

## 19 Environmental Management Plan

### 19.1 Purpose and Scope

This Environmental Management Plan (EMP) has been prepared to cover all construction and operational activities associated with the McArthur River Mine (MRM) Phase 3 Development Project (the Project). This plan has been developed in accordance with industry best practice, and to facilitate implementation of commitments stated in the Draft Environmental Impact Statement (EIS).

The purpose of this strategic EMP is to facilitate that appropriate environmental protection and impact minimisation techniques are implemented throughout the construction and operational activities at the Project. The following document describes the safeguards and controls to be employed to prevent, manage and monitor identified and potential impacts of MRM activities of the construction and operation period, and reflect commitments described throughout the various chapters of the Draft EIS.

### 19.2 Environmental Management

This EMP addresses the Final Guidelines for the Project Draft EIS and takes into account the Draft EIS findings. Commitments are expressed so as to be measurable and auditable; they set objectives, standards and measurable indicators, and include control strategies/actions to facilitate achievement of the objectives.

This EMP covers the existing McArthur River Mine and the Project. The environmental values, impacts, commitments and conditions apply to the Xstrata Zinc operations on the MRM leases.

#### 19.2.1 Management Systems

MRM currently has a Sustainable Development (SD) Management System that applies at the site that addresses Health, Safety Environment and Community issues. The SD Management System is compliant with Xstrata plc. and Xstrata Zinc's Sustainable Development Policy and Standards as well as ISO 14001 *International Environmental Management Standard* and AS 4801 *Australian Standard for Health and Safety Management* requirements.

#### 19.2.2 Resource Conservation Program

MRM has implemented various resource management programs which include the various components. These programs will be updated as necessary to incorporate relevant aspects of the Project. The components are:

- detailed baseline information is obtained prior to the development of new projects
- comprehensive assessment of new projects is undertaken
- a permit system is implemented to clear and dig, to prevent land disturbance unless authorised
- key performance indicators and targets are set for resource consumption and efficiency
- a waste management plan is implemented and reviewed periodically.

#### 19.2.3 Environmental Impact Management

MRM has implemented various environmental impact management programs which include various components. These programs will be updated as necessary to incorporate relevant aspects of the Project. The components are:

- annual internal reviews of environmental management
- facilitation of external annual regulatory reviews of environmental performance

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- environmental monitoring program with results reviewed monthly
- submission to the Northern Territory Government of an annual environmental monitoring report
- monthly review of site environmental compliance for relevant MRM sections and personnel.

## 19.2.4 Environmental Incident Management

MRM has implemented an environmental incident management procedure which includes various components. These procedures will be updated as necessary to incorporate relevant aspects of the Project. The components are:

- a system for reporting all incidents and hazards
- a follow up system for actions and outcomes resulting from incident investigations
- initial induction and ongoing training of employees and contractors in the incident reporting process
- communication of the outcomes and learning experiences of environmental incident investigations with employees and contractors.

## 19.2.5 Environmental Training

All Managers are responsible for identifying training and competency requirements for personnel under their control, and for ensuring that personnel have the requisite competencies, skills and training to carry out their assigned tasks. Managers are also responsible for ensuring training records are maintained. Training may include Inductions, Toolbox Meetings, Job Safety Environment Analysis (JSEAs) and Execution Plans.

MRM employees, contractors and visitors will receive appropriate environmental awareness training. This will be achieved through a variety of methods including induction training, formal presentations, and impromptu meetings.

Specifically, MRM requires that employees, contractors and visitors are aware of:

- their roles and responsibilities (including reporting environmental incidents)
- the environmental impacts, potential or actual, of their activities on site
- the potential consequences of poor environmental performance
- site emergency procedures.

MRM has implemented the following environmental training programs. They will be updated as necessary to incorporate the Project. The programs:

- include an environmental component in inductions for all employees, contractors and visitors
- provide specific environmental training at the department level as required.

Environmental awareness training will be provided at induction, and will be a regular feature of site-wide training. Records of training content and attendance will also be maintained.

The induction process is not intended to train all new employees and contractors in all aspects of environmental management at MRM. It provides a basic understanding of environmental requirements at MRM, and is followed as required by job-specific training. Training requirements are identified through the development of a Training Needs Analysis for each section or department. Additional training requirements can also be identified through the performance review process.

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## **19.2.6 Environmental Communication**

MRM has implemented the following environmental communication program that will continue for the Project:

- environmental information is communicated to employees and contractors via notice boards, the MRM intranet web page, and General Manager presentations
- the Sustainable Development Policy is displayed throughout the operation
- standards and guidelines are available electronically
- an MRM Sustainable Development Committee has been established
- MRM representatives, where required, are on industry and legislative committees and groups.

## **19.2.7 Environmental Management Program**

MRM has the following environmental management programs to control various activities, materials or services that can cause environmental harm. They will be updated as necessary to incorporate the activities within the Project area. The programs are:

- tailings storage and management
- overburden management
- mine site water management
- concentrate handling
- fuel and oil handling
- waste management and disposal
- dust and noise
- biodiversity management
- fire management.

## **19.2.8 Responsibilities**

MRM is responsible for the implementation and compliance with this EMP. MRM will engage construction contractors (the Constructor) to carry out activities such as process plant constructions. The selected Constructor will be responsible for the implementation of and compliance with this EMP.

MRM will be responsible for contractually binding the Constructor to compliance with this EMP and for regularly monitoring the environmental performance of the Constructor. MRM will also be responsible for approval of quality management procedures and systems prepared in association with the Constructor in accordance with this EMP.

Amongst other obligations, the Constructor shall be responsible for:

- development of systems, procedures and reporting mechanisms which will demonstrate in a tangible way, their compliance with the EMP and the MRM Contractors Suppliers and Partners procedure
- development and implementation of appropriate training to all staff and contractors on the requirements of this EMP. This shall range from detailed training for supervisors, through to inclusion of environmental matters in Project induction for other workers
- participating in audits and reviews and undertaking corrective actions and system improvements when audit and review results deem necessary.

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Overall responsibility for Environmental Management at McArthur River Mine lies with the Health, Safety and Environment (HSE) Manager. Work programs and monitoring are based around commitments from within the Sustainable Development Mining Management Plan, Sustainable Development Water Management Plan, Commonwealth Environmental Monitoring Plan and previous EIS and PER reports. All employees within the Environment team have their own responsibilities which are outlined in their job descriptions (JDAP). Contractors and consultants that conduct work for the environment team are normally managed by the HSE Manager although the Environmental Superintendent has input into various projects.

All MRM personnel are responsible for the environmental performance of their activities and for complying with the laws of the Northern Territory (NT) and Commonwealth.

## **19.2.9 Performance Indicators**

Performance indicators and evaluation techniques have been developed so that environmental management activities are satisfactorily focussed towards achieving desired outcomes (generally outcomes revolve around minimising environmental impact).

It is anticipated that this EMP will be a dynamic document. The continual evaluation and review of management activities will ensure that environmental management is based on the latest available information.

## **19.2.10 Corrective Actions and Contingency Arrangements**

Corrective actions guide necessary actions when monitoring finds that current management measures are not effective in mitigating impacts on a day to day basis, or when there has been a non-conformance with the strategies of the management plan. Contingency arrangements are triggered when management measures fail through human induced events (such as fire or spills) or natural extreme events (such as cyclones).

## **19.2.11 Monitoring Requirements**

Monitoring requirements have been listed for each category of management in order to establish whether there have been any impacts from the project, and to determine the effectiveness of mitigation measures. The recommended monitoring strategy will also determine whether the environmental strategies are being complied with, and whether any environmental incidents have occurred. Monitoring results will feed back into the management plan review, planned annually with the submission of the Mining Management Plan (MMP). The annual MRM MMP is submitted by the 1st of November annually for the reporting period 1st November to 30th October each subsequent year.

MRM annually reviews its MMP in accordance with the *Mining Management Act*. Should there be any significant changes to the operations within the reporting period of the MMP, an amendment will be prepared and submitted to the Department of Resources.

Effective monitoring requires acquisition of baseline data to compare back against throughout the life of the mine. As such, baseline flora and fauna surveys and baseline groundwater and surface water monitoring have been conducted throughout the mine life.

The environmental monitoring programme is designed to achieve the following objectives:

- confirm compliance with statutory regulations
- evaluate the environmental performance of the operation
- evaluate performance against objectives and targets
- assist in improving environmental management strategies

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- identify emerging environmental issues and potential impacts
- contributing to the local knowledge on regional biodiversity.

Significant monitoring requirements have been identified and documented in the Water Management Plan (WMP). MRM's monitoring programme is a dynamic system, which changes based on new government requirements and/or other agreed stakeholder expectations. The monitoring conducted at MRM is specified primarily in the WMP and the MMP.

An Environmental Monitoring Manual has also been developed which includes the following information:

- types of monitoring conducted
- frequency of monitoring
- monitoring locations
- analysis conducted on samples
- laboratories where samples are sent
- dispatch procedures
- invoicing procedures
- data management
- record keeping requirements
- safety issues associated with monitoring activities.

## 19.2.12 Reporting and Auditing

All reports, reviews, and audits will be maintained so that the objectives of the EMP are being achieved. Relevant information is made available to the appropriate Managers and, when relevant, the Regulatory Authorities. Audit results will be used to review management practices, and the EMP will be updated yearly to accommodate changes in management practices.

The McArthur River Mine Water Management Plan is to be submitted annually to the Northern Territory Department of Resources, as is currently the case. The annual Mining Management Plan will include the revised EMP.

### 19.2.12.1 Audits

Audits of EMP compliance will be conducted and reported as part of the annual MMP review and renewal process. The audit reports of the McArthur River Mine Independent Monitor can be found at <http://www.mrmindependentmonitor.com.au/>. In order to best assess the effectiveness of erosion and sediment control measures, annual environmental audits will be conducted during, or shortly after the wet season, access permitting. Any reasonable environmental practices, procedures or standards recommended after an environmental audit or assessment will be implemented at the first available opportunity. MRM understands the importance of high environmental standards and is committed to achieving this over the mine life.

Closure audits will be conducted upon completion of closure commitments, and yearly following closure until relinquishment to evaluate effectiveness of revegetation, erosion and soil stability management, ARD control, and water quality management. Timing of audits will be dependent on weather conditions and accessibility. Issues identified during audits will be recorded and corrective action implemented.

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## 19.2.12.2 Incident Reporting and Non-Conformance

Incident reporting will be continued to record any safety or environmental non-conformances or incidents. These will be recorded on an incident report form and forwarded to the relevant personnel, and, where relevant, the appropriate government agency. Incidents will be investigated and followed up and, where relevant, corrective actions nominated and implemented. Designated staff will be responsible for ensuring all incidents are thoroughly investigated and managed accordingly.

## 19.2.12.3 Complaints Register

Any complaints from the public or specific Project stakeholders will be reported in the existing Complaints Register in accordance with the Complaints Management Procedure. Each complaint will be reviewed upon receipt and addressed. Corrective actions and other recommendations including, where applicable, modifications to practices and procedures shall be made and closed out under the direction of relevant personnel.

## 19.3 Draft Environmental Management Plan

### 19.3.1 Purpose

The purpose of the following draft EMP for the Project is to identify potential environmental issues and mitigation measures together with corrective actions if an undesirable impact or unforeseen level of impact occurs.

### 19.3.2 Objectives

The objectives of the EMP are to:

- provide evidence of practical and achievable plans for the environmental management of the Project so that environmental requirements are complied with
- provide MRM as well as the Northern Territory and Commonwealth authorities with a framework to confirm compliance with relevant policies and requirements
- provide the community with evidence that the Project is being managed in an environmentally acceptable manner.

The EMP will be reviewed and periodically updated, if necessary, to reflect knowledge gained during the course of operations. Changes to the EMP will be implemented in consultation with the relevant authorities where necessary via MRM's Mining Management Plan.

### 19.3.3 Components

Each of the EMPs in the following sections has been prepared based on the recommended structure provided in the Final Guidelines for the Draft EIS. They are based on existing experience at MRM and the predicted future Project operations and reflect commitments described throughout the various chapters of the Draft EIS.

The draft Construction and Operations EMPs have been prepared at a strategic level describing a framework for environmental management for construction and operation of the Project. It is expected that a final EMP will be prepared at the conclusion of the assessment process taking into consideration comments on the Draft EIS, the EIS Supplement, and incorporating the Assessment Report recommendations.

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## 19.4 Construction Environmental Management Plan

MRM will retain overall responsibility for environmental management during the construction phase. Proven environment, health and safety (EHS) performance will be a key criterion in the selection of the construction contractor. Achievement of agreed EHS standards during construction will be a contract requirement and penalties will apply for serious breaches.

The construction contractor will be responsible for the preparation and implementation of the construction phase EMP and will be expected to comply with all responsibilities detailed in the MRM Contractors, Suppliers and Partners procedure. The contractor will identify responsibilities and organisation required to implement the accountabilities of the construction phase EMP. The requirements of the EMP will apply to the principal contractor and all sub-contractors.

The contractor will also be responsible for developing and implementing a site-specific induction program for all construction workers to complement the current MRM induction program. This program will include all EHS hazards and aspects and their control measures. Construction workers will be trained and competent and hold the appropriate certification for the tasks that they will be undertaking.

In the event of a non-compliance with the EMP, it will be the responsibility of the construction contractor to investigate and report and implement appropriate corrective actions in accordance with MRM procedures.

