

## **1.0 Introduction**

### **1.1 Overview**

Lead ore was first discovered at McArthur River in 1888 at a location approximately 45 km south-west of the township of Borroloola and 740 km south-east of Darwin (Figure 1.1). The mining of lead surface outcrops in the area commenced 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 Northern Territory 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 to Imperial Smelting Process smelters. Mining was to be carried out by an underground operation removing only the high grade ore-bodies. A full environmental impact assessment was undertaken and submitted in May 1992 (Hollingsworth Dames & Moore, 1992).

McArthur River Mining (MRM) began operations in 1995 as an underground mine and a processing plant that converts the mined ore into bulk concentrate. The concentrate is trucked from the mine to the port of Bing Bong where it is loaded into ships for export to refineries around the world to be made into zinc and lead metal and alloys. The project layout is shown in Figure 1.2.

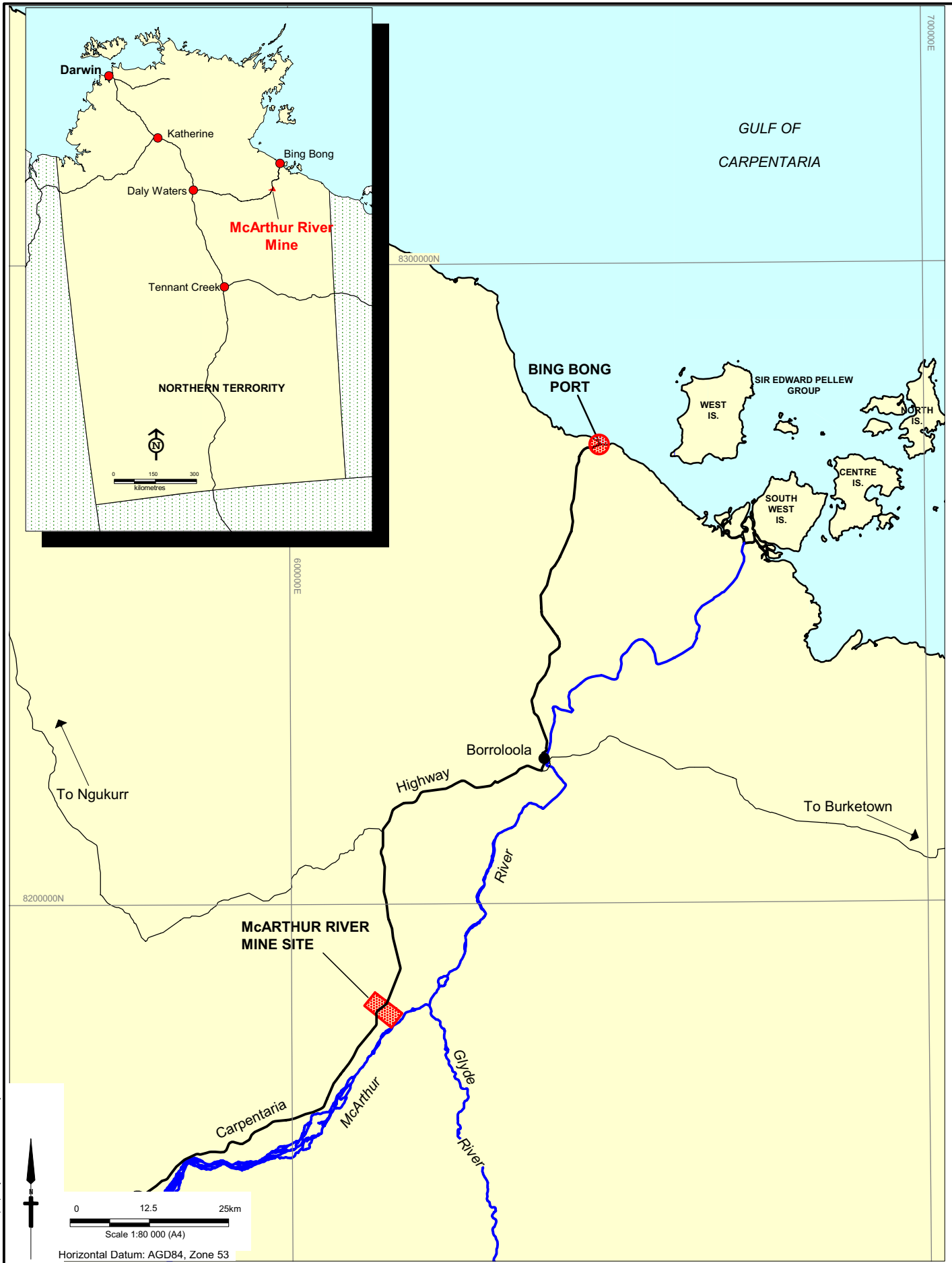
Resources that enable underground mining to continue in a safe and economical manner have recently been exhausted, and underground mining ceased in April 2006. To enable operations at site to continue it is necessary to change from underground to open cut mining methods.

