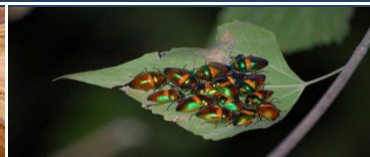




Appendix D Environmental Management Plan



Sherwin Iron (NT) Pty Ltd
Sherwin Creek Iron Ore Project
Environmental Impact Statement



2013





Environmental Management Plan: Sherwin Creek Iron Ore Project

Prepared for: Sherwin Iron (NT) Pty Ltd

Prepared by: EcOz Environmental Services

2013



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1 Background

1.1 Introduction

Sherwin Iron (NT) Pty Ltd (Sherwin) proposes to build an iron ore mine in the Roper Region of the Northern Territory. This mine - called the Sherwin Creek Iron Ore Project (SCIOP) - is within ML29584. For the SCIOP iron ore will be mined from leases, transported along the Roper and Stuart Highways to the Port of Darwin for export. The mine consists of open pits and associated infrastructure such as an accommodation village, offices, workshops and hazardous materials storage. As part of the regulatory approvals process for the mine an Environmental Management Plan (EMP) is required to be developed.

This document describes the framework employed by Sherwin Iron for environmental management including safeguards and controls developed to ensure environmental impacts are minimised and promptly remedied, and outlines effective monitoring and environmental management throughout the construction phase and operational phases of the project and will be included with the Mining Management Plan. Some aspects of the individual EMPs are duplicated, this is essential to allow for use on ground by specific personnel, who may not have, or need, access to other sections of the EMP.

Elements of the EMP will be continuously updated to incorporate further information, new techniques and relevant legislative requirements and adaptations resulting from monitoring results. Implementation strategies will be directed to achieving the performance criteria set out in the individual EMPs (Section 3.2) and any statutory requirements.

The EMP will be reviewed and amended to incorporate any recommendations resulting from the EIS assessment process. Maps and diagrams included in Section 3.2.1 will be updated as design of the mine is refined during the pre-construction and EIS stage. The EMP will be reviewed as part of the Mining Management Plan to maintain relevance to all aspects of the project.

1.2 Project description

1.2.1 Location

The project is located in the Northern Territory approximately 570 km south-east of Darwin and 150 km east of Mataranka by road. The Roper Highway connects the project area with Stuart Highway (Figure 1-1).

The closest settlements to this area are Mataranka, roughly 120 km west and Ngukurr, approximately 50 km east.