### 19.4.1 Waste Management Plan

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| Objective                                      | Efficient use of resources and minimisation of waste generation and disposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Target                                         | Achieving cost effective waste management by: <ul style="list-style-type: none"><li>• minimising waste generation</li><li>• maximising waste re-use and materials re-use</li><li>• maximising recycling</li><li>• safely treating and disposing of all non-reusable and non-recyclable materials.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Actions (Refer to Draft EIS Chapter 9 – Waste) | <p>Waste Management</p> <p>The construction contractor will prepare a waste management plan which will incorporate the elements outlined below:</p> <ul style="list-style-type: none"><li>• incorporation of the waste management commitments contained in Enduring Value – The Australian Minerals Industry Framework For Sustainable Development</li><li>• alignment with MRM's existing waste management strategies and plans</li><li>• the scope and objective of this plan</li><li>• opportunities and actions to be taken to implement the waste management hierarchy</li><li>• quantitative estimates of the expected waste streams and emissions</li><li>• agreements with suppliers to accept the return of unused materials</li><li>• agreements with and license details of, companies accepting wastes for off-site disposal</li><li>• agreements with and license details of companies to be used for the off-site transport of wastes</li><li>• workforce training programs in waste minimisation practices</li><li>• a monitoring program</li><li>• emergency response procedures</li><li>• a reporting program</li><li>• Examples of the actions to be undertaken include the following:</li></ul> |

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|                                    | <ul style="list-style-type: none"> <li>• where possible trees from site clearing will be chipped and stockpiled for use on site landscaping and rehabilitation</li> <li>• where practical, any excess materials and used chemical containers will be returned to the supplier</li> <li>• waste streams will be separated into various components at the point at which they are produced. Waste separation at source will be achieved by providing bins for re-useable and recyclable materials. An area on-site will be allocated for the collection of re-useable and recyclable materials</li> <li>• waste oil will be collected for transport and off-site disposal</li> <li>• any contaminated wastes will be disposed of at the Tailings Storage Facility (TSF)</li> <li>• packaging and office waste will be buried at the existing on-site refuse facility</li> <li>• recyclable building wastes will be collected separately and re-used or recycled where possible.</li> </ul> |
| Monitoring Programs                | <p>The waste management plan will require the following waste streams to be measured and reported:</p> <ul style="list-style-type: none"> <li>• waste generation</li> <li>• waste re-use</li> <li>• waste recycling</li> <li>• waste disposal.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Performance Indicators             | <p>Records of waste transport and disposal.<br/>Waste minimised or recycled wherever possible.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Reporting                          | <p>During construction, the Construction Contractor will report monthly to the MRM General Manager on the results of the waste monitoring program and other relevant waste management issues.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Corrective Actions                 | <p>The following constitute incidences or failures to comply in relation to waste management policies:</p> <ul style="list-style-type: none"> <li>• wastes being disposed of rather than reused or recycled where possible</li> <li>• uncontrolled waste disposal</li> <li>• other non-compliances with the waste management plan.</li> </ul> <p>Should an incident or failure to comply occur, the contractor's environmental representative will take the necessary actions to identify the causes of non-conformance with the waste management plan performance requirements and implement actions the necessary to achieve compliance.</p>                                                                                                                                                                                                                                                                                                                                           |
| Responsibility                     | <p>Construction contractor(s)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Relevant Legislation and Standards | <p>MRM's Sustainable Development Policy, Standards and Procedures.<br/><i>Waste Management and Pollution Control Act 1998.</i><br/>Environmental Protection (National Pollution Inventory) Objective 2004.<br/>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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## 19.4.2 Surface Water Management Plan

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| Objective                                                 | Minimise erosion and the discharge of contaminated surface water generated from construction activities to the surrounding environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Target                                                    | To prevent the direct or indirect release of contaminated runoff resulting from construction activities to surface waters.<br>To prevent incidences of accelerated erosion as a result of the construction activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Actions (Refer to Draft EIS Chapter 10 – Water Resources) | <p>Provide bunded storage areas for fuels and dangerous goods required for construction equipment with spill cleanup kits in accordance with the requirements of AS 1940:2004 and AS 3780:2008.</p> <p>Implement controls so that all transfer of fuels and chemicals is managed to prevent spillage.</p> <p>Construction contractor to prepare and implement a site-specific construction erosion and sediment control plan in accordance with the Institution of Engineers Australia – Erosion and Sediment Control Guidelines (1996).</p> <p>Diversion bunds, silt fences and/or sediment traps to be installed downstream of all work areas draining to the natural drainage system. Where practicable, procedures for the construction and maintenance of the sediment traps will include the following:</p> <ul style="list-style-type: none"> <li>• sediment traps will be preferably excavated below the natural ground surface. Where it is necessary to construct embankments to form a sediment trap, embankments will to be adequately compacted with batter slopes commensurate with the available materials</li> <li>• sediment traps will include a high flow spillway outlet to safely divert floods without breaching the basin</li> <li>• sediment traps will include adequate provisions for access for regular monitoring and maintenance to clean out captured sediments</li> <li>• sediment traps will be sized with sufficient sediment storage capacity to match the combination of the rate of sediment supply and planned frequency of sediment removal from the basin</li> <li>• clean water diversion drains will be installed to divert clean stormwater flow from undisturbed areas away from the sediment traps. Diversion drains will also be installed as necessary to direct sediment-laden stormwater flow to the sediment traps.</li> </ul> <p>Measures to be taken to minimise the impact of erosion and sediment movement include the following:</p> <p>Infrastructure and Development Areas</p> <ul style="list-style-type: none"> <li>• limit the disturbed area and clearing vegetation progressively, immediately prior to construction activities commencing</li> <li>• safeguard the surface layer by stripping and stockpiling useable topsoil prior to construction</li> <li>• using temporary soil diversion mounds to control runoff within and divert water away from the construction site</li> <li>• minimise the period that bare soil is left exposed to erosion</li> <li>• use sediment traps/silt fences etc., to minimise off-site effects of erosion</li> <li>• provide rapid vegetation cover, including, where required, erosion control matting</li> <li>• reuse stored topsoil in revegetation and landscaping activities.</li> </ul> <p>Construction Roads and Temporary Access Tracks</p> <ul style="list-style-type: none"> <li>• grade roads to a crown and provided efficient surface drainage to prevent runoff eroding either the road surface or the adjacent land</li> <li>• low mounds angled across the track will be constructed to divert runoff (at a non erosive velocity) into adjacent areas where necessary</li> </ul> |

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|                                    | <ul style="list-style-type: none"> <li>• create cut and fill batters (associated with service tracks) to a safe slope and stabilised by vegetation where practicable</li> <li>• table drains that need to be established will be designed to a broad dish shape, grassed or lined appropriately, to prevent erosion</li> <li>• the removal and rehabilitation of all temporary construction tracks and laydown areas once construction is completed.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Monitoring Programs                | The construction contractor will conduct regular inspections of construction areas and assess the condition and operability of site drains and erosion mitigation measures. Inspections shall be conducted on a weekly basis during the wet season as well as after each significant rainfall event.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Performance Indicators             | Adherence with Waste Discharge Licence and Water Management Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Reporting                          | <p>The construction contractor will report monthly to MRM's General Manager on the following:</p> <ul style="list-style-type: none"> <li>• compliance with the approved erosion and sediment control plan</li> <li>• incidents of erosion</li> <li>• incidents of any discharge of contaminated runoff</li> <li>• results of weekly inspections</li> <li>• results of any corrective actions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Corrective Actions                 | <p>Incidents or failure to comply in relation to surface water management include:</p> <ul style="list-style-type: none"> <li>• breach in integrity of ponds, bunds or drains</li> <li>• discharge of contaminated runoff</li> <li>• spilled fuel or wastes enter the stormwater drainage system</li> <li>• sedimentation ponds demonstrating significant reduced available volume</li> <li>• insufficient general housekeeping to prevent general rubbish and contaminants entering the stormwater runoff from the site.</li> </ul> <p>Should an incident or failure to comply occur in relation to stormwater management, a selection of the following corrective actions will be considered where relevant:</p> <ul style="list-style-type: none"> <li>• repair stormwater controls (e.g. ponds, bunds and drains)</li> <li>• contain and remediate or dispose of contaminated material/contaminants</li> <li>• treat or dispose of contaminated stormwater</li> <li>• clean out the sedimentation ponds</li> <li>• undertake additional general housekeeping to minimise rubbish and contaminants entering the stormwater</li> <li>• review the erosion and sediment control plan.</li> </ul> |
| Responsibility                     | Construction contractor(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Relevant Legislation and Standards | <p>AS 1940:2004 <i>The Storage and Handling of Flammable and Combustible Liquids</i>.<br/> AS 3780:2008. <i>The Storage and Handling of Corrosive Substances</i>.<br/> MRM's Sustainable Development Policy, Standards and Procedures.<br/> Waste Discharge Licence pursuant to Section 74 of the <i>Water Act</i>.<br/> ANZECC Guidelines for Fresh and Marine Water Quality 2000.<br/> ICMM Sustainable Development Framework.<br/> Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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## 19.4.3 Air Quality and Greenhouse Gases Management Plan

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| Objective                                                                  | To control the release of fugitive emissions and greenhouse gases to air from areas where construction activities are occurring.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Target                                                                     | No fugitive emissions to air causing, or likely to cause, an environmental nuisance at the accommodation village or beyond the lease boundaries. These include odour, dust, smoke and fumes.<br>Minimise greenhouse gas emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Actions (Refer to Draft EIS Chapter 11 – Air Quality and Greenhouse Gases) | <p>Actions to be undertaken to control air quality/greenhouse gas emissions during construction include the following:</p> <ul style="list-style-type: none"> <li>• reschedule vegetation clearing activities or earthworks during periods of high wind if visible dust is blowing over the accommodation village or off-lease</li> <li>• regular watering or other treatment of haul roads and exposed construction areas subject to vehicle and machinery movements</li> <li>• ensuring that vehicles and equipment are appropriately maintained or covered to minimise air emissions</li> <li>• vehicles must be maintained for optimal diesel efficiency to minimise CO<sub>2</sub> emissions</li> <li>• natural gas will continue to be used as the principal energy source for electricity generation</li> <li>• revegetate disturbed areas as soon as possible</li> <li>• no open burning of wastes to be undertaken without permission</li> <li>• topsoil stockpiles will be stabilised with an appropriate surface cover.</li> </ul> |
| Monitoring Programs                                                        | <p>Visual inspections will be undertaken by the construction contractor to check for evidence of excessive dust generation.</p> <p>The existing dust monitoring network will be referenced to determine whether dust controls are being applied effectively.</p> <p>Diesel and electricity use.</p> <p>Estimate greenhouse gas emissions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Performance Indicators                                                     | Air emissions and greenhouse gas emissions minimised.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Reporting                                                                  | Results of dust monitoring and greenhouse gas emissions will be stored in the monitoring database and reviewed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Corrective Actions                                                         | <p>The following would constitute an incident or failure to comply in regards to air quality management:</p> <ul style="list-style-type: none"> <li>• receipt of a justifiable complaint about fugitive emissions or dust</li> <li>• exceeding dust goals</li> <li>• exceeding greenhouse gas targets.</li> </ul> <p>The construction contractor will investigate all complaints and will assess site operations to determine the source of the emissions and identify any significant modifications to activities and processes that can be made to reduce emissions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Responsibility                                                             | Construction contractor(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Relevant Legislation and Standards                                         | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p>ICMM Sustainable Development Framework.</p> <p>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p> <p>National Environmental Protection Measure for Ambient Air Quality.</p> <p>National Greenhouse and Energy Reporting Act 2007 (NGER Act).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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## 19.4.4 Noise Management Plan

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|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                                                     | Control the noise generated during the construction phase and to mitigate any potential noise impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Target                                                        | Noise levels from construction activities not to cause a nuisance at the accommodation village or off-site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Actions (Refer to Draft EIS Chapter 12 – Noise and Vibration) | <p>The following strategies will be implemented during the construction phase of the project:</p> <ul style="list-style-type: none"> <li>• best available work practices will be employed on-site to manage occupational noise levels</li> <li>• all construction equipment will be regularly inspected and maintained in good working condition</li> <li>• the construction laydown area will be located away from noise sensitive locations.</li> </ul>                                                                                                                                                                                                     |
| Monitoring Programs                                           | <p>Should a justifiable noise complaint be received, an appropriately designed monitoring program will be implemented by the construction contractor.</p> <p>Any monitoring conducted will be in accordance with Australian Standard 1055 <i>Acoustics - Description and Measurement of Environmental Noise</i> AS 1055.1 - 1997.</p>                                                                                                                                                                                                                                                                                                                         |
| Performance Indicators                                        | Number of noise complaints.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Reporting                                                     | <p>Any noise complaints will be documented in the Complaints Register, investigated and reported by the construction contractor to the MRM General Manager.</p> <p>The results of any monitoring undertaken by the construction contractor will also be reported to the MRM General Manager.</p>                                                                                                                                                                                                                                                                                                                                                              |
| Corrective Actions                                            | <p>The following represents an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>• noise complaint received</li> <li>• non-compliance with the above control actions.</li> </ul> <p>Should a failure to comply occur, the following steps will be taken:</p> <ul style="list-style-type: none"> <li>• construction activities will be investigated to determine the cause of the problem</li> <li>• control measures will be reviewed to prevent recurrences and, where necessary, additional control and mitigation measures will be investigated and installed</li> <li>• a noise monitoring program will be considered.</li> </ul> |
| Responsibility                                                | Construction contractor(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Relevant Legislation and Standards                            | <p>MRM's Sustainable Development Policy and Procedures.</p> <p>AS 2436-2010 <i>Guide to Noise Control on Construction, Maintenance and Demolition Sites</i>.</p> <p>AS 1055.1 1997 <i>Acoustics: Description and Measurement of Environmental Noise; Part 1: General Procedures</i>.</p>                                                                                                                                                                                                                                                                                                                                                                      |

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## 19.4.5 Nature Conservation

