.4	20	31/12/2019
Exploration	Un-named	ELA8189	10,930	6	6/10/2009
Pastoral[1]	Dredge Spoil	PPL1051	89.3	1	31/12/2005
Total Mining			**12,547.6**		
Authorisation	Emu Fault	AN366	295,500[2]	2	30/6/2005

[1] Non-Pastoral Land Use Approval NP033

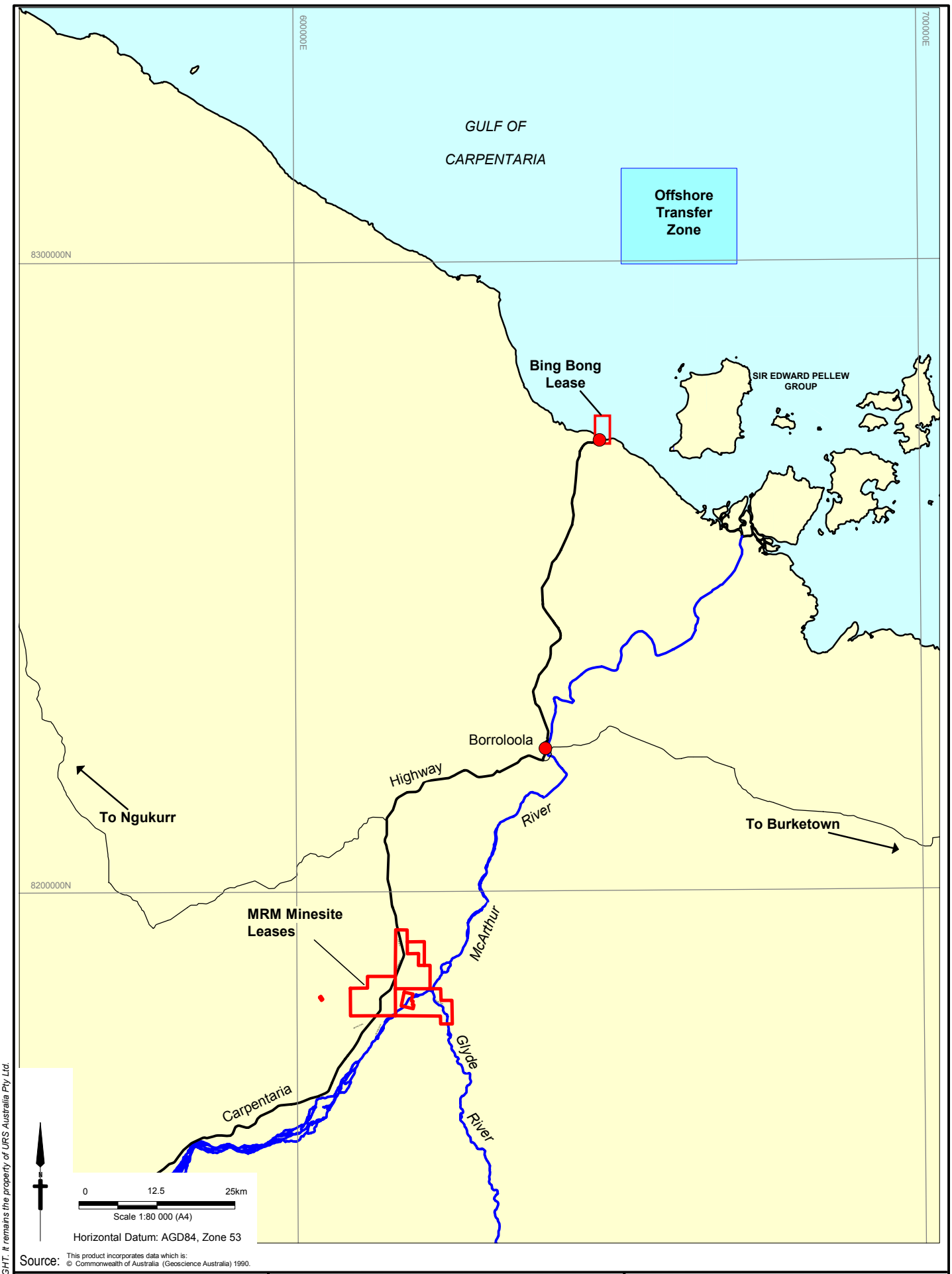
[2]Authorisation not included in Total Mining