### **1.2 History of Open Cut Project**

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 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 million tonnes per annum (mtpa)), rechanneling 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 (EIS) for the project including the zinc refinery, weir and new power station.

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McARTHUR RIVER MINE  
 OPEN CUT PROJECT  
 PUBLIC ENVIRONMENTAL REPORT

PROJECT LOCATION



Drawn: VH	Approved: CMP	Date: 27-06-2006
Job No: 42625552	File No: 42625552-g-174.wor	

Figure: 1.1

Rev: A  
 A4

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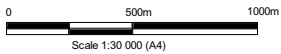
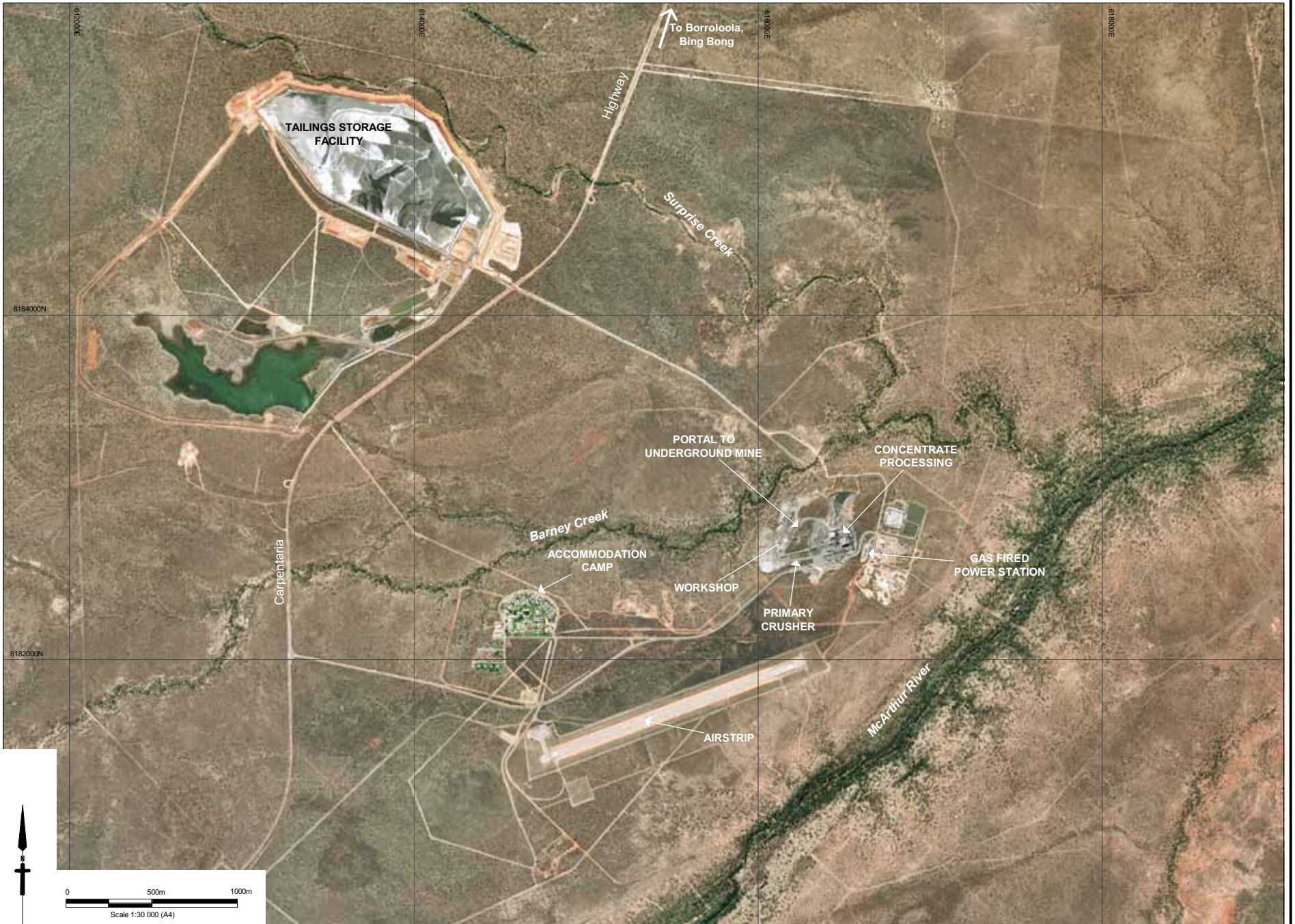
MCARTHUR RIVER MINE  
OPEN CUT PROJECT  
PUBLIC ENVIRONMENTAL REPORT