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|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                                                     | <p>Minimise the impact of construction activities on vegetation adjacent to construction areas.</p> <p>Prevent the spread of weeds.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Target                                                        | <p>No disturbance of flora outside of designated construction activity areas.</p> <p>No increase in weed distribution above background levels.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Actions (Refer to Draft EIS Chapter 13 – Nature Conservation) | <p>All clearing will be conducted in accordance with MRM's Permit to Clear procedure. The construction contractor will prepare a vegetation clearing plan.</p> <p>Construction activities will be limited to designated areas unless approved by MRM's General Manager. The total area to be cleared for construction will be restricted to the minimum required.</p> <p>Prior to clearing, the boundary of the area authorised to be cleared will be identified and clearly marked to prevent construction vehicles impacting on adjacent undisturbed vegetation.</p> <p>Prior to clearing, a clearing pattern will be determined that will allow fauna adequate opportunity for dispersal into adjacent habitat.</p> <p>Cleared vegetation will be pushed into a series of windrows within the disturbed area and either chipped for reuse in rehabilitation areas or burnt.</p> <p>Vegetation will be burnt only after receipt of a Permit to Burn. This ensures that relevant parties are notified of the date, time and location of the controlled burn. Parties include Air North, NT Bushfire Council, Community Relations/traditional owners, and the McArthur River Pastoral Lease Manager.</p> <p>Vegetation identified as potentially valuable habitat (e.g. hollow logs) may be stockpiled for use in erosion and sediment control works or in site rehabilitation.</p> <p>The current weed control program will be continued and will involve periodic (monthly) inspection of construction sites and downstream areas and control of any infestations of declared weeds. The source of any infestation will be investigated and the most appropriate control technique will be implemented.</p> |
| Monitoring Programs                                           | <p>Monitoring of vegetation health adjacent to the construction activity area will be undertaken during and after construction.</p> <p>Monthly inspection for weed infestation of the construction site and/or downstream areas.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Performance Indicators                                        | <p>No unplanned or unapproved damage to flora and fauna.</p> <p>Demonstration that clearing has only occurred in approved areas and in accordance with Project drawings and mapping.</p> <p>Rehabilitation of disturbed areas after construction.</p> <p>Weeds and pest animals are no more prevalent within the project area than on adjacent lands.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Reporting                                                     | <p>The construction contractor will report any incidents of vegetation disturbance outside of designated areas or weed infestation to MRM's General Manager.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Corrective Actions                                            | <p>The following constitute an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>unauthorised disturbance of vegetation outside of the designated area</li> <li>evidence of weed infestation.</li> </ul> <p>In the event of a failure to comply, investigations will be undertaken into the cause of the incident or failure to comply and the appropriate action taken to overcome the problem.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Responsibility                                                | <p>Construction contractor(s).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Relevant Legislation and Standards                            | <p>MRM's Sustainable Development Policy Standards and Procedures.</p> <p><i>Weeds Management Act.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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## 19.4.6 Mosquito Management Plan

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| Objectives                                                                         | Prevent the occurrence of potential mosquito breeding sites and the presence of adult mosquitos.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Targets                                                                            | No mosquito breeding sites created by construction activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | <p>Construction activities will be concentrated in the dry season as much as possible.</p> <p>Any depressions created in the ground surface where possible will be filled or drained to prevent the ponding of water.</p> <p>Stockpiles will be placed in areas that do not impede drainage and will be shaped to prevent ponding.</p> <p>Storage containers capable of ponding water will be either discarded after use or stored in an inverted position (care will be taken that ponding does not occur in rubbish storage areas).</p> <p>Any ponds and on-site excavations filled with water will be inspected for the presence of mosquito larvae during the wet season, as is the current case. If larvae are detected, the Medical Entomology Branch of NT Health will be contacted for assistance in choosing a suitable method of lavaciding. If required, an adulticiding program will also be undertaken.</p> <p>Erosion and washdown practices will be controlled to prevent sediment and debris forming standing water pools in natural watercourses adjacent to the site.</p> <p>All drainage channels/spoon drains will be kept as shallow as possible to prevent ponding.</p> <p>Sedimentation ponds will be emptied promptly after storm events to prevent long-term ponding.</p> <p>All construction workers will be educated to be especially vigilant during the high mosquito borne disease risk periods (late dry to post wet) through the use of long sleeved shirts and trousers, avoidance of going outside at sundown, and the regular use of insect repellent. Insect repellent will be provided at work sites.</p> <p>Workers will be educated about the early symptoms associated with exposure to mosquito borne arbovirus and will be instructed on the need to report any symptoms to a medical officer.</p> <p>All construction accommodation facilities will be screened and air conditioned and external street lighting will be fitted with yellow bulbs to discourage mosquitos.</p> |
| Monitoring Programs                                                                | The construction contractor will check mosquito activity within the construction accommodation and work areas to identify if mitigation measures are not successful and to determine whether larval and adult eradication programs should be implemented.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Performance Indicators                                                             | <p>Personal Protection Equipment (PPE) adequate to prevent exposure.</p> <p>Minimal impacts from biting insects on personnel.</p> <p>Spraying implemented if required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Reporting                                                                          | Any significant mosquito activity will be reported to MRM's General Manager and/or the Northern Territory Medical Entomology Branch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Corrective Actions                                                                 | <p>The following represent an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>• mosquito breeding sites created by construction activities</li> <li>• excessive numbers of larvae and/or mature mosquitoes are evident on-site</li> <li>• significant incidences of mosquito bites are reported.</li> </ul> <p>Should an incident or failure to comply occur, a selection of the following actions will be taken:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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|                                    | <ul style="list-style-type: none"> <li>an investigation will be undertaken into why directives are not being carried out</li> <li>employees will be re-educated on desired practices</li> <li>work policies and procedures will be changed to improve the situation.</li> </ul> |
| Responsibility                     | Construction contractor(s).                                                                                                                                                                                                                                                     |
| Relevant legislation and Standards | MRM's Sustainable Development Policy, Standards and Procedures.                                                                                                                                                                                                                 |

## 19.4.7 Chemicals and Dangerous Goods Management Plan

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|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objectives                                                                         | Safely manage, purchase, store, handle and dispose of fuels and chemicals and prevent uncontrolled releases to the environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Targets                                                                            | <ul style="list-style-type: none"> <li>Compliance with relevant Australian Standards (e.g. for the storage and handling of flammable and combustible liquids and dangerous goods) including: <ul style="list-style-type: none"> <li>AS 4452 <i>The Storage and Handling of Toxic Substances</i></li> <li>AS 1940 <i>The Storage and Handling of Flammable and Combustible Liquids</i></li> <li>AS 3740 <i>The Storage and Handling of Corrosive Substances</i>.</li> </ul> </li> </ul> <p>No spills of chemicals or release of chemicals to the environment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | <p>Material Safety Data Sheets (MSDSs) of all chemicals used during construction will be kept in a register by the construction contractor.</p> <p>The construction contractor to have procedures in place regarding emergencies relating to chemicals and dangerous goods consistent with MRM's SD System.</p> <p>Records will be kept on the existing inventory, storage location, personnel training and disposal of waste for all chemical and dangerous goods used on-site.</p> <p>All relevant construction workers will be trained in appropriate handling, storage and containment practices for chemicals and dangerous goods as is relevant to their position.</p> <p>Fuel and chemicals stored in accordance with the requirements of relevant Australian Standards.</p> <p>Provide bunded storage areas for fuels and dangerous goods required for construction equipment with spill clean-up kits.</p> <p>Implement controls for all transfer of fuels and chemicals to prevent spillage.</p> <p>Any spills to be cleaned up immediately.</p> <p>Contaminated runoff and contaminated soil will be collected and remediated or disposed of in the TSF.</p> |
| Monitoring Programs                                                                | Inspections of storages tanks and bulk containers and the integrity of bunded areas, pavement and associated containment systems will be conducted monthly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Performance Indicators                                                             | <p>No contamination of the environment by hazardous goods.</p> <p>Any spills are addressed and appropriate remedial action implemented.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Reporting                                                                          | <p>The construction contractor will record and sign off on monthly inspections of containers, bund integrity, valves and storage and handling areas.</p> <p>Spills will be reported to MRM's General Manager including actions taken to minimise the impacts.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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| Corrective Actions                 | <p>Should an incident occur, a selection of the following corrective actions will be undertaken as appropriate:</p> <ul style="list-style-type: none"> <li>• contain and clean up spilt material immediately and remediate or appropriately dispose of contaminated material</li> <li>• repair containment systems</li> <li>• relocate fuel or chemicals to appropriately bunded or approved storage areas.</li> </ul> |
| Responsibility                     | Construction contractor(s).                                                                                                                                                                                                                                                                                                                                                                                            |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy and Procedures.<br>Relevant Australian Standards (AS 1940, AS 3740 AS 4452).                                                                                                                                                                                                                                                                                                      |

## 19.4.8 Health and Safety Management Plan

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|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                                                                          | The construction phase does not adversely affect the health and safety of employees, contractors or the general public.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Target                                                                             | Zero reportable injuries and work-related illnesses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | <p>The site's existing SD management system will be modified to incorporate construction requirements.</p> <p>The site's existing behavioural safety management program will be modified to incorporate the requirements of the construction phase.</p> <p>Safety training will be implemented through both general site safety induction as well as area specific inductions.</p> <p>Job Safety Environment Analysis will be undertaken as required for specific tasks associated with the Project construction phase and used to develop Standard Operating Procedures to comply with the MRM/Xstrata Zinc standards.</p> <p>Existing workplace hazards and procedures will be modified to incorporate the construction phase of the Project. These procedures will include:</p> <ul style="list-style-type: none"> <li>• hazardous substances/dangerous goods</li> <li>• noise</li> <li>• isolation and tagging</li> <li>• manual handling</li> <li>• personal protection equipment.</li> <li>• confined spaces</li> <li>• height safety</li> <li>• health and hygiene programs</li> <li>• illness and injury management system</li> </ul> |
| Monitoring Programs                                                                | MRM is committed to continuous improvement through the regular auditing of the site's health and safety health systems both internally and externally through an AS/NZS 4801:2001 certification body.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Performance Indicators                                                             | <p>Number of incident reports.</p> <p>Severity of incidents (e.g. fatality, injury, major spill).</p> <p>Percentage compliance with training procedures.</p> <p>Percentage compliance with corrective action procedures.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Reporting                                                                          | <p>The Constructor's OHS representative will report weekly to the Executive Management Team on any health and safety issues that need to be addressed.</p> <p>The results of all health and safety audits will be reported to the General Manager.</p> <p>MRM's existing electronic incident reporting process will be used to report all incidents.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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| Corrective Actions                 | MRM will investigate, respond to and take appropriate corrective action and preventive action following a health and safety incident.                                                                                                                                                           |
| Responsibility                     | Construction contractor(s).                                                                                                                                                                                                                                                                     |
| Relevant Legislation and Standards | MRM's Sustainable Development Policies, Standards and Procedures.<br><i>Workplace Health and Safety Act 2007.</i><br><i>Workplace Health and Safety Regulations 2010.</i><br>AS/NZS 4801:2001.<br>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005. |

## 19.4.9 Incidents and Complaints Management Plan

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| Objective                                                                          | Manage environmental or social incidents and complaints.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Target                                                                             | Immediate action undertaken as soon as possible and within 24 hours of receipt of a complaint.<br>Investigations completed within seven days of receipt of a complaint.<br>All corrective actions implemented by the nominated due date.                                                                                                                                                                                                                                                                                                                                                                          |
| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | All incidents or complaints about either environmental or social issues will be managed in accordance with the relevant MRM procedure. This procedure requires the following actions to be undertaken: <ul style="list-style-type: none"> <li>• take any necessary immediate action</li> <li>• report the incident or complaint (including to Government if necessary)</li> <li>• undertake an investigation</li> <li>• determine root causes</li> <li>• undertake any necessary corrective or preventative actions</li> <li>• monitor action implementation</li> <li>• audit effectiveness of action.</li> </ul> |
| Monitoring Programs                                                                | The construction contractor will monitor compliance against the targets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Performance Indicators                                                             | Number of complaints received.<br>Number of complaints resolved within specific timeframe.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Reporting                                                                          | All incidents and complaints will be recorded in the construction contractor's incident reporting system.<br>Reports of all incidents and complaints will be submitted to MRM's General Manager.<br>The complainant will be advised of what action, if any, is taken as a result of the complaint.                                                                                                                                                                                                                                                                                                                |
| Corrective Actions                                                                 | Should further incidents occur or complaints be received in relation to previous occurrences, an appropriate selection of the following corrective actions will be undertaken: <ul style="list-style-type: none"> <li>• additional environmental awareness training of the workforce with respect to the procedures to be followed for environmental incidents or complaints</li> <li>• investigation into why the incident/complaint was not addressed within the specified time frame</li> <li>• undertake incident/complaint follow-up according to the results of the investigation.</li> </ul>               |

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| Responsibility                     | Construction contractor(s).                                                                                                                                                                            |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy, Standards and Procedures.<br>ICMM Sustainable Development Framework.<br>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development. |

## 19.4.10 Transport Management Plan

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                                          | Manage construction traffic to and from the Project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Target                                             | Minimal impact on road safety and pavement conditions.<br>Minimal increase in road congestion.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Actions (Refer to Draft EIS Chapter 8 – Transport) | Traffic management and logistics plans will be developed to reduce total vehicular travel distance and risk of accidents from project construction.<br>MRM will work with government and industry with respect to infrastructure modifications which may be required to meet the increased demands on the regional and local transport network.<br>Measures, including project-based speed limits, will be implemented to reduce, as far as practicable, the generation of dust by project vehicles during construction. |
| Monitoring Programs                                | Routine monitoring of near-misses and traffic accidents (incident reporting system).<br>Monitoring of pavement condition of construction haul routes.                                                                                                                                                                                                                                                                                                                                                                    |
| Performance Indicators                             | Road safety and pavement conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Reporting                                          | Data will be gathered and communicated through existing SD reporting systems.<br>Independent reports will be produced for any investigations triggered by a complaint or an audit finding.                                                                                                                                                                                                                                                                                                                               |
| Corrective Actions                                 | Corrective actions will depend on the nature of the issue, for example, for excessive congestion of a particular route, alternative routes will be investigated and logistics plan altered as required and/or traffic monitoring will target the particular route. However, this is not anticipated to be an issue due to the isolated location of the site.                                                                                                                                                             |
| Responsibility                                     | Construction contractor(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Relevant Legislation and Standards                 | MRM's Sustainable Development Policy, Standards and Procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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## 19.5 Operations Environment Management Plan

The existing environmental management procedures will apply to the operational phase of the Project. The EMP will be progressively updated to include changes associated with the mine as they occur.

MRM's General Manager will have overall responsibility for ensuring that all environmental commitments are met. All employees will be responsible for day-to-day implementation of the requirements of the EMP. Area Superintendents will report on the implementation and performance of the EMP within their areas of responsibility.

