2.0 Objectives and Benefits

2.1 Market Opportunities for Zinc

There is a wide range of applications for zinc in current markets. An indication of typical applications is shown below.

- **Galvanising:** In Australia today, two-thirds of all the zinc used is to protect steel from rusting, by coating it using a process called galvanising. The steel is dipped in molten zinc, often also with aluminium. Galvanised products include steel beams, roofs, poles, wires, nails, household appliances and car bodies.
- **Diecast objects:** Zinc mixed with small amounts of aluminium produces a very strong alloy. Its low melting point enables it to be diecast (cast into different shapes in steel moulds) to make a number of items (some requiring fine detail) including carburettors, door handles, staples, zips and matchbox cars.
- **Brass:** Brass (70% copper, 30% zinc) is particularly rust-resistant and so is used to make the hulls of sailing boats and other marine hardware. Other brass products include musical instruments, decorative pieces, light fittings, taps, and instruments for astronomy, surveying, navigation and other scientific purposes.
- **Batteries:** When alloyed with other metals, zinc becomes a good electrical conductor. Zinc-bromide and zinc-nickel power cells are amongst the newest types of batteries.
- **Health:** Humans and other animals need to ingest zinc for proper growth and for the healing of wounds to occur. Fruits, nuts, meat, oysters and other shellfish are good sources of zinc and marketing opportunities exist for the manufacture of dietary zinc supplements.
- **Zinc oxide:** Zinc oxide is a unique and very useful material, used in the manufacture of rubber tyres, skin products (such as zinc cream, anti-dandruff shampoos, antiseptic ointments, and calamine lotion for healing skin disorders), paints, floor coverings, plastics (to help prevent cracking) and ceramic glazes.
- **Zinc sulphide:** Zinc sulphide is used in luminous dials on watches, TV screens and fluorescent lights.
- **Other zinc compounds:** Zinc is also used as a dissolving agent, to help prevent plastics from cracking, in surgical dressings, glues, and to preserve and fireproof timber.

Zinc metal output is currently constrained by zinc concentrate supply. The global market is forecast to remain in deficit for a number of years.

The outlook for zinc demand can be summarised as follows:

- Global zinc demand is forecast to grow at an annual average rate of 2.7% until 2015, equivalent to an additional 322,000 tonnes each year.

- Asia is expected to record the fastest rate of growth over the forecast period and to account for two-thirds of the global increase in demand in absolute terms.
- While galvanising will remain the largest end use of zinc, demand growth is expected to be fastest in brass semis/casting and in zinc alloy consumption (principally diecasting).

There has been a significant increase in global zinc production since 1996 although in recent years higher mine output from new mines has been offset by mine closures. Total world zinc consumption continued increasing at a faster pace of over 4% driven by strong growth in Eastern Europe and China where galvanising capacity has grown markedly in recent times. The higher internal consumption in China resulted in it becoming a net importer of zinc metal since early 2004.

Mine production has continued to be stagnant with increases in India, Morocco, Peru and Ireland compensated by lower production elsewhere keeping the concentrates supply market tight and contributing to lower treatment charges (the charge miners pay smelters to process their concentrate).

Industry forecasts predict a widening gap will emerge between known zinc mine supplies and the demand for zinc in concentrates which reflects the underlying growth in demand for refined zinc.

As zinc metal output is now largely restricted to the availability of zinc concentrates in the market, global metal production is increasing moderately.

The net effect of higher zinc consumption and a moderate growth in global metal output has kept the zinc metal market supply in deficit which should continue supporting zinc prices.

MRM currently produces nearly 10% of Australia's production of zinc in concentrate. In terms of MRM and its ranking in the world market, it is the largest producer of bulk concentrate. Bulk concentrate, essentially a zinc concentrate with a high lead content, is best used as a raw material feed to zinc smelters using the Imperial Smelting Process (ISP) where the zinc and lead are easily recovered from concentrate.

There are currently eight ISP smelters operating in the world today with two new projects in China planned to become operational late in 2006. Total capacity of zinc production from operating ISP smelters is approximately 735 kt (Brook Hunt, 2004). MRM currently supplies about 20% of this capacity in terms of zinc units.

MRM forecasts that the ISP market will continue at present levels and that MRM bulk concentrate will continue to be placed in this market.

2.2 Project Need

The forecast gap between known zinc supplies and the demand for zinc in concentrates (Figure 2.1) provides an opportunity for MRM to increase its participation in the zinc business and to capture an opportunity in the market by developing a highly competitive zinc-lead mine operation.