Drawn: VH  
Job No: 42625552  
Approved: CMP  
File No: 42625552-g-175.wor  
Date: 27-05-2006

SITE LAYOUT  
EXISTING OPERATIONS

Figure: 1.2

Rev: A  
A4



Horizontal Datum: AGD84, Zone 53  
Date of Aerial Photography, 2001

Since then, further reviews undertaken by MRM have resulted in the scale of the project being reduced. This 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 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 reducing the mining rate to 1.8 Mt/y. 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.

A Draft EIS for the McArthur River Open Cut Project was prepared in August 2005 (URS, 2005a) to identify and assess the environmental impacts from the open cut project and to develop appropriate management strategies. It was 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.

The Draft EIS was made available for public review and comment and an EIS Supplement was prepared in December 2005 (URS, 2005b) addressing the issues raised during the comment period. In February 2006, the Environmental Protection Agency (EPA) issued an Environmental Assessment Report (EPA, 2006) which recommended that the proposal as outlined in the Draft EIS should not proceed.

### **1.3 Test Pit Project**

To provide sufficient information to design the proposed open cut mine, MRM began to develop a Test Pit in July 2005 to provide a bulk sample of the ore for metallurgical testing. The Test Pit enabled identification of the various ore types and their processing requirements, as well as the relevant geotechnical and mining conditions that are likely to be encountered. Stage A of the Test Pit involved the construction of a pit to a depth of 60 m to the east of the underground operations. The pit is surrounded by a flood protection bund to protect it from flooding of the McArthur River.

The environmental approvals process for the Open Cut Project has taken longer than anticipated, with the possibility that the proposal may not be approved. Stage A of the Test Pit exhausted its supply of ore by the end of March 2006. Surface ore stockpiles from various sources enabled milling to continue into May 2006 before the supplies ran out.

To avoid retrenching the mine workforce and closing the mine, MRM obtained approval in April 2006 to extend the Test Pit in order to continue mining and milling operations until a decision is made on the Open Cut Project. The underground mine cannot safely provide additional ore to enable operations to continue. However, extending the Test Pit (Southern Extension) provides additional ore to avoid the immediate closure of the mine.