In the event of a non-compliance with the EMP, it will be the responsibility of the Area Superintendents to undertake appropriate investigation, reporting and implementation of corrective actions in accordance with MRM procedures.

### 19.5.1 Land Resources and Rehabilitation Management Plan

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| Objective                                                                                                  | Rehabilitation will be sustainable and, where operationally practicable, is undertaken progressively.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Target                                                                                                     | Rehabilitation works will, at the completion of mining, result in a stable vegetated landscape and stable realigned drainage channels having minimal impact on the surrounding environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Actions (Refer to Draft EIS Chapter 5 – Rehabilitation and Decommissioning and Chapter 7 – Land Resources) | <p>The site's rehabilitation program, which is presented in the MRM Life of Mine Plan, will be updated to incorporate the Project. The post-mine land use for areas disturbed by the Project will be a self-sustaining vegetation community using appropriate native tree, shrub and pasture grass species.</p> <p>The rehabilitation strategy will remain flexible and will be amended as new rehabilitation techniques emerge and as environmental investigations progress, or when the mine plan is modified. Rehabilitation programs will be developed on an ongoing basis and will be implemented at the appropriate sites. Rehabilitation will commence when areas become available. Land will be regarded as successfully rehabilitated when nominated targets for land suitability, land use, landform stability, and land contamination have been met.</p> <p>Materials will be placed in a strategic manner to facilitate progressive rehabilitation and to minimise material handling costs.</p> <p>Trials and studies will be undertaken to enable effective techniques to be implemented when carrying out rehabilitation.</p> <p>Rehabilitation requirements, plans and timelines will be reviewed annually.</p> <p>Development of revegetation strategies will be an ongoing component of rehabilitation activities.</p> <p>Soils, Land Suitability and Land Use</p> <p>Measures to mitigate potential soil impacts include:</p> <ul style="list-style-type: none"><li>• implementation of appropriate erosion and sediment control measures prior to and during soil disturbance</li><li>• soil stripping will be limited to the minimum area required for operational purposes at any one time</li><li>• all topsoil and soil forming materials will be stockpiled in a manner which retains soil qualities</li><li>• rehabilitation will be undertaken as soon as viable areas become available</li><li>• sediment control dams will be constructed to minimise the amount of soil lost to erosion during rainfall events</li><li>• achieve appropriate landform profiles, revegetation and surface water management to minimise erosion and sedimentation</li><li>• selected final slopes on rehabilitation sites will be subject to erosion monitoring</li></ul> |

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|  | <ul style="list-style-type: none"> <li>an environmental auditing program, including stability and erosion auditing, will be continued.</li> </ul> <p>The mine workshop and fuel storage areas are recognised as having the potential to generate contaminated land through hydrocarbon spills. All fuel and chemical storage areas within the industrial area will be bunded, and contaminants from the workshop and truck wash-down areas will be directed to a sump or drain where they can be contained for subsequent treatment or proper disposal.</p> <p>Potential for land contamination from the spilling of hydrocarbons will be minimised through the continued development and implementation of standard operating procedures for transport, handling and storage of hydrocarbons. Other measures such as bunding around storage areas, emergency spill response planning and employee training will be employed. Correct handling procedures will be followed at all times. Any land contamination that occurs will be recorded on a register and remediated.</p> <p><b>Overburden Emplacement Facilities (OEF)</b></p> <p>Overburden from the Project pit excavation will be placed in the existing North OEF and in other smaller OEFs. The following overburden emplacement management measures will be carried out:</p> <ul style="list-style-type: none"> <li>the top of the OEF and the intermediate berms will be rehabilitated as sections of the OEF are completed</li> <li>rehabilitation trials will be continued on various landform profiles, outer batter material types, revegetation strategies, and surface water management systems</li> <li>exposure time of Potentially Acid Forming (PAF) material to the surface will be kept to a minimum to reduce the potential formation of acid leachate and soil dispersion</li> <li>the final landform will incorporate soil covers, designed to adequately protect the OEF from potential wind and surface water erosion, and moisture infiltration. Drainage works will be designed to maximise long-term stability of the soil cover</li> <li>the final rehabilitation strategy will depend on trial outcomes.</li> </ul> <p><b>Tailings Storage Facility (TSF)</b></p> <p>At the completion of mining activities, the TSF will be decommissioned and rehabilitated using a strategy that will include:</p> <ul style="list-style-type: none"> <li>re-profiling the surface so incident rainfall runs off the TSF rather than seeps into the tailings</li> <li>placement of a capillary layer over the re-profiled surface to limit the capillary rise of salts into the cover layer</li> <li>placement of a low permeability cover over the capillary layer to prevent the oxidation of tailings, to minimise the potential for seepage into the tailings, to stabilise the surface, and to provide a medium for vegetation growth</li> <li>revegetating the surface of the cover with native grasses and shallow rooted tree species to stabilise the cover surface and to assist in the removal of water stored within the cover following extended wet periods</li> <li>continue the operation of the interception bores at the toe of the perimeter wall so that the risks of future seepage to Surprise Creek are limited until closure criteria are met.</li> </ul> <p><b>Open Pit</b></p> <ul style="list-style-type: none"> <li>remediate pit edges to create stable and safe conditions</li> <li>stabilise cleared operational areas by re-grading to control drainage, then replace topsoil and revegetate.</li> </ul> <p><b>Realigned Drainage Channels</b></p> <ul style="list-style-type: none"> <li>the banks of the realigned river and creek channels will continue to be revegetated. In the alluvial sections the channel will be fully revegetated and in the rocky sections the high parts of the realigned banks (alluvial soils) will be fully revegetated with strategic</li> </ul> |
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|                                    | <p>revegetation of the lower rocky banks</p> <ul style="list-style-type: none"> <li>• revegetation will be achieved by a combination of direct and hand seeding, and planting of seedlings</li> <li>• seeds will be collected from the surrounding riverine habitats at the time of seeding for each of the relevant species</li> <li>• seedlings will be grown from locally collected seeds - these will be a mixture of endemic species including woody, herbaceous and grassy species that reflects the existing natural species density</li> <li>• a weed management and monitoring plan will be continued for the realigned channels.</li> </ul> <p>Visual Amenity</p> <p>The rehabilitation of the OEFs described above will minimise adverse visual impacts.</p>                                  |
| Monitoring Programs                | <p>MRM will undertake regular audits of the extent and success of rehabilitation activities. Rehabilitation will be monitored to validate rehabilitation performance and identify any additional work required to meet success criteria. This monitoring will include assessment of:</p> <ul style="list-style-type: none"> <li>• plant establishment, growth, diversity and cover</li> <li>• evidence and type of erosion.</li> </ul> <p>The realigned drainage channels will continue to be monitored for vegetation health and growth success including before and after each wet season until the vegetation matures and bank stability is attained.</p> <p>Weeds along the realigned channels will be monitored in accordance with the requirements of the weed management and monitoring plan.</p> |
| Performance Indicators             | <p>No evidence of uncontrolled erosion following high rainfall.</p> <p>No evidence of abnormal sedimentation in watercourses.</p> <p>Revegetation occurring and in line with surrounding vegetation.</p> <p>No unplanned change in drainage pattern leading to soil erosion.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Reporting                          | <p>The results of MRM's rehabilitation program will continue to be reported in annual report sent to DOR on the sites environmental performance.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Corrective Actions                 | <p>The following constitute an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>• failure to implement the rehabilitation program</li> <li>• significant erosion</li> <li>• unsuccessful rehabilitation (such as unstable landforms)</li> <li>• weed infestation within rehabilitated areas.</li> </ul> <p>In the event of an incident of failure to comply, investigations will be undertaken into the cause of the incident or failure to comply and the appropriate action taken to overcome the problem.</p>                                                                                                                                                                                                                                                                |
| Responsibility                     | <p>Health, Safety and Environment Manager.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Relevant Legislation and Standards | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p>MRM's Mineral Leases.</p> <p><i>Mining Management Act 2001.</i></p> <p><i>Mining Act 2004.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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## 19.5.2 Waste Management Plan

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| Objective                                      | Efficient use of resources and minimisation of waste generation and disposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Target                                         | <p>Achieving cost effective waste management by:</p> <ul style="list-style-type: none"> <li>• minimising waste generation</li> <li>• maximising waste re-use</li> <li>• maximising recycling</li> <li>• safely treating and disposing of all non-reusable and non-recyclable materials.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Actions (Refer to Draft EIS Chapter 9 – Waste) | <p>MRM operates a Waste Management Plan that details requirements for employee and contractor responsibility, training and disposal of all materials used on site. The adoption of the principles of the waste management hierarchy minimises the inappropriate loss of resources and promotes appropriate disposal of wastes.</p> <p>The Project will utilise the existing waste management system. The Project will not introduce any new wastes, but will contribute to the volume of wastes currently managed at the existing operation.</p> <p>MRM will modify its existing Waste Management Plan on the basis of a risk assessment to incorporate the wastes to be generated by the Project.</p> <p>MRM will manage wastes in accordance with the Waste Management Hierarchy, which involves:</p> <ul style="list-style-type: none"> <li>• waste avoidance</li> <li>• waste reuse</li> <li>• waste recycling</li> <li>• waste to energy</li> <li>• waste disposal.</li> </ul> <p>Cleaner production, pollution prevention and waste minimisation are all important components of the overall waste management strategy.</p> <p>A continuous improvement approach has been implemented for the existing mine and will be adopted for the Project over the life of the mine. This approach will involve reviewing and modifying processes, materials and operating practices throughout the mine life when required. The development of quantifiable key performance indicators will be included in the Waste Management Plan.</p> <p>The objectives of the Waste Management Plan are to:</p> <ul style="list-style-type: none"> <li>• identify and categorise all wastes produced across all leases</li> <li>• identify and characterise disposal and storage areas for each waste category produced</li> <li>• perform risk assessments on all storage, transport and disposal of all waste produced</li> <li>• ensure appropriate maintenance of disposal areas</li> <li>• ensure appropriate re-use and recycling of specific appropriate wastes</li> <li>• identify and implement feasible waste reduction strategies.</li> </ul> <p>General Waste</p> <p>MRM's existing waste management strategies will apply to the Project. These strategies include the following:</p> <ul style="list-style-type: none"> <li>• contaminated waste from both the mine site and Bing Bong port and sludge from the sewerage treatment plant will be disposed of in the tailings storage facility</li> <li>• any waste asbestos requiring disposal will be handled and disposed of in an approved manner according to the Asbestos Code of Practice Safe Removal of Asbestos</li> <li>• laboratory waste will continue to be discharged to the concentrator runoff pond</li> </ul> |

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|  | <ul style="list-style-type: none"><li>• putrescible (kitchen) wastes will be incinerated at the on-site refuse facility</li><li>• packaging and office waste will be buried at the on-site refuse facility, though cardboard, paper, and ink cartridges are transported off-site by a waste contractor for off-site recycling at appropriate recycling facilities</li><li>• medical waste will be transported to Darwin Hospital for disposal in accordance with <i>AS/NZS 3816:1998 Management of clinical and related wastes</i></li><li>• waste oil will be collected for transport and disposal off-site</li><li>• aluminium cans will be transported off-site by a waste contractor for off-site recycling at appropriate recycling facilities</li><li>• scrap metal will be transported off-site for recycling</li><li>• waste Jet A1 fuel will be re-used in the on-site workshop as a cleaning fluid and disposed of off-site as part of the waste oil stream</li><li>• waste mill lubricant will be disposed of off-site as part of the waste oil stream</li><li>• batteries will be transported off-site for disposal</li><li>• light vehicle tyres are segregated, stored and stacked in a designated tyre storage area located within the site refuse facility. Heavy vehicle tyres are segregated, stored and used for barricading at the mining services area or buried in the North OEF. Some excess tyres may be transported off site for disposal.</li><li>• waste streams will be separated into various components at the point at which they are produced. Waste separation at source will be achieved by providing bins for re-useable and recyclable materials. An area on-site will be allocated for the collection of re-useable and recyclable materials</li><li>• recyclable building wastes will be collected separately and re-used or recycled where possible, for example:<ul style="list-style-type: none"><li>• timber from concrete formwork will be recovered and reused</li><li>• scrap steel and offcuts will be recycled</li><li>• plastics will be recycled.</li></ul></li></ul> <p>Tailings</p> <ul style="list-style-type: none"><li>• tailings will be disposed of in the existing and approved TSF, with the addition of a new cell</li><li>• the facility will be designed to contain the tailings and prevent uncontrolled surface water runoff to the surrounding environment and minimise seepage to the underlying groundwater system</li><li>• tailings water plus stormwater runoff will be pumped from the tailings cells to the water management dam for reuse in the process plant.</li></ul> <p>Overburden</p> <ul style="list-style-type: none"><li>• overburden generated by the mining operation will be disposed of at the existing engineered North OEF and West OEF, as well as other new OEFs</li><li>• the North OEF will store both PAF material and NAF</li><li>• PAF overburden will be encapsulated within clay cells and layers of NAF waste so that there is no acidic seepage generated by the facility</li><li>• PAF ponds will contain runoff from the PAF sections of the North OEF. Water from the PAF ponds will be evaporated, with some reused in the process plant</li><li>• runoff from NAF and rehabilitated sections of the OEF will pass through sediment ponds before being discharged</li><li>• the final surface of the OEFs will be protected against erosion, and drainage systems will be constructed to facilitate non-erosive surface water runoff</li><li>• the East and South OEFs will be constructed using NAF material only. An Erosion Protection Bund will protect the OEFs from erosion by waters in the Barney Creek and McArthur River channels</li><li>• Material balances of key materials used in rehabilitation (including topsoil, clay and NAF) will be maintained to ensure adequate resources are identified to fulfil rehabilitation commitments.</li></ul> |
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| Monitoring Programs                | <p>Monitoring will include the recording of waste types and volumes generated on site and being transported off site. Records will be maintained in order to determine where large quantities of certain wastes are being produced.</p> <p>Records will be reviewed on a regular basis and appropriate corrective actions formulated to reduce or eliminate waste generation or impacts associated with waste.</p> <p>The following waste streams will be measured and reported:</p> <ul style="list-style-type: none"> <li>• waste generation</li> <li>• waste re-use</li> <li>• waste recycling</li> <li>• waste treatment and disposal.</li> </ul> <p>The purpose of monitoring the activities and outcomes related to waste management include:</p> <ul style="list-style-type: none"> <li>• providing baseline data for the continuous development of ameliorative measures in addition to forming the basis from which waste management and waste minimisation decisions are made throughout the life of the Project</li> <li>• assessing actual waste results against forecasted waste volumes</li> <li>• monitoring for potential environmental impacts.</li> </ul> <p>Wastes and emissions generated are also reported annually, as required, through the National Pollutant Inventory (NPI) process.</p> <p>Regular surveying of the OEF and analysis of overburden materials will be undertaken to confirm that the various material types (PAF, NAF, etc.) are placed in accordance with the mining plan and OEF design.</p> <p>Water monitoring will be undertaken for both surface water and groundwater around the overburden emplacement facility and the TSF.</p> |
| Performance Indicators             | <p>Records of waste disposal.</p> <p>Waste minimised or recycled wherever possible.</p> <p>Surface and groundwater quality.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Reporting                          | <p>MRM's waste management performance will continue to be reported in the annual environmental performance report.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Corrective Actions                 | <p>The following constitute incidences or failures to comply in relation to waste management policies:</p> <ul style="list-style-type: none"> <li>• unnecessary volumes of waste being sent for disposal</li> <li>• wastes being disposed of rather than reused or recycled where possible</li> <li>• uncontrolled waste disposal</li> <li>• other non-compliances with the waste management plan</li> <li>• surface water or groundwater contamination from tailings or overburden storage indicated by the monitoring program.</li> </ul> <p>Should an incident or failure to comply occur, MRM will:</p> <ul style="list-style-type: none"> <li>• take the necessary actions to identify the causes of non-conformance with the waste management plan performance requirements</li> <li>• implement all actions necessary to achieve compliance.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Responsibility                     | <p>Health, Safety and Environment Manager.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Relevant Legislation and Standards | <p>MRM's Sustainable Development Policy and Procedures.</p> <p><i>Waste Management and Pollution Control Act 2003.</i></p> <p>Environmental Protection (National Pollution Inventory) Objective 2004.</p> <p>ICMM Sustainable Development Framework.</p> <p>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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## 19.5.3 Surface Water Management Plan