Continuation of the existing MRM operation utilising underground mining at the current output rate of 1.6 Mt/y will result in the mine becoming uneconomic to operate. The underground operation would

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McARTHUR RIVER MINE
OPEN CUT PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Job No.: 42625552 | Drawn: VH | Approved: CMP | Date: 12-11-2004

File No. 42625552-g-005b.cdr

Figure: 2.1

Rev: B

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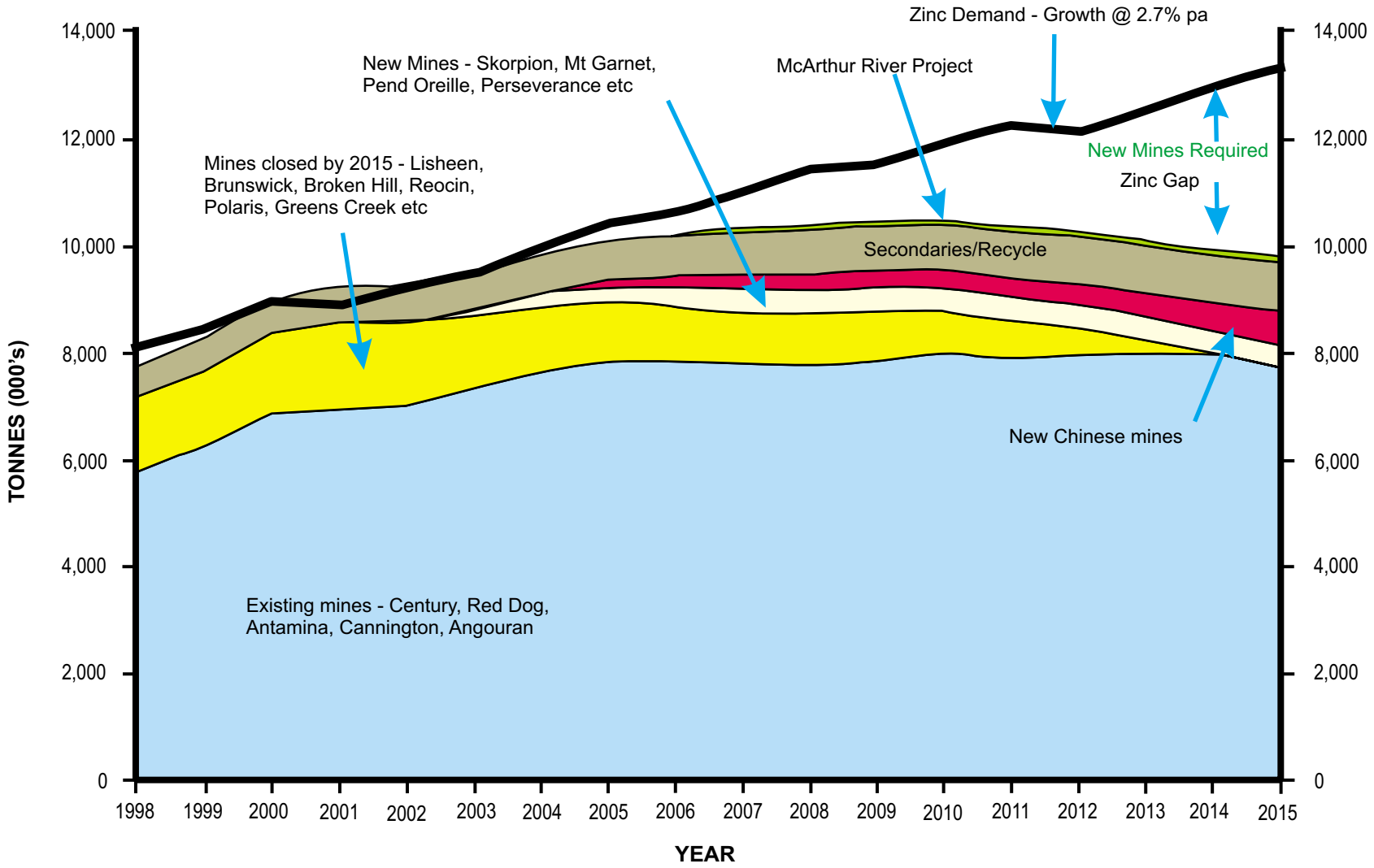
GLOBAL DEMAND FOR ZINC IN CONCENTRATES Vs IDENTIFIED ZINC MINE SUPPLY



require backfill paste after 2005 and this additional cost results in the mine becoming uneconomical as a bulk concentrate producer. Changing the mining method from underground to open cut will enable all ore-bodies to be economically mined and increase the mine life to 25 years.

In summary, MRM aims to secure the long-term viability of the operation by changing to open cut mining methods. A key component of the project will be the management of impacts to acceptable limits.

Should the open cut project not proceed, mining at McArthur River will cease. This will result in a loss of economic production for the Northern Territory, the loss of employment for the existing workforce, and detrimental socio-economic impacts in the region. Furthermore, the project benefits described in Section 2.3 will not be realised.