The objectives of the Southern Extension mining plan are to:

- Satisfy the ore feed requirements for the concentrator until a decision is made on the Open Cut Project
- Leave the McArthur River and Barney Creek channels and flood plains intact and unhindered

- Have a stable excavation protected from flooding
- Enable placement of the waste rock in suitably sized, engineered and constructed Overburden Emplacement Facilities (OEFs) that satisfy environmental and safety requirements
- Be able to be successfully rehabilitated in the event of mine closure when the Southern Extension is completed.

## **1.4 Modified Open Cut Project**

During the preparation of the Draft EIS and EIS Supplement, numerous strategies were developed to reduce the project's environmental impact. These strategies related to components of the project's design and operations as well as the ongoing the environmental monitoring program.

Since the release of the EPA's Environmental Assessment Report, further improvements have been made to the design. These include a number of these modifications, incorporating recommendations in a review of the river diversion by Professor Wayne Erskine (Erskine, 2006) commissioned by the EPA. The strategies adopted by MRM have resulted in a modified project with reduced environmental impacts, compared with those assessed in the Draft EIS and Supplement.

In accordance with the requirements of the *Northern Territory Environment Assessment Act (1982)*, MRM submitted a Notice of Intent (NOI) for a Public Environmental Report (PER) to the Department of Natural Resources, Environment and the Arts (DNRETA) in April 2006 for the modified McArthur River Open Cut Project.

In response to the NOI, DNRETA prepared draft guidelines indicating the scope of the issues that the PER needs to address. The draft guidelines were advertised for public comment for 14 days during April 2006 and were subsequently finalised in May 2006. A copy of the final guidelines is given in Appendix A.1.

Since the release of the guidelines, and following discussions with the relevant government agencies and Professor Wayne Erskine, additional hydrology modelling has been undertaken, and additional biological surveys have been conducted. Input has also been sought from a rehabilitation specialist and a tropical ecology specialist, to ensure that the final geomorphological form of the river diversion will be stable and ecologically sustainable.

## **1.5 PER Objectives**

The objective of this PER is to address the environmental impacts of relevant components of the modified Open Cut Project as specified in the guidelines. The PER provides:

- A response to the EPA's Environmental Assessment Report (EPA, 2006)
- A source of information from which individuals and groups may gain an understanding of the modified project, its environmental impacts, and the measures to be taken to minimise those impacts

- A basis for public review and informed comment on the modified project
- A framework against which decision-makers can assess the environmental aspects of the modified project and have input to the environmental management and monitoring programs.

## **1.6 Project Proponent**

The project proponent is McArthur River Mining Pty Ltd (MRM) which is a subsidiary of Mount Isa Mines Ltd.

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 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%).

MRM's contacts for the project are as follows:

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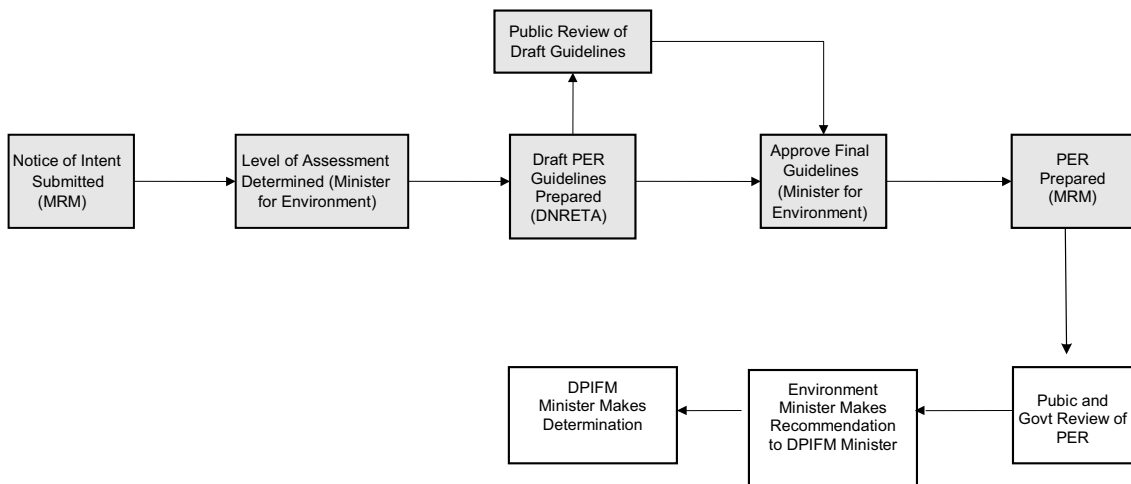
Mr Warren Crabb  
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## 1.7 Environmental Assessment Process