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| Objective                                                 | Minimise the discharge of mine affected (or 'contaminated') surface water to the surrounding environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Target                                                    | <p>Compliance with the Waste Discharge Licence under the provisions of the NT <i>Water Act</i>. Ambient water quality monitoring assessed in accordance with site-specific trigger levels.</p> <p>No erosion or deposition of sediment within the surface water courses beyond natural fluctuations.</p> <p>Minimise water usage.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Actions (Refer to Draft EIS Chapter 10 – Water Resources) | <p>The overarching operational water management strategy for the Project seeks to:</p> <ul style="list-style-type: none"> <li>• minimise the amount of surface runoff impacted by mining operations by diverting clean water flows around the mining operations</li> <li>• minimise the amount of raw water to be imported to site by maximising the recycling of stored water resources</li> <li>• minimise impacts to water quality and quantity on existing downstream water users</li> <li>• maintain adequate protection of internal water management infrastructure and external surface water values during flood events.</li> </ul> <p>The existing mine water management system was developed to manage three different categories of water, being:</p> <ul style="list-style-type: none"> <li>• clean water - runoff from areas outside of the mine lease and runoff from rehabilitated areas</li> <li>• sediment water ('dirty' water) - runoff from disturbed areas but not including mining areas</li> <li>• mine affected water (or 'contaminated') water - runoff from mining and product handling areas. This includes the mine pit and industrial areas.</li> </ul> <p>Water Management System Objectives</p> <p>Continue and expand the existing surface water management system based on the following objectives:</p> <ul style="list-style-type: none"> <li>• minimise raw water consumption by maximising the reuse of process water</li> <li>• evaporate excess contaminated water</li> <li>• maintain a non-release system for 'contaminated' mine waters, except under extreme conditions, as approved</li> <li>• provide adequate storage in the surface water management system</li> <li>• minimise the generation and release of contaminants, with an emphasis on source control</li> <li>• minimise the retention of 'clean' water.</li> </ul> |

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|  | <p><b>New Water Storages</b></p> <p>Disturbed area runoff from OEFs will be directed to sediment or PAF dams. A suitable freeboard will be maintained in these storages prior to each wet season.</p> <p>MRM will implement the following major changes to the mine's surface water management system to cater for the Project:</p> <ul style="list-style-type: none"><li>• construction of NAF sediment ponds to remove sediment and reduce turbidity in runoff from the non-acid forming (NAF) areas of the OEFs</li><li>• construction of new PAF containment ponds at the North OEF to:<ul style="list-style-type: none"><li>• capture and contain runoff from the exposed PAF material prior to capping by NAF</li><li>• store any potential seepage collected from the OEF areas in the dry season</li></ul></li><li>• Increase in capacity of some dams for storage of intercepted groundwater.</li></ul> <p><b>Open Pit Dewatering</b></p> <p>Dewatering of the Project's open pit will be directed to following available storages in priority order, as per the current practices:</p> <ul style="list-style-type: none"><li>• first – storage ponds for reuse in process plant and for dust suppression</li><li>• second – TSF Cell 4 water management dam to maximise evaporative losses, and allow transfer back to for reuse in process plant.</li></ul> <p>Expansion of the pit will eventually require replacement of the infrastructure used to dewater the underground workings. This will require drilling and equipping of multiple dewatering bores into the deepest areas of the old underground mine workings.</p> <p><b>Water Balance Modelling</b></p> <ul style="list-style-type: none"><li>• The existing water balance management model will be modified to incorporate the changes from the Project and will be used to determine system performance. The following management strategies will be implemented:<ul style="list-style-type: none"><li>• water balance modelling will be updated regularly to produce reliable representation of:<ul style="list-style-type: none"><li>• the structure and operating rules of the water management system</li><li>• actual storage and transfer capacity of system components (confirmed by surveys)</li><li>• mine production rates and associated concentrator process water balance</li><li>• rates of groundwater inflows into the open pit and total pit dewatering requirements (confirmed by flow monitoring)</li><li>• varying catchment areas and 'type' over the mine life (e.g. staged construction of OEF and its runoff contribution to the OEF ponds)</li><li>• varying water reuse demands and improved knowledge of demand influencing factors (e.g. seasonal variation, relationship to production rates, etc.)</li><li>• improved knowledge of catchment runoff characteristics (confirmed by flow monitoring as required)</li><li>• variation of modelled climatic data with monitoring data (to confirm system performance in response to climate variation)</li></ul></li></ul></li></ul> |
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|                     | <ul style="list-style-type: none"> <li>• MRM will manage the impacts of flooding as required to minimise impacts on mining activities and any potential for release of 'contaminated' water to the environment</li> <li>• ongoing seepage management of new and existing storage ponds - review, assessment and implementation of interception strategies and mitigation works where necessary</li> <li>• review of the potential consequences from containment storage overflows as site water monitoring data are obtained, and where necessary, revise the target overflow probability used to size containment storages</li> <li>• upgrading water management infrastructure (pond storage capacity, pumps and pipeline capacity) as required to maintain acceptable overflow criteria (spill risk) as determined from the water balance modelling</li> <li>• practice continual improvement by using the water balance modelling on adaptive management basis to accommodate actual groundwater inflow rates into the open pit, to reassess the risk of discharge to the environment, to review system performance, and to minimise reliance on external raw water supplies.</li> </ul> <p><b>Realigned Drainage Channels</b></p> <p>The realigned channels of McArthur River and Barney/Surprise Creeks (undertaken before this Draft EIS) have been designed to replicate existing conditions and to minimise erosion of the new beds and banks. This has included limiting design flow velocities, provision of scour protection in critical areas, and revegetation of banks and batters.</p> <p>This is to make provision for fish movement by matching existing flow velocities to avoid hydraulic barriers, providing micro-habitats along channel bed, and providing resting pools where tributaries join the realigned river channel.</p> <p>The proposed North, South and East OEFs will constrict the McArthur River and Barney Creek floodplains adjacent to the dumps. The dumps could increase velocities in some sections of the McArthur and Barney Creek channels and floodplain during large flood events. Areas where there is potential for elevated velocities due to the proposed Project's works will be inspected after major flow events for any evidence of erosion. The key locations where velocities would be elevated and therefore should be monitored are identified as part of the flood impact assessment. If it is found that erosion is taking place along the diversions, additional rock protection may be required along the affected reaches. The monitoring schedules for the above diversions have been documented in the SDWMP</p> <p><b>Drainage Control</b></p> <p>Sediment traps to be provided as necessary downstream of disturbed areas outside of the flood protection bund to control sediment load in site runoff.</p> <p>Clean water diversion drains will be installed to divert clean stormwater flow from undisturbed areas away from the sediment traps. Diversion drains will also be installed as necessary to direct sediment-laden stormwater flow to the sediment traps.</p> <ul style="list-style-type: none"> <li>• Provide bunded storage areas for fuels and dangerous goods with spill cleanup kits in accordance with the requirements of AS 1940:2004 and AS 3780:2008.</li> </ul> <p>Implement controls to minimise spills during the transfer of fuels and chemicals.</p> <p><b>Infrastructure and Development Areas</b></p> <ul style="list-style-type: none"> <li>• control runoff within and divert water away from the infrastructure site</li> <li>• use sediment traps/silt fences etc, to minimise off-site effects of erosion.</li> </ul> |
| Monitoring Programs | <p>An environmental monitoring system is currently in place at MRM to determine the impacts from the site operation and to establish trends on the downstream water quality values. The existing surface water monitoring program will continue. The surface water monitoring program will include event-based upstream and downstream monitoring and monitoring at site water storage points. A NATA or similar accredited laboratory is used for sample analysis.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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|                                        | <p>The existing surface water monitoring program will be extended to incorporate the new runoff and containment ponds.</p> <p>The effectiveness of the site's surface water management system will be regularly assessed and the water balance modelling updated as necessary.</p> <p>Regular engineering safety/audit assessments will be undertaken of the integrity of water storages where there is potential for spill to receiving waters in the event of a storage breach.</p> <p>Sedimentation monitoring and management will be continued within the realigned channels and downstream to the Bukalara Range.</p> <p>After mining has ceased and decommissioning and rehabilitation works are complete, MRM will seek to relinquish the mining leases. Prior to relinquishment, MRM will discuss the nature, scope and resourcing of an ongoing surface water monitoring program with the Northern Territory government and any parties within ongoing interests in the surface water resources and infrastructure associated with the site. This program may be a continuation of that outlined for operational mining, or an agreed variation, depending on the circumstances at the time.</p>                                  |
| Performance Indicators                 | <p>Adherence with Waste Discharge Licence conditions and Water Management Plan.</p> <p>Xstrata Zinc has targeted reducing freshwater consumption intensity by 2.0% by 2012 (from 2010 baseline).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Reporting                              | <p>The results of MRM's water quality monitoring program will continue to be reported in the annual site's environmental performance report.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Corrective Actions                     | <p>The following will be classified as an incident or failure to comply in relation to surface water management:</p> <ul style="list-style-type: none"> <li>• breach in integrity of ponds, pipes or drains</li> <li>• overflow from water management system</li> <li>• sedimentation ponds demonstrating significant reduced available volume</li> <li>• discharge in contravention of the site's waste Water Discharge Licence, or</li> <li>• erosion or deposition occurring within the surface water courses in excess of natural fluctuations.</li> </ul> <p>Should an incident or failure to comply occur in relation to surface water management, a selection of the following corrective actions will be considered where relevant:</p> <ul style="list-style-type: none"> <li>• repair water management controls (e.g. ponds, pipes or drains)</li> <li>• contain and remediate or dispose of contaminated material/contaminants</li> <li>• modify the operating strategies for the surface water management system</li> <li>• clean out the sedimentation ponds</li> <li>• modify channel cross sections</li> <li>• implement additional revegetation</li> <li>• provide other rectification measures as appropriate.</li> </ul> |
| Responsibility                         | <p>Process Plant Manager, Health Safety and Environment Manager.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Legislative Requirements and Standards | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p>Waste Discharge Licence pursuant to Section 74 of the <i>Water Act</i>.</p> <p>Environmental Protection (National Pollution Inventory) Objective 2004.</p> <p>ANZECC Guidelines for Fresh and Marine Water Quality 2000.</p> <p>AS 1940:2004 <i>The Storage and Handling of Flammable and Combustible Liquids</i>.</p> <p>AS 3780:2008. <i>The Storage and Handling of Corrosive Substances</i>.</p> <p>ICMM Sustainable Development Framework.</p> <p>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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## 19.5.4 Groundwater Management Plan