2.3 Project Benefits

This project will secure a substantial and long-term mining operation which will produce significant direct and indirect benefits to the Northern Territory and Australia generally.

The benefits from the proposed open cut project include:

- **Continued contribution to NT and Australian economies**: The open cut project will enable the economic benefits of the mine to continue. It will contribute $175 million to the Gross State Product of the Northern Territory and $271 million to Australia's Gross Domestic Product.
- **Capital investment:** The open cut project will result in a capital investment of about $80 million.
- **Increased mine life:** The mine life will be extended to 25 years, securing the future of the mine, its output and its employees.
- **Construction employment:** During construction, there will be an average of 290 jobs created in the Northern Territory (including flow-on effects) and 570 new jobs nationally (including flow-on effects) for each year of the construction phase.
- **Operational employment:** During operations, total employment in the Northern Territory generated by MRM (including flow-on effects) will be 610. National total employment will be 1,700 (including flow-on effects).
- **Economic output:** MRM's contribution to the economic output of all industries in the Northern Territory will be $329 million per year (including flow-on effects). Nationally, it will be $523 million (including flow-on effects).
- **Local economic activity:** During both construction and operations, employment opportunities will be available for local residents as well as opportunities for local businesses to provide goods and services to the mine.

2.4 Environmental Objectives

2.4.1 Xstrata's Health Safety Environment and Community Policy

The Xstrata plc Board ('the Board') establishes the strategic direction of the Group, which the Executive Management Team then implements. The Group operates a decentralised management model with authority delegated to Commodity Business Boards for Xstrata Alloys, Xstrata Coal, Xstrata Copper and Xstrata Zinc. MRM is part of Xstrata Zinc.

Commodity Businesses are given a high degree of autonomy to pursue their business objectives and they operate within the Group Policies governing inter alia:

- Risk management;
- Health, safety, environment and community; and
- Corporate social involvement

The Board has set the Health, Safety, Environment and Community (HSEC) Policy for application across the whole Group and expects the commodity businesses and supporting functions to implement the HSEC Policy and HSEC management standards within the confines of what the commodity businesses consider reasonable and operationally viable.

The Xstrata HSEC Policy is the driver for implementing and improving HSEC Management Systems. A copy of the HSEC Policy is attached in (Chart 2.1). The Policy forms the basis upon which Xstrata sets its objectives and targets, and establishes the direction for management systems development for each of the commodities businesses.

The commitments in the HSEC Policy are to be implemented by each business within Xstrata, through implementation of the 17 management standards (Table 2.1). The management standards establish the intent and performance requirements for HSEC. Copies of the management standards are available on the Xstrata website (www.xstrata.com).

Table 2.1

Xstrata's HSEC Management Standards

1. Leadership, Accountability and Ethics	10. Biodiversity and Land Management
2. Planning, Resources, Objectives and Targets	11. Contractors, Suppliers and Partners
3. Competency and Behaviour	12. Community
4. Communications and Engagement	13. Project Management
5. Risk and Change Management	14. Product Stewardship
6. Catastrophic Hazards	15. Incident Management
7. Legal Compliance and Document Control	16. Assessment and Reporting
8. Operational Integrity	17. Emergencies, Crises and Business Continuity
9. Health and Occupational Hygiene	

2.4.2 MRM's Environmental Policy and Management System

MRM have developed a site-based environmental policy to comply with ISO 14001 principles. A copy of the policy is given in Chart 1.2 of Section 1. The format and content of the policy is being reviewed as part of the review of significant environmental aspects and impacts at the site, the development of an updated environmental management system (EMS), and the integration of the Xstrata's HSEC Policy and Management Standards.

MRM has established an EMS to assist with the overall environmental management of the site. It is intended to fully develop the EMS by the end of 2005 in the form of an integrated HSEC Management System based on the 17 Xstrata HSEC management standards listed in Table 2.1.

The HSEC Management System will be fully compatible with the requirements of ISO 14001, and it is MRM's intention to have the HSEC Management System certified to ISO 14001 as soon as practicable.

2.4.3 Open Cut Project

The open cut project is being developed with a strong focus on sustainability. In order for the social and economic benefits to be realised, the local, regional and wider environment will be considered to ensure that future generations inherit a healthy and safe environment with improved living standards.

This draft EIS has been developed to identify the potential environmental impacts, to assess their significance, and to identify management strategies for these impacts. In conjunction with this, will operate a framework of environmental management through the implementation of the mine's environmental management system (EMS).

The open cut project will be implemented in accordance with the existing MRM environmental policy and EMS framework in order to ensure that potential impacts on the local, regional and global environment are minimised as far as practicable.