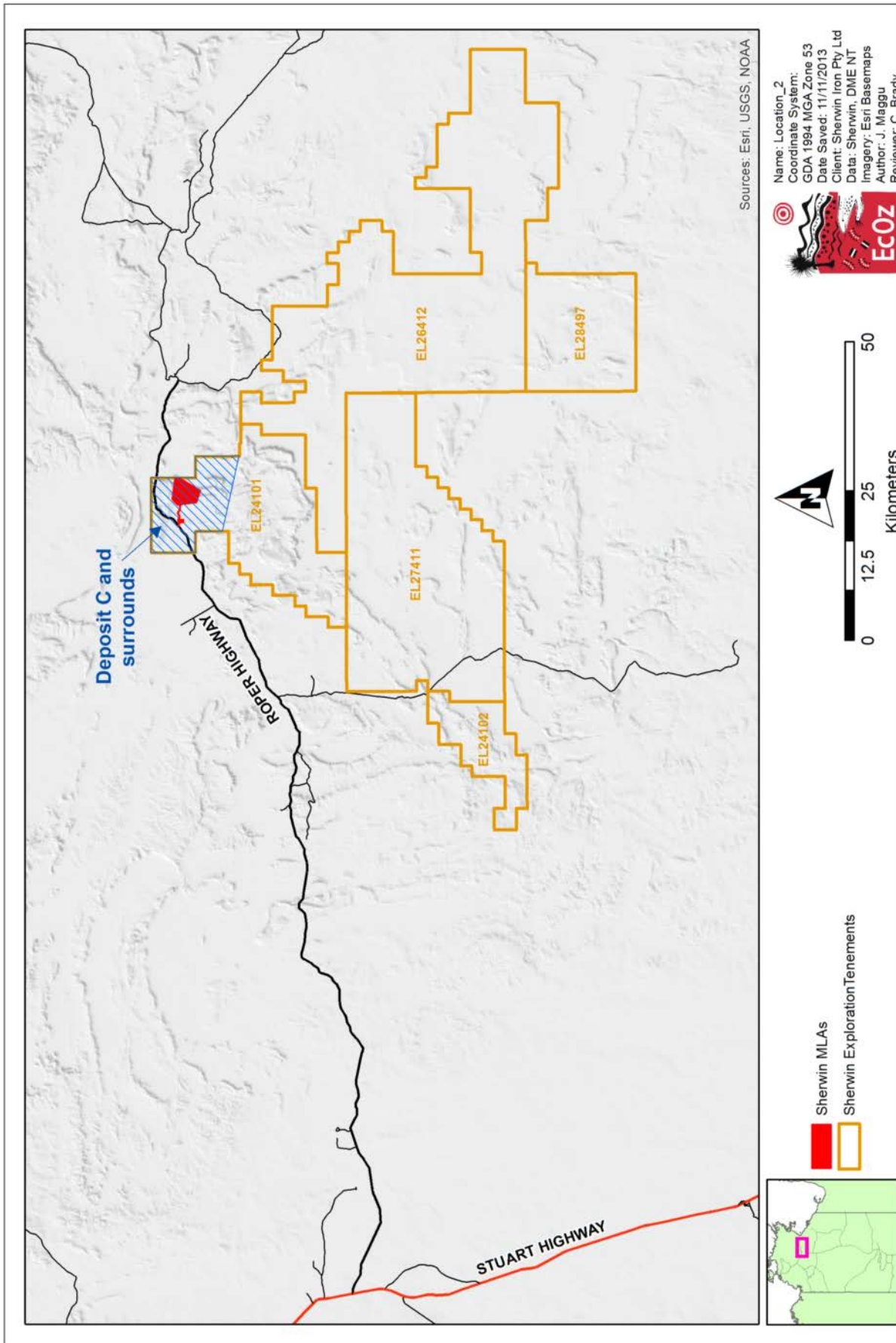


Figure 1-1. Map showing location of Sherwin Creek Iron Ore Project

1.2.2 Construction and operation activities

The project area includes multiple deposits of iron ore within the tenement boundaries. Sherwin is currently undertaking a Bulk Sample program whereby direct shipping iron ore is being mined and transported via road to the Port of Darwin for export to China. This program allows steel mills to test the ore in their furnaces and ensures that Sherwin has a desirable and therefore marketable product.

In the initial stages, the project will involve the development of open pits to mine DSO at Sherwin Creek (Deposit C); the development of some infrastructure (workshops, office, laydown, magazine, drainage, others); an area for DSO stockpile at the mine (ROM); loading facility and stockpile at the Port of Darwin; Sub-Grade (SG) stockpile area and waste dump area at the mine site; haul road between pit and stockpiles; service roads within the project; and accommodation village.

DSO will be mined, crushed, and stockpiled at a ROM stockpile for blending if required, before it is transported by road train to the Port of Darwin. During mining, SG ore will be mainly stockpiled while mine waste material will be used to construct roads, laydown area, and stockpile area. An out of pit waste dump will be built during the initial mining stages for each pit. However, as the pit progresses, in-pit waste dumps and stockpiles will be utilised to minimise the environmental footprint.

The DSO is to be transported by road train to Darwin. There is a 4.5 km access road from the operation to the Roper Highway, then 150 km along Roper Highway to the Stuart Highway near Mataranka, with a further 420 km to the Port of Darwin.

1.2.3 Timing and scheduling

The bulk sampling program that is being carried out is the first phase of the planned operation. Temporary offices and workshop facilities were put in place to meet the requirements of the bulk sampling program. The temporary office and workshop facilities will be superseded by the permanent facilities to be constructed following regulatory approval of the project and then either relocated or removed from site. The crushing and screening plant used for the bulk sampling program will be used for this project.

Sherwin intends to commence construction of required facilities and pre-strip of the proposed DSO pit immediately upon approval. This will hopefully allow for commencement of mining and crushing operations during the dry season of 2014, with 1.5 Mt of ore produced in 2014. Ore production rate will be increased to 2.0 Mtpa from 2014, increasing in successive years to a peak of 3.0 Mtpa in 2016/17. The operation is scheduled for completion of mining in 2019. A summary of the project components and timeframe is shown in Table 1-1.

Table 1-1 Project Components and Timeframe

Component	Details and Timeframe
Proposed Construction Commencement	Early 2014
Proposed Operation Commencement	Q1 2014
Life of Mine	6 years
Estimated Year of Decommissioning	2019
Size of Orebody	39.2 Mt, including low grade ore
Ore Type	Oolitic Hematite
Estimated Total DSO Production	13.8 million tonnes at 58% Fe
Strip Ratio	7:1
Number of Pits	1
Depth of Pits	10m to 40m
Estimated Recoverable Topsoil	100,000 m ³ , average depth of 0.1 m
Crushing Rate	Up to 3 Mtpa

Component	Details and Timeframe