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| Objective                                                 | Protect the quality of the existing groundwater resource.<br>Use groundwater as a source of water supply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Target                                                    | No deterioration in groundwater quality.<br>No unacceptable effects due to groundwater drawdown.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Actions (Refer to Draft EIS Chapter 10 – Water Resources) | <p>The Project Open Pit</p> <p>Groundwater management</p> <ul style="list-style-type: none"> <li>• Intercept groundwater moving toward the open pit and underground voids before it becomes potentially contaminated</li> <li>• Discharge this off-site as per site discharge licences</li> <li>• Excess water would be sent to off-site areas for irrigation</li> <li>• Groundwater that is not intercepted and reaches the open pit and/or underground workings, would be considered contaminated.</li> <li>• the Project open pit is to be dewatered by new perimeter bores drilled into the deepest parts of the old underground mine workings, and sumps in the open pit in localised wet areas <ul style="list-style-type: none"> <li>• This would be pumped to surface water management system and will be utilised for the ore processing facilities and dust suppression throughout the mine site</li> </ul> </li> <li>• construction of any bores will be in accordance with Minimum Construction Requirements for Water Bores in Australia, 2nd Edition September 2003 and undertaken by a licensed water bore driller.</li> <li>• A low permeability cut-off wall to block paleochannel water entering the mining area from under the mine levee wall is being considered for current operations. The Project would not require any change to this proposed system.</li> </ul> <p>Industrial Area</p> <ul style="list-style-type: none"> <li>• new run of mine (ROM) and stockpile area will be built on the existing West OEF that drains to Lake Archer, Van Duncan's dam and the pit . This will limit the potential for groundwater contamination outside the mine levee area.</li> </ul> <p>Tailings Storage Facility</p> <ul style="list-style-type: none"> <li>• the installation of the geopolymer barrier around the perimeter of the existing TSF will be maintained to prevent seepage</li> <li>• once the new tailings storage cell (Cell 4) has been constructed and the other TSF cells are full, the existing tailings impoundment will be decommissioned and rehabilitated</li> <li>• the embankments of Cell 4 to be constructed for the Project will have an earth fill core zone (clay/silt fraction greater than 20%) with a cut-off key extending into competent basement material to minimise seepage. Cell 4 will also be lined and an underdrain system will be considered for collection of any seepage.</li> <li>• to minimise the contamination of any potential seepage, an appropriate tailings deposition regime will be maintained so that the potential for tailings to oxidise and release oxidation products will be limited</li> <li>• a series of recovery bores will continue to be operated to intercept any seepage through the surficial sandy clay or sandy gravel layers and the underlying dolomitic sandstone layer. The recovery bores will continue to operate post-mining until the groundwater conditions meet agreed standards for relinquishment.</li> </ul> |

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|                          | <p>Overburden Emplacement Facilities</p> <ul style="list-style-type: none"> <li>all PAF material within the North OEF will be encapsulated by NAF materials to prevent the generation of acidic seepage, with seepage directed toward PAF dams</li> <li>Perimeter drains will collect seepage which will be pumped to the PAF dams</li> <li>PAF pond base and walls will be constructed of compacted clay to minimise the potential for seepage to groundwater.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Monitoring Programs      | <p>MRM will develop and implement a revised groundwater monitoring program prior to the Project commencing operations to monitor the existing groundwater environment and potential impacts. The groundwater monitoring network will be maintained to monitor the potential impacts of drawdown on the local and regional groundwater regime.</p> <p>The existing groundwater quality and level monitoring program will be expanded to incorporate additional monitoring bores around the new OEFs, TSF Cell 4 and the open pit.</p> <p>Drawdown levels will be monitored to assess the efficiency of the Project dewatering program and to confirm the predicted drawdown effects.</p> <p>A groundwater level monitoring program will be maintained in the vicinity of Djirrinmini Waterhole on the McArthur River.</p> <p>After mining has ceased and decommissioning and rehabilitation works are complete, MRM will seek to relinquish its mining leases. Prior to relinquishment, MRM will discuss the nature, scope and resourcing of an ongoing groundwater monitoring program with interested parties. Post mining groundwater monitoring will be undertaken within monitoring bores that will be installed during the operational phase.</p> |
| Performance Indicators   | <p>Adherence with Water Management Plan.</p> <p>Groundwater level monitoring showing consistent levels that indicate MRM is not over-drawing groundwater from the Djirrinmini area.</p> <p>Where an incident causing pollution occurs the EPA will be informed within 24 hrs, as per the <i>Waste Management and Pollution Control Act 1998</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Reporting                | <p>The results of MRM's groundwater monitoring program will continue to be reported in the annual environmental performance report.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Corrective Actions       | <p>Excessive drawdown at Djirrinmini or detection of contaminated groundwater by the monitoring program would be classified as an incident or failure to comply in relation to groundwater management.</p> <p>Should an incident or failure to comply occur in relation to groundwater management, a selection of the following corrective actions will be considered where relevant:</p> <ul style="list-style-type: none"> <li>identify the source of the seepage and effect remedial action to the seepage control system</li> <li>recover contaminated groundwater for reuse in the processing plant.</li> </ul> <p>Should the monitoring program indicate that the drawdown at Djirrinmini Waterhole is greater than predicted, implement mitigation measures such as sustaining upstream river flows from suitable bores.</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Responsibility           | <p>Health, Safety and Environment Manager.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Legislative Requirements | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p>ANZECC Guidelines for Fresh and Marine Water Quality 2000.</p> <p>ICMM Sustainable Development Framework.</p> <p>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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## 19.5.5 Air Quality and Greenhouse Gases Management Plan

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| Objective                                                                  | To minimise emissions to air from MRM operations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Target                                                                     | To achieve compliance with the relevant ambient standards Meet MRM's obligations under the <i>National Greenhouse and Energy Reporting Act 2007</i> .<br>Control greenhouse gases per tonne mined.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Actions (Refer to Draft EIS Chapter 11 – Air Quality and Greenhouse Gases) | <p>The following dust emission management control strategies will be continued:</p> <ul style="list-style-type: none"> <li>dust control equipment will be installed on all major plant and equipment generating significant point sources of dust. The conveyor belt transfer points will be covered to minimise dust emissions</li> <li>water sprays will be used (as required) across work zones and unsealed areas to suppress dust. Water will be applied by water cart across ground surfaces whenever the surface has the potential to generate excessive levels of dust. Ore and rock, after blasting, will be watered down if necessary</li> <li>minimise surface disturbance to the area necessary for mining activities and rehabilitate promptly</li> <li>remove and dump overburden as soon as practicable after blasting, i.e. drying time will be limited where practicable</li> <li>avoid topsoil stripping and replacement on days when the wind speed is sufficient to carry visible dust beyond the MRM boundary, where practicable. Earthworks supervisors will pay particular attention to the management of topsoil stripping such that dust does not become a safety hazard or nuisance</li> <li>provide dust suppression sprays at locations in transfer points that produce excessive dust</li> <li>haul truck routes will be kept as short as practicable</li> <li>vegetation will not be burned without a permit and will be conducted in consideration of wind direction</li> <li>the number of roads will be kept to a minimum. Once a road is no longer required, it will be barricaded and revegetated</li> <li>vehicular access will be strictly limited to authorised vehicles and designated routes (i.e. bitumen and major haul / access roads)</li> <li>other exposed surfaces and stockpiles will also be watered or sprayed as required</li> <li>any long-term stockpiles will be stabilised using fast-seeding, local common grass where required</li> <li>haul trucks to Bing Bong concentrate storage and loading facility (Bing Bong) will pass through a wheel wash before they leave the mine site</li> <li>haul trucks to Bing Bong will have their loads covered to prevent dust generation.</li> </ul> <p>The following greenhouse gas emission management control strategies will be continued and implemented:</p> <ul style="list-style-type: none"> <li>improve efficiency and minimise energy use through mine planning, including minimising haul distances</li> <li>consider fuel efficiency of mining equipment and haul trucks during procurement</li> <li>maintain mining equipment and haul trucks in good working order to maximise equipment fuel efficiency</li> <li>select appropriately sized equipment</li> <li>continue MRM's active involvement and compliance with proactive greenhouse gas abatement initiatives and all legislative requirements</li> <li>estimate and report annual greenhouse gas emissions to relevant regulatory authorities, as required</li> <li>review annual energy use to identify potential energy efficiency opportunities</li> </ul> |

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|                        | <ul style="list-style-type: none"> <li>on a regular and ongoing basis</li> <li>identify opportunities for renewable energy generation/uses</li> <li>MRM will continue to be a signatory to the Greenhouse Challenge Plus Program</li> <li>natural gas will continue to be used as the principal energy source for electricity generation</li> <li>consideration will be given to opportunities for ongoing energy efficiency programs in the existing plant.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Monitoring Programs    | <p>The existing dust deposition monitoring program will be reviewed prior to the commencement of the Project operations to determine appropriate monitoring locations in light of the proposed changes in site activities. The dust collected will continue to be analysed for lead and zinc concentrations.</p> <p>Dust monitoring has been regularly carried out at MRM. No indications of a nuisance dust issue beyond areas of active mining operations have arisen. Consequently, dust has not been considered a significant issue, however, if complaints are made, an investigation will be undertaken.</p> <p>Monitoring is undertaken in accordance with Australian Standard / New Zealand Standard 3580.10.1:2003 <i>Methods for sampling and analysis of ambient air. Method 10.1 Determination of particulate matter – Deposited Matter – Gravimetric method.</i></p> <p>A PM<sub>10</sub> monitor will be maintained at the eastern side of the accommodation village to monitor for ambient concentrations of suspended particulates. The dust will be analysed for PM<sub>10</sub> concentrations as well as lead and zinc.</p> <p>Monitoring of wind speed, wind direction, rainfall and temperature will be continued at the airfield. The anemometer will be regularly calibrated and maintained for acceptable data quality.</p> <p>The monitoring network will account for the ramp up in production and OEF operations. These results will be reviewed monthly to determine if the site is causing an increase in dust concentration above acceptable levels. The dust concentration data will include an analysis of the prevailing meteorology, extraction rates and processes.</p> <p>Diesel and electricity use will be monitored.</p> <p>Monitor nitrogen dioxide emissions from the power station (on a campaign basis) to confirm ambient standards are being met.</p> |
| Performance Indicators | <p>Dust managed sufficiently so that it does not become a health or nuisance issue.</p> <p>Greenhouse gases controlled per tonne mined.</p> <p>Xstrata Zinc has targeted reducing GHG emissions intensity by 2.4% by 2012 (2010 baseline).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Reporting              | <p>MRM's air quality performance will continue to be reported in the annual environmental performance report.</p> <p>MRM will continue to quantify greenhouse gas emissions and submit annual reports to the federal Department of Climate Change and Energy Efficiency on performance against emission management targets.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Corrective Actions     | <p>The following would constitute an incident or failure to comply in regards to air quality and greenhouse gas management:</p> <ul style="list-style-type: none"> <li>proposed dust mitigation strategies not being implemented</li> <li>dust emissions exceed guideline limits</li> <li>receipt of an air quality complaint</li> <li>failure to meet greenhouse intensity targets.</li> </ul> <p>Should an incident or failure to comply occur, the MRM will:</p> <ul style="list-style-type: none"> <li>take the necessary actions to identify the causes of the non-conformance</li> <li>implement all actions necessary to achieve compliance.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| Responsibility                     | Health, Safety and Environment Manager.                                                                                                                                                                                                                                                                                                                                                                                   |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy, Standards and Procedures.<br>Environmental Protection (National Pollution Inventory) Objective 2004.<br>ICMM Sustainable Development Framework.<br>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.<br>National Environmental Protection Measure for Ambient Air Quality.<br><i>National Greenhouse and Energy Reporting Act 2007.</i> |

## 19.5.6 Noise and Vibration Management Plan

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| Objective                                                     | Minimise the generation of noise emissions during the operations phase and to mitigate any potential noise impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Target                                                        | Noise levels from operational activities not to exceed 55 dB(A) at the accommodation village.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Actions (Refer to Draft EIS Chapter 12 – Noise and Vibration) | The proposed Project open pit and processing plant operational design is effective in controlling noise at all locations. It is envisaged that the noise from the Project will comply with noise level goals<br>All new equipment will be selected so as to reduce occupational noise exposure to acceptable levels.<br>Proper maintenance and operation procedures will continue to be implemented to minimise nuisance noise emissions from equipment.<br>Blasting will only be scheduled as permitted. There will be no change in blasting technique or hours of operation associated with the Project. Flyrock will be managed through appropriate blast design.<br>Any legitimate noise complaints will be investigated and appropriate mitigation measures instigated, as required. |
| Monitoring Programs                                           | A noise monitoring program will be implemented if required. To date, noise has not been a major issue at MRM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Performance Indicators                                        | Noise criteria.<br>Number of noise complaints.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Reporting                                                     | Any complaints will be documented in the complaints register, investigated and reported to MRM's General Manager.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Corrective Actions                                            | The following would constitute an incident or failure to comply in regards to noise management: <ul style="list-style-type: none"> <li>complaints received about excessive noise at the accommodation village or at sites off lease.</li> </ul> Should an incident or failure to comply occur, the MRM will: <ul style="list-style-type: none"> <li>identify the source of the noise</li> <li>if appropriate, implement a noise monitoring program.</li> </ul> If monitoring indicates that operational noise could cause sleep disturbance, appropriate noise mitigation strategies will be identified and implemented.                                                                                                                                                                  |

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| Responsibility                     | Health, Safety and Environment Manager.                                                                                                                                                                                                                                                                                                                                                                      |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy, Standards and Procedures.<br>Waste Management and Pollution Control (Environmental Noise) Regulation.<br>AS 1055.1 1997 <i>Acoustics: Description and Measurement of Environmental Noise; Part 1: General Procedures</i> .<br>ICMM Sustainable Development Framework.<br>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005. |

## 19.5.7 Nature Conservation

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| Objective                                                     | Minimise impacts on flora and fauna around operational areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Target                                                        | No disturbance to flora and fauna outside the designated operational area.<br>Prevent spread of weeds and feral pests.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Actions (Refer to Draft EIS Chapter 13 – Nature Conservation) | <p>Terrestrial Flora</p> <ul style="list-style-type: none"> <li>impacts on vegetation communities will be minimised by delaying clearing as long as practicable and clearing only the minimal area required. Mined areas and OEFs will be rehabilitated to recreate the most suitable vegetation and habitat whilst meeting the rehabilitation constraints. Monitoring and reporting of progressive rehabilitation will occur in the Mining Management Plan for the site.</li> <li>all vegetation clearing will be conducted in accordance with MRM's "Permit to Clear" procedure. Prior to any clearing required, the boundary of the area authorised to be cleared will be identified and clearly marked tape so construction vehicles do not impact on adjacent undisturbed vegetation</li> <li>vegetation will be burnt only after receipt of a "Permit to Burn". This ensures that all appropriate parties are notified of the date, time and location of the controlled burn. Appropriate parties include Air North, NT Bushfire Council, Community Relations/traditional owners, and the McArthur River Pastoral Lease Manager</li> <li>a buffer zone of approximately 75 m will be maintained between the East OEF and Barney Creek channel and McArthur River Channel.</li> </ul> <p>Aquatic Fauna</p> <ul style="list-style-type: none"> <li>heavy metal monitoring including both macroinvertebrates and fish species will continue to be undertaken as per the current monitoring program</li> <li>monitoring of fish abundance and diversity in these systems will be incorporated into the ongoing monitoring program</li> <li>when the East OEF is established, banks will be stabilised by increased planting of the diversion batters, direct seeding and planting of established trees to help prevent excessive erosion due to elevated flow rates and provide slow back-waters to aid upstream fish migration. Building additional baffling on the western diversion wall to reduce erosion will be implemented if erosion appears</li> <li>appropriate water management infrastructure will be incorporated into the expanded North OEF to prevent flow of contaminants into the McArthur River via drainage lines entering below the channel</li> <li>coarse woody debris will be retained as habitat piles adjacent to, and within the diversion channel to provide refugia, disrupt stream flow rates and provide heterogeneity of habitats</li> <li>as part of the continuing management of the McArthur River Channel that was</li> </ul> |