MRM's existing HCSE Management System will be modified to incorporate the open cut project. In this way environmental management of the open cut project will be fully integrated with the site's existing environmental objectives and systems.

An approved environmental monitoring program has been conducted annually by MRM since the mining operation commenced. The program includes monitoring of surface water, groundwater, artificial surface waters, sea water, potable water, marine sediment, stream sediment, dust, soil, noise, rehabilitation (vegetation and soil profile), marine flora and fauna, waste management aspects, meteorology, and greenhouse gas emissions.

The proposed open cut project will build on the existing environmental monitoring programs to ensure that environmental, cultural and socio-economic values of the project area are maintained. The potential environmental impacts from the project and the proposed management strategies and monitoring programs are discussed in detail in the subsequent sections of this draft EIS. The implications of the project with respect to the National Greenhouse Strategy are discussed in Section 18.4.

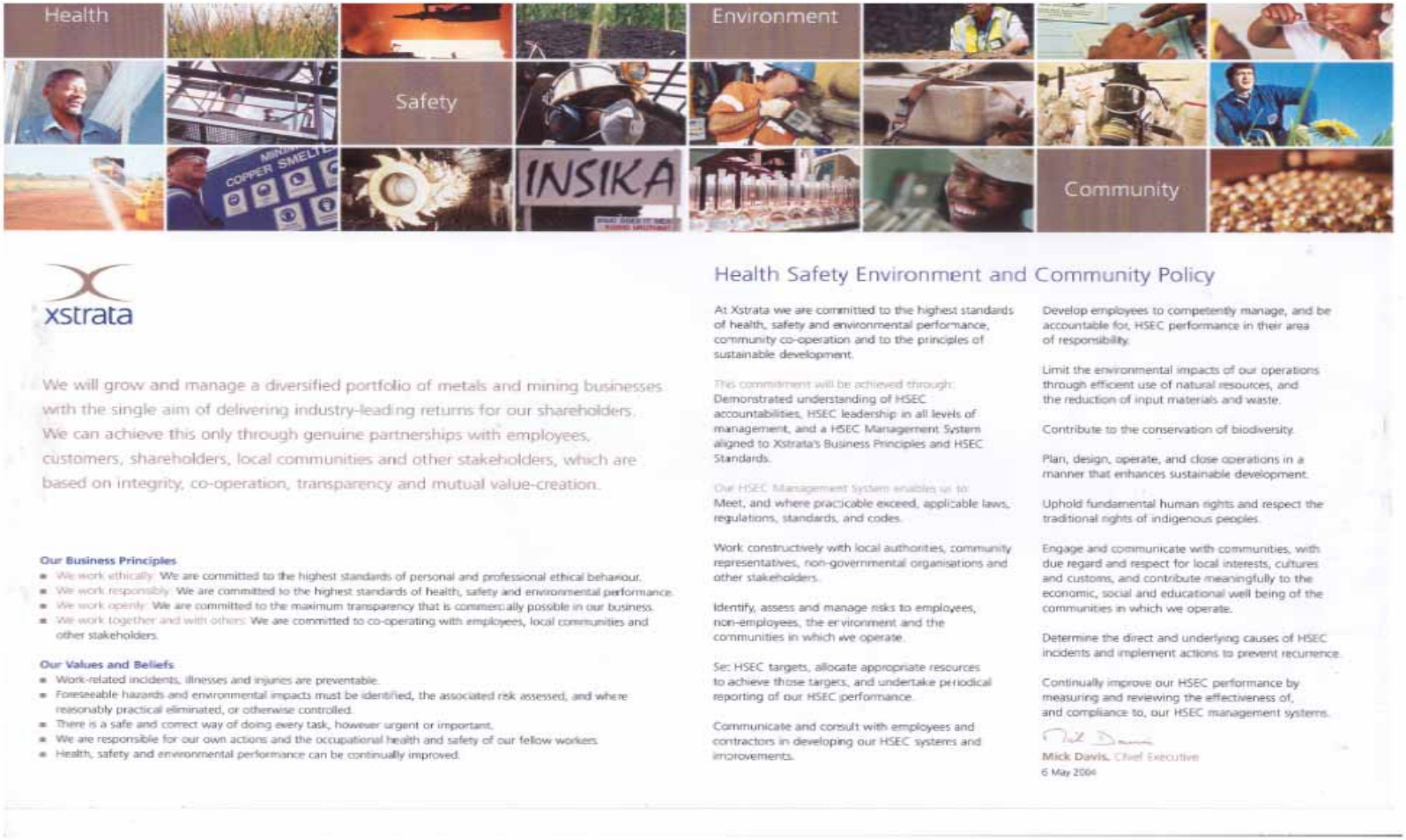


Chart 2.1 – Xstrata's HSEC Policy