This PER has been prepared in accordance with the requirements of the *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**

### Environmental Assessment Process



DNRETA – Department of Natural Resources, Environment and the Arts

DPIFM – Department of Primary Industries, Fisheries and Mines

☐ = Tasks completed to date

There are seven key phases in the Northern Territory's environmental approval process:

1. **Notice of Intent (NOI).** A NOI for the modified Open Cut Project was submitted to DNRETA on 10 April 2006. The NOI outlined the scope of the project and enabled the Minister to determine the level of assessment required. The information within the NOI and consultation with relevant agencies also assisted the preparation of the draft guidelines concerning matters to be addressed in the environmental assessment.
2. **Level of Assessment.** Under the Northern Territory Government's assessment process, an environmental assessment can be in the form of a Public Environmental Report (PER) or an Environmental Impact Statement (EIS). A PER is used to assist in assessing environmental impacts which are considered significant but limited in extent while an EIS is more comprehensive. As much of the project's environmental assessment undertaken in the previous EIS remains relevant, the Environment Minister determined (12 April 2006) that a PER should be prepared to address the remaining issues of concern in relation to the modified project.
3. **Public Review of Guidelines.** Draft guidelines covering issues to be addressed in the PER were released for public comment on 17 April 2006 for a 14 day period. On 8 May 2006, the final guidelines were issued taking into account comments received from the community and government agencies. A copy of the final guidelines is given in Appendix A.1.

4. **Preparation of the PER.** Work began on the preparation of the PER in April 2006 following release of the draft guidelines. Work continued with minor changes of scope following the release of the final guidelines on 8 May 2006. During this time ongoing discussions were held with relevant government agencies and their technical advisers, including with Professor Wayne Erskine from the University of Newcastle on issues associated with geomorphology of the river realignment. As described in Section 1.4, the objective of these discussions was to ensure that the final geomorphological form of the river and creek diversions will be stable and ecologically sustainable.
5. **Public Review of PER.** The PER will be released for review to enable the public and government agencies to comment on the modified project. Notification of the display centres, submission procedures, and purchasing details will be advertised in local newspapers. The public and government agencies will have 28 days to submit comments to DNRETA.
6. **Government Review and Decision.** Following review of the PER and relevant public comments, DNRETA will prepare an Environmental Assessment Report including 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 Primary Industries, Fisheries and Mines 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 project will be given by the Minister for Primary Industries, Fisheries and Mines under the requirements of the *Mining Management Act (2001)*.

### 1.7.1 Commonwealth Government

In addition to the 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
- Commonwealth land.

A referral under the EPBC Act was submitted to the Commonwealth Department of the Environment and Heritage (DEH) in relation to the 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)
- 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 Northern Territory assessment process under the terms of the bilateral agreement between the Commonwealth and Northern Territory Governments.

Following its review of the Northern Territory Government's Assessment Report, the DEH in a letter dated 16 March 2006 responded that it requires further information on the impacts associated with the realignment of the McArthur River and the potential effects on the freshwater sawfish (Appendix A.2). This additional information is provided in this PER.