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|  | <p>required as part of the underground to open-pit conversion, results from the aquatic monitoring program will be regularly assessed and, if necessary, changes to the management of the realigned channel made to alleviate adverse effects</p> <ul style="list-style-type: none"><li>• mineral salt depositions on the banks of Surprise and Barney Creeks (and anywhere else such deposits are recorded) will be analysed and monitored to aid assessing the potential impacts that elevated sulphate levels pose to the McArthur River system.</li></ul> <p>Terrestrial Fauna</p> <ul style="list-style-type: none"><li>• mined areas and waste rock emplacements will be progressively rehabilitated to recreate the most suitable vegetation and habitat whilst meeting the rehabilitation constraints</li><li>• contractors and operators will be made aware of the potential presence of endangered or vulnerable species and will be instructed to temporarily cease clearing if these species are identified. As the Permit to Clear procedure vegetation clearing activities will occur in an appropriate direction through the vegetation, to direct animals into adjacent habitat</li><li>• as no recorded or likely migratory species are expected to be significantly affected by the proposed disturbance from the Project, no management actions are considered necessary</li><li>• proposed management measures will include performing regular pest control actions in conjunction with local authorities. Measures to minimise accumulation of putrescible waste outside of animal-proof designated areas will be implemented.</li><li>• the old McArthur River channel, both upstream and downstream of the current bund wall, is a functioning ecosystem that provides a terrestrial fauna refuge and corridor. Where practicable, development of these two areas will be delayed, until the ecological value of the diversion channel has been enhanced through revegetation activities.</li><li>• where practicable, cleared vegetation will be placed as coarse mulch and debris on revegetation sites. Suitable logs will be placed on the ground in rehabilitation sites to provide habitat and ground-layer complexity. Some larger logs will be used within the river channel for aquatic habitat and environmental flow regulation.</li><li>• increased planting and seeding of the channel batters and planting of established local provenance trees along and adjacent to the channel will be undertaken. By establishing dense, structurally complex vegetation, impacts on riparian fauna and the effects of habitat continuity reduction will be minimised. Revegetation will be conducted in accordance with MRM's revegetation strategy.</li><li>• the feasibility of a program to relocate populations of purple-crowned fairy-wrens and buff-sided robins from within the open pit area and the two old McArthur River Channel sites will be investigated by suitably qualified ecologists. These populations have been subject to long-term monitoring and without appropriate management (relocation/ reestablishment of alternative habitat areas) would be significantly impacted by the Project</li><li>• increasing the cattle exclusion areas along the McArthur River channel and expanding these into woodland habitats will mitigate removal of habitat for purple-crowned fairy wrens, Australian bustards, Merten's water monitors and other threatened species</li><li>• fencing will be rapidly maintained following each wet season to minimise potential for cattle to enter the exclusion areas.</li></ul> <p>Weed Management</p> <ul style="list-style-type: none"><li>• the current weed control program will be continued. It will involve the monthly inspections of operational sites and downstream areas and control of any infestations of declared environmental weeds. The source of any infestation will be investigated and the most appropriate control technique will be implemented.</li></ul> |
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|                        | <p>Realigned Drainage Channels</p> <ul style="list-style-type: none"> <li>the realigned channels will continue to be revegetated to assist in stabilising the banks and batters and to provide fauna habitat</li> <li>design flow velocities within the realigned McArthur River have been adopted so there is no velocity impediment to fish movement</li> <li>within the realigned channel, a variety of micro-habitats will continue to be provided in the form of logs, rocks, sandy substrate etc. to provide some protection and resting areas for fish</li> <li>the success of the revegetation within the realigned channels will be monitored quarterly including before and after each wet season until the vegetation matures and bank stability is attained.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Monitoring Programs    | <p>The existing vegetation monitoring program will be reviewed and updated with regards to monitoring parameters, site selection and monitoring frequency. It will be designed to monitor any mine-related effects such as groundwater drawdown, water and air quality, erosion or weed infestation.</p> <p>Monitoring of rehabilitation sites and the McArthur River Channel revegetation will be undertaken on a continuing basis to facilitate the management of potential impacts on rehabilitation. Monitoring will be undertaken by suitably qualified ecologists.</p> <p>Regular bird counts will be continued at points upstream and downstream of the mine site. Continuation of the current riparian bird program will require some modifications to capture any potential additional impacts of the Project.</p> <p>Should the option to increase cattle exclusion areas be adopted as a management strategy, a monitoring program to assess the success of habitat improvement and fauna communities, including threatened species and indicator species, will be established.</p> <p>Aquatic Biology</p> <p>The aquatic monitoring program will be continued to assess populations of species in permanent pools above the river realignment and to assess movements of species through the realigned channel.</p> <p>Specific surveys for the endangered freshwater sawfish will be continued as well as the management and monitoring plan for this species.</p> |
| Performance Indicators | <p>No unplanned or unapproved damage to flora and fauna.</p> <p>Demonstration that clearing has only occurred in approved areas and in accordance with Project drawings and mapping.</p> <p>Weeds and pest animals are no more prevalent within the project area than on adjacent lands.</p> <p>Results of bird and aquatic monitoring programs.</p> <p>Success of rehabilitation measures.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Reporting              | <p>The results of MRM's biology management program will continue to be reported in the annual environmental performance report.</p> <p>MRM's biology management program is audited by the independent monitor.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Corrective Actions     | <p>The following constitute an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>unauthorised disturbance of vegetation or habitats or threatened fauna species outside of the designated operational area</li> <li>evidence of weed infestation or feral pest presence</li> <li>revegetation not established in mine rehabilitation areas or is not growing healthily or at the design densities</li> <li>impediment of movement of species through channels.</li> </ul> <p>In the event of a failure to comply, investigations will be undertaken into the cause of the incident or failure to comply and the appropriate action taken to overcome the problem.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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| Responsibility                     | Health, Safety and Environment Manager.                                                                                                                                                                                                                                                     |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy, Standards and Procedures.<br><i>Territory Parks and Wildlife Conservation Act 2000.</i><br>ICMM: Good Practice Guidance for Mining and Biodiversity.<br>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005. |

## 19.5.8 Mosquito Management Plan

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| Objectives                                                                         | Prevent the occurrence of potential mosquito breeding sites and the presence of adult mosquitos.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Targets                                                                            | No mosquito breeding sites created by operational activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | <p>Any depressions created in the ground surface will be filled or drained to prevent the ponding of water where possible.</p> <p>Storage containers capable of ponding water will be either discarded after use or stored in an inverted position (care will be taken that ponding does not occur in rubbish storage areas).</p> <p>Any ponds and on-site excavations filled with water will be inspected for the presence of mosquito larvae. If larvae are detected, the Medical Entomology Branch of NT Health will be contacted for assistance in choosing a suitable method of lavaciding. If required, an adulticiding program will also be undertaken.</p> <p>Erosion and washdown practices will be controlled to prevent sediment and debris forming standing water pools in natural watercourses adjacent to the site.</p> <p>All drainage channels/spoon drains will be kept as shallow as possible to prevent ponding.</p> <p>All operational workers will be educated to be especially vigilant during the high mosquito borne disease risk periods (late dry to post wet) through the use of long sleeved shirts and trousers, avoidance of going outside at sundown, and the regular use of insect repellent. Insect repellent will be provided at work sites.</p> <p>Workers will be educated about the early symptoms associated with exposure to mosquito borne arbovirus and will be instructed on the need to report any symptoms to a medical officer.</p> <p>All on-site accommodation facilities will continue be screened and air conditioned and external street lighting will be fitted with yellow bulbs to discourage mosquitos.</p> |
| Monitoring Programs                                                                | MRM will continue to monitor mosquito activity within accommodation and work areas to identify if mitigation measures are not successful and to determine whether larval and adult eradication programs should be implemented.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Performance Indicators                                                             | <p>Minimal impacts from biting insects on personnel.</p> <p>Personal Protection Equipment (PPE) adequate to prevent exposure.</p> <p>Spraying implemented if required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Reporting                                                                          | Any significant mosquito activity will be reported to the Medical Entomology Branch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Corrective Actions                                                                 | <p>The following represent an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>excessive numbers of potential mosquito breeding sites exist on-site</li> <li>excessive numbers of larvae and/or mature mosquitoes are evident on-site</li> <li>significant incidences of mosquito bites are reported.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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|                                    | <p>Should an incident or failure to comply occur, a selection of the following actions will be taken:</p> <ul style="list-style-type: none"> <li>• an investigation will be undertaken into why directives are not being carried out</li> <li>• employees will be re-educated on desired practices</li> <li>• work policies and procedures will be changed to improve the situation.</li> </ul> |
| Responsibility                     | Health, Safety and Environment Manager.                                                                                                                                                                                                                                                                                                                                                         |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy and Procedures.                                                                                                                                                                                                                                                                                                                                            |

## 19.5.9 Cultural Heritage Management Plan

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| Objectives                                                  | Minimise impacts on the region's cultural heritage values.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Targets                                                     | Cultural heritage values understood and protected by MRM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Actions (Refer to Draft EIS Chapter 14 – Cultural Heritage) | <p>MRM is committed to avoiding and/or minimising harm to all cultural heritage values at MRM operations. No unauthorised disturbance of sites of cultural heritage significance will occur.</p> <p>Comply with all conditions attached to the site's Aboriginal Areas Protection Authority (AAPA) certificates, including:</p> <ul style="list-style-type: none"> <li>• prevention of entry to sacred sites</li> <li>• prevention of ground-disturbing works at sacred sites</li> <li>• damage prevented to vegetation at sacred sites other than for purposes specified in the condition</li> <li>• prevention of storage of material and parking of machinery within areas of sacred sites, or within a certain radius of sites</li> <li>• highly visible temporary protective fences erected in specified areas (e.g. along the outer perimeter of work areas in the vicinity of sacred sites) and fence maintenance while works are in progress</li> <li>• notification of the Aboriginal custodians of the sacred sites and providing them with the opportunity to supervise any restoration works carried out on the site.</li> </ul> <p>Obtain new AAPA certificates as required for areas to be developed that are not covered by existing certificates (for example, East OEF and camp extension).</p> <p>Provide cross-cultural inductions for all new project employees.</p> <p>Continue to support local indigenous cultural activities and consult with the indigenous community.</p> <p>Make a suitably qualified archaeologist available when clearing and earthworks activities are undertaken in areas identified in the predictive survey as being highly likely to contain significant artefacts.</p> <p>A rapid response plan will be put in place to ensure that the NRETAS Heritage Branch is contacted in the event of the discovery of protected heritage objects during works at the Project site.</p> <p>As no items or places of non-Indigenous cultural heritage significance have been identified within the mining lease, no significant impacts are expected.</p> <p>General control measures will be adopted to manage unexpected discovery of items or places located within the MRM operations. Should any such site or place be identified, it will be managed in accordance with the applicable legislation.</p> |

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| Monitoring Programs                | Visual inspection of sacred sites.<br>Traditional Owners to undertake cultural heritage clearances before disturbance are undertaken.<br>Review feedback from the Traditional Owners.                                                                                                                                                                                                                                                                                           |
| Performance Indicators             | Minimal adverse impacts to Archaeological or Historic sites.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Reporting                          | Cultural heritage issues will be reported on in the annual environmental performance report.                                                                                                                                                                                                                                                                                                                                                                                    |
| Corrective Actions                 | The following constitute an incident or failure to comply: <ul style="list-style-type: none"> <li>• unauthorised disturbance of sacred sites</li> <li>• non compliance with AAPA certificate conditions</li> <li>• lack of cross-cultural inductions for new project employees.</li> </ul> In the event of a failure to comply, investigations will be undertaken into the cause of the incident or failure to comply and the appropriate action taken to overcome the problem. |
| Responsibility                     | Health, Safety and Environment Manager, Community Relations Manager.                                                                                                                                                                                                                                                                                                                                                                                                            |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy, Standards and Procedures.<br><i>Aboriginal Land Rights Act 1976.</i><br><i>Heritage Conservation Act 2000.</i><br><i>Northern Territory Aboriginal Sacred Sites Act 1989.</i><br>ICMM Sustainable Development Framework.<br>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.                                                                                                                 |

## 19.5.10 Social and Community Management Plan

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| Objectives                                                                        | Maximise beneficial social and/or community effects from the operations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Targets                                                                           | No complaints about social or community impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Actions (Refer to Draft EIS Chapter 15 – Social Impact and Chapter 16 Economics)) | The MRM Community Reference Group (CRG) for the MRM operations is an overarching management tool to enable MRM to monitor impacts on the community and facilitate the provision of project information and feedback.<br>MRM is committed to the continuation of the CRG meetings. Through the CRG, MRM will have a mechanism to: <ul style="list-style-type: none"> <li>• respond to community enquiries and complaints</li> <li>• resolve disputes with stakeholders</li> <li>• develop action plans with stakeholder involvement for ongoing social and community support</li> <li>• report on progress of activities and commitments</li> <li>• monitor through stakeholder feedback the effectiveness of their community engagement processes</li> <li>• adjust mitigation strategies to achieve the best outcomes for all parties.</li> </ul> Continue to pursue partnerships and agreements with community and government counterparts on matters of community development.<br>Continue to participate in community development projects. |