The mine site is contained within five contiguous leases (N1121, N1122, N1123, N1124 and N1125), located on McArthur River Station Pastoral Lease. Also on McArthur River Station Pastoral Lease is the minor mineral lease N582. The bulk of the mine's infrastructure is located on Barney Hill, on the western end of MLN1122.

The Bing Bong port facility is situated on Mineral Lease N1126, located on the Bing Bong Pastoral Lease. Adjacent to the Bing Bong Mineral Lease is the Bing Bong Dredge Spoil emplacement, located on the Non-Pastoral Land Use Approval NP035.

The general locations of the mineral leases are depicted in Figure 1.3 and the layout of the MRM leases is shown in Figure 1.4.

All of the proposed mine activities will take place within the existing MRM tenements and no further tenement applications will be required.



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McARTHUR RIVER MINE
OPEN CUT PROJECT
ENVIRONMENTAL IMPACT STATEMENT

LOCATION OF LEASES AT McARTHUR RIVER MINE AND BING BONG PORT

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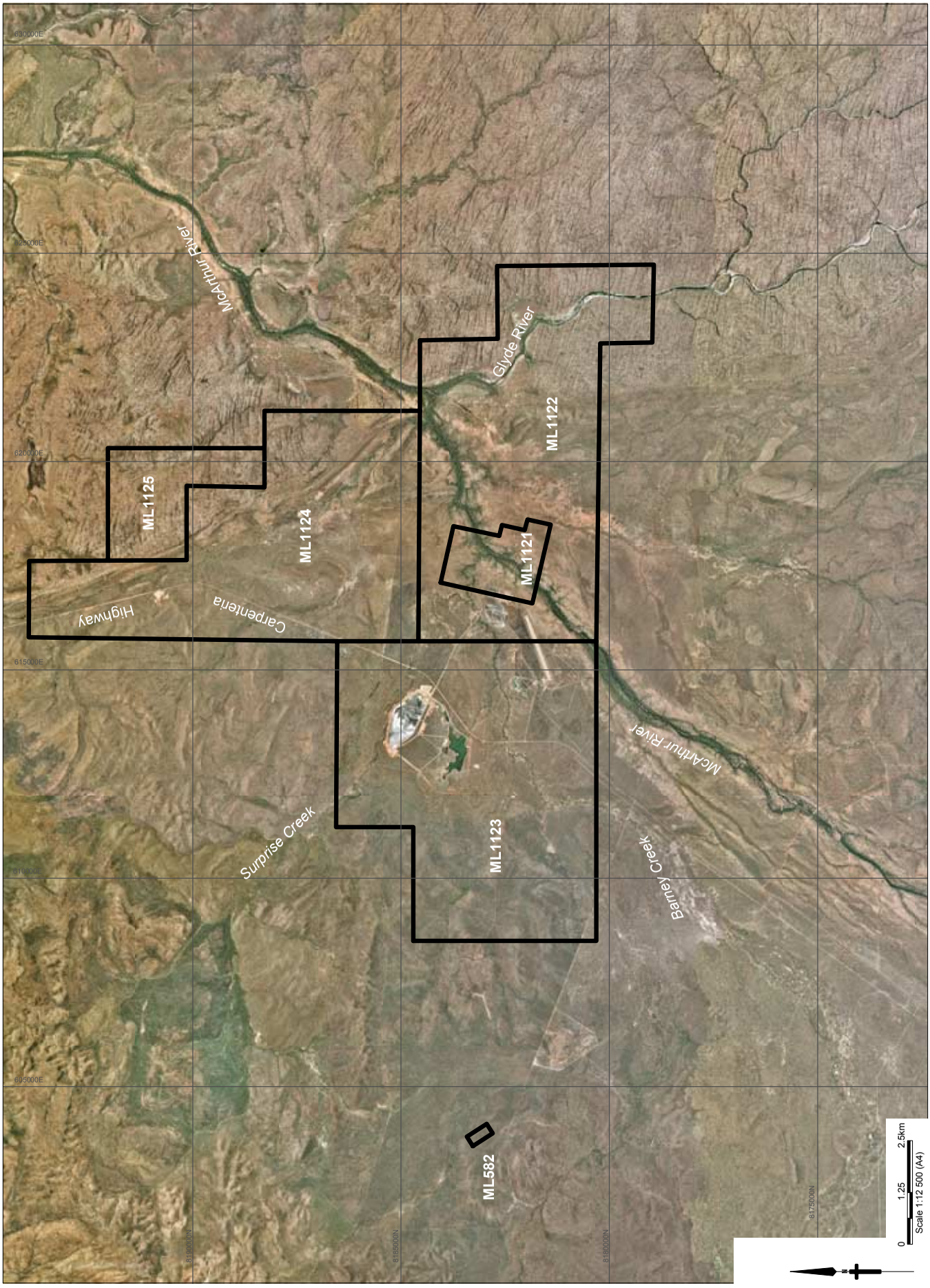
Job No: **42625552**	File No: 42625552-g-004.wor		Rev: A **A4**



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McARTHUR RIVER MINE
OPEN CUT PROJECT
ENVIRONMENTAL IMPACT STATEMENT

McARTHUR RIVER MINE LEASES

Drawn: VH	Approved: CMP	Date: 12-11-04	Figure: **1.4**	Rev: A
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1.7.2 Potential for Additional Development

At this stage no additional satellite ore bodies have been identified. The proposed pit outline reflects the current optimised mining profile in terms of economically recoverable ore. However over the life of the mine, mining plans will be continually reassessed to maximise ore recovery and economic returns. If mining plans are updated they will be provided through the annual Mine Management Plan as required by the *Mining Management Act (2001).*

1.8 Report Structure

This draft EIS has the following structure.

VOLUME 1

Executive Summary

Executive Summary	A brief overview of the project, its potential environmental and social effects, and the proposed mitigation strategies

Introduction

Section 1	Introduction to the report outlining its objectives, the proposed project and proponent, and the EIS process
Section 2	Background to the zinc industry and an outline of the project need and project benefits

Project Information

Section 3	Provides details of the current operations
Section 4	Provides details of the proposed open cut project
Section 5	Outlines the project's utility and infrastructure requirements
Section 6	Discusses the alternatives considered

Waste Management

Section 7	Characterises the waste streams and discusses their treatment and disposal

Environmental Impacts and Management

Section 8	Assesses the project's air quality effects and management strategies
Section 9	Assesses the project's noise effects and management strategies
Section 10	Assesses the project's terrain and soils effects and management strategies
Section 11	Assesses the project's groundwater effects and management strategies
Section 12	Assesses the project's surface water effects and management strategies
Section 13	Assesses the project's biological effects and management strategies

Cultural and Social Impacts and Management

Section 14	Assesses the project's effects on the area's cultural heritage values
Section 15	Assesses the project's social and community effects and management strategies
Section 16	Details the community consultation activities undertaken and summarises the results
Section 17	Assesses the project's economic effects and management strategies

Risk Management

Section 18	Discusses the project's health and safety aspects
Section 19	Details the project's risk assessment and the proposed risk management strategies
Section 20	Details the site's rehabilitation and closure procedures and commitments

Environmental Management

Section 21	Outlines a strategy for the provision of biodiversity offsets
Section 22	Outlines the project's strategic environmental management plan

VOLUME 2

Appendices	Provide additional technical details which support the assessments given in Volume 1