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|                                    | <p>Develop a code of conduct which will include controls on employee access to, and use of, regional recreational areas.</p> <p>Continue to provide training and employment opportunities for local residents.</p> <p>Continue to use a range of communication tools so that the local community is kept informed of MRM's operations.</p> <p>Continue the role of MRM's Community Development Officer as an active member of a number of local community organisations.</p> <p>MRM will continue to undertake stakeholder engagement throughout the commissioning, operational and final decommissioning phases of the Project.</p> |
| Monitoring Programs                | Review feedback from the local community.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Performance Indicators             | <p>Positive contributions to the community such as sponsorship, employment, or delivery of local services.</p> <p>Comprehensive database maintained on complaints, employee health and social issues. Recurring issues analysed and addressed.</p>                                                                                                                                                                                                                                                                                                                                                                                   |
| Reporting                          | Community issues will be reported in the annual environmental performance report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Corrective Actions                 | <p>The following constitute an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>justified complaints from about social and community issues</li> <li>non involvement of MRM in local community activities</li> <li>cessation of training and employment opportunities for local residents.</li> </ul> <p>In the event of a failure to comply, investigations will be undertaken into the cause of the incident or failure to comply and the appropriate action taken to overcome the problem.</p>                                                                                                           |
| Responsibility                     | Community Relations Manager.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Relevant Legislation and Standards | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p>ICMM Community Development Toolkit.</p> <p>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p>                                                                                                                                                                                                                                                                                                                                                                                                               |

## 19.5.11 Chemicals and Dangerous Goods Management Plan

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| Objectives                                                                         | To safely manage, purchase, store, handle and dispose of fuels and chemicals and prevent the uncontrolled release of chemicals to the environment.                                                                                                                                                                                                                                                                                                                                                                                                               |
| Targets                                                                            | <ul style="list-style-type: none"> <li>Compliance with relevant Australian Standards (e.g. for the storage and handling of flammable and combustible liquids and dangerous goods) including: <ul style="list-style-type: none"> <li>AS 4452 <i>The Storage and Handling of Toxic Substances</i></li> <li>AS 1940 <i>The Storage and Handling of Flammable and Combustible Liquids</i></li> <li>AS 3740 <i>The Storage and Handling of Corrosive Substances</i>.</li> </ul> </li> </ul> <p>No spills of chemicals or release of chemicals to the environment.</p> |
| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | <p>MSDSs of all chemicals used during operations will be kept in a register.</p> <p>Procedures in place regarding emergencies relating to chemicals and dangerous goods.</p> <p>Records will be kept on the existing inventory, storage location, personnel training and</p>                                                                                                                                                                                                                                                                                     |

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|                                    | <p>disposal of waste for all chemical and dangerous goods used on-site.</p> <p>All relevant workers will be trained in appropriate handling, storage and containment practices for chemicals and dangerous goods as is relevant to their position.</p> <p>Fuel/chemicals will be stored in accordance with the requirements of relevant Australian Standards.</p> <p>Provide bunded storage areas for fuels and dangerous goods with spill clean-up kits.</p> <p>Implement controls so all transfer of fuels and chemicals is managed to prevent spillage.</p> <p>Any spills to be cleaned up immediately. Contaminated runoff and contaminated soil will be collected and remediated or disposed of in the TSF.</p> |
| Monitoring Programs                | Inspections of storages tanks and bulk containers and the integrity of bunded areas, pavement and associated containment systems will be conducted on a monthly basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Performance Indicators             | <p>No contamination of the environment by hazardous goods.</p> <p>Any spills are addressed and appropriate remedial action has been implemented.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Reporting                          | <p>Monthly inspection reports of containers, bund integrity, valves and storage and handling areas.</p> <p>Spills will be reported to MRM's General Manager including actions taken to minimise the impacts.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Corrective Actions                 | <p>The following constitutes an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>• storage areas not meeting Australian Standards</li> <li>• storage areas not containing suitable bunding</li> <li>• release of fuel or chemicals to the environment.</li> </ul> <p>Should an incident occur, a selection of the following corrective actions will be undertaken as appropriate:</p> <ul style="list-style-type: none"> <li>• contain and clean up spilt material immediately and remediate or appropriately dispose of contaminated material</li> <li>• repair containments systems</li> <li>• relocate fuel or chemicals to appropriately bunded or approved storage areas.</li> </ul>   |
| Responsibility                     | Health, Safety and Environment Manager.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Relevant Legislation and Standards | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p>Relevant Australian Standards (AS 1940, AS 3740 AS 4452).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 19.5.12 Health and Safety Management Plan

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| Objective | The operation does not adversely affect the health of the employees, contractors or the general public. |
| Target    | Zero reportable injuries and work-related illnesses.                                                    |

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| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | <p>The site's existing SD management system will be modified to incorporate the requirements of the Project.</p> <p>The site's existing behavioural safety management program will be modified to incorporate the requirements of the Project.</p> <p>Safety training will be implemented through both general site safety induction as well as area specific inductions.</p> <p>Job Safety Analysis will be undertaken as required for specific tasks associated with the Project and used to develop Standard Operating Procedures to achieve compliance with the MRM standards.</p> <p>The site's existing risk register will be reviewed to incorporate all high level business, safety and environmental risks associated with the Project.</p> <p>Existing workplace hazards and procedures will be modified to incorporate the Project. These procedures will include:</p> <ul style="list-style-type: none"> <li>hazardous substances/dangerous goods</li> <li>noise</li> <li>isolation and tagging</li> <li>manual handling</li> <li>personal protection equipment</li> <li>confined spaces</li> <li>height safety</li> <li>health and hygiene programs</li> <li>illness and injury management system.</li> </ul> |
| Monitoring Programs                                                                | MRM is committed to continuous improvement through the regular auditing of the site's health and safety health systems both internally and externally through an AS/NZS 4801:2001 certification body.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Performance Indicators                                                             | <p>Number of incident reports.</p> <p>Severity of incidents (e.g. fatality, injury, major spill).</p> <p>% compliance with training procedures.</p> <p>% compliance with corrective action procedures.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Reporting                                                                          | <p>The OHS representative reports to the Executive Management Team on a weekly basis on any health and safety issues that need to be addressed.</p> <p>The results of all health and safety audits will be reported to the General Manager.</p> <p>MRM's existing electronic incident reporting process will be used to report all incidents.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Corrective Actions                                                                 | MRM will investigate, respond to and take appropriate corrective action and preventive action following a health and safety incident.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Responsibility                                                                     | Health, Safety and Environment Manager.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Relevant Legislation and Standards                                                 | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p><i>Workplace Health and Safety Act 2007.</i></p> <p><i>Workplace Health and Safety Regulations 2010.</i></p> <p>AS/NZS 4801:2001.</p> <p>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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## 19.5.13 Incidents and Complaints Management Program

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|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                                                                          | To manage environmental or social incidents and complaints.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Target                                                                             | Immediate action undertaken as soon as possible.<br>Investigations completed within a timely fashion.<br>All corrective actions implemented by the due date.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Actions (Refer to Draft EIS Chapter 17 and 18 – Health and Safety/Hazard and Risk) | All incidents and complaints about either environmental or social incidents or complaints will be managed in accordance with the relevant MRM procedure. This procedure requires the following actions to be undertaken: <ul style="list-style-type: none"> <li>• take any necessary immediate action</li> <li>• report the incident or complaint (including to Government if necessary)</li> <li>• undertake an investigation</li> <li>• determine root causes</li> <li>• undertake any necessary corrective or preventative actions</li> <li>• monitor action implementation</li> <li>• audit effectiveness of action.</li> </ul> |
| Monitoring Programs                                                                | Monitor compliance against the targets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Performance Indicators                                                             | Number of complaints received.<br>Number of complaints resolved within specific timeframe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Reporting                                                                          | Incidents and complaints will be reported to the General Manager.<br>Incident and complaint trends will be reported annually in the Mining Management Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Corrective Actions                                                                 | The following constitute an incident or failure to comply: <ul style="list-style-type: none"> <li>• failure to act upon occurrence of an incident or receipt of a complaint</li> <li>• failure to investigate an incident or complaint</li> <li>• failure to implement any necessary corrective action.</li> </ul> In the event of a failure to comply, investigations will be undertaken into the cause of the incident or failure to comply and the appropriate action taken to overcome the problem.                                                                                                                             |
| Responsibility                                                                     | Community Relations Manager.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Relevant Legislation and Standards                                                 | MRM's Sustainable Development Policies and Procedures.<br>ICMM Sustainable Development Framework.<br>Enduring Value - The Australian Minerals Industry Framework for Sustainable Development 2005.                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 19.5.14 Transport Management Plan

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|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                                          | Manage operational traffic to and from the McArthur River Mine Project.                                                                                                                                                                                                                       |
| Target                                             | Minimal impact on road safety and pavement conditions.<br>Minimal increase in road congestion.                                                                                                                                                                                                |
| Actions (Refer to Draft EIS Chapter 8 – Transport) | Traffic management and logistics plans will be developed to reduce total vehicular travel distance where possible and risk of accidents from project operations.<br>Operating to any load limits or restrictions that may be imposed from time to time to protect public road infrastructure. |

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|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring Programs                | Routine monitoring of near-misses and traffic accidents (incident reporting system).<br>Monitoring of pavement condition of operations haul routes.                                                                                                                                                                                                             |
| Performance Indicators             | Road safety and pavement conditions.                                                                                                                                                                                                                                                                                                                            |
| Reporting                          | Data will be gathered and communicated through existing SD reporting systems.<br>Independent reports will be produced for any investigations triggered by a complaint or an audit finding.                                                                                                                                                                      |
| Corrective Actions                 | Corrective actions will depend on the nature of the issue, for example, for excessive congestion of a particular route, alternative routes will be investigated and logistics plan altered as required and/or traffic monitoring will target the particular route.<br>However, this is not anticipated to be an issue due to the isolated location of the site. |
| Responsibility                     | Administration Manager.                                                                                                                                                                                                                                                                                                                                         |
| Relevant Legislation and Standards | MRM's Sustainable Development Policy and Procedures.                                                                                                                                                                                                                                                                                                            |

## 19.5.15 Mine Closure Management Plan

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| Objective                                                                                                                        | After the site is closed it will be left in a condition that reflects government and community expectations.<br>Promote the physical and geochemical stabilisation of all project components in the short and long term.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Target                                                                                                                           | To meet the site closure criteria set out in MRM's Unplanned and Life of Mine Completion Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Actions (Refer to Draft EIS Chapter 5– Rehabilitation and Decommissioning, Chapter 9 – Waste and Appendix E4– Mine Closure Plan) | Update the MRM's Unplanned and Life of Mine Completion Plan to incorporate the Project.<br>MRM will address closure planning as part of the Mining Management Plan. Implementation of the closure plan will be based identifying post-closure impacts, developing and implementing inspections and monitoring programs to verify acceptable performance and developing and implementing corrective action plans, as appropriate.<br>MRM will regularly consult with stakeholders on closure related issues.<br>Infrastructure will be removed from the site at the completion of mining or as it becomes redundant. This will include administrative offices, workshops, fuel storage tanks, and water pipes. Infrastructure such as bores and roads will not be decommissioned if post-mining land users request their retention. |
| Monitoring Programs                                                                                                              | MRM's Unplanned and Life of Mine Completion Plan will be reviewed annually.<br>Short, medium and long term monitoring requirements will be detailed within the Closure Planning in the MMP. As a minimum, the following monitoring measures will be implemented where appropriate.<br><br>Groundwater<br>Post closure groundwater monitoring will be conducted in accordance with the requirements of the regulatory Authority until it can be shown by MRM that there will be no long-term impacts from the operation.<br><br>Surface Water<br>Post closure surface water monitoring will be conducted in accordance with the requirements of the regulatory Authority until it can be shown by MRM that there will be no long-term impacts from the operation.                                                                   |

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|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | <p><b>Vegetation</b></p> <p>Inspect revegetated areas until the regulatory authority agrees that they are self-sustaining and that rehabilitation objectives have been achieved. Inspections will determine additional actions necessary to achieve the objectives such as providing water, fertiliser, reseeding, replanting and/or protecting (e.g. by fencing) areas that have been damaged by drought, fire or over-grazing by wildlife.</p> <p><b>Physical Stability</b></p> <p>Assess the following and, as appropriate and necessary, take corrective action:</p> <ul style="list-style-type: none"> <li>the integrity of OEF rehabilitation, particularly the slopes</li> <li>the stability of rehabilitated surfaces where infrastructure was located.</li> </ul> <p><b>Relinquishment, and Long Term Care and Maintenance</b></p> <p>Once it is established that revegetated areas are self-sustaining, rehabilitation objectives have been achieved, and there is low risk of:</p> <ul style="list-style-type: none"> <li>groundwater contamination</li> <li>the accumulation of water of unacceptable quality in the open pit</li> <li>the drainage of water of unacceptable quality from the OEF/TSF.</li> </ul> <p>MRM will negotiate the complete relinquishment of the lease. Prior to any negotiation to relinquish the lease and obtain bond money, MRM shall consult with relevant parties. As appropriate, the relinquishment will occur either in stages for portions of the lease or at one time for the entire property.</p> |
| Performance Indicators             | <p>Consulting with stakeholders prior and during closure.</p> <p>Achievement of closure criteria.</p> <p>Compliance with mining legislation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Reporting                          | <p>The site's closure strategy will be reported in MRM's Unplanned and Life of Mine Completion Plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Corrective Actions                 | <p>The following constitute an incident or failure to comply:</p> <ul style="list-style-type: none"> <li>failure to update the Unplanned and Life of Mine Completion Plan to incorporate the Project</li> <li>failure to review the Unplanned and Life of Mine Completion Plan.</li> </ul> <p>In the event of a failure to comply, investigations will be undertaken into the cause of the incident or failure to comply and the appropriate action taken to overcome the problem.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Responsibility                     | <p>Health, Safety and Environment Manager.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Relevant Legislation and Standards | <p>MRM's Sustainable Development Policy, Standards and Procedures.</p> <p>MRM's Mineral Leases.</p> <p>Western Australia – Mine Closure Guideline.</p> <p><i>Mining Management Act 2001.</i></p> <p><i>Mining Act 2004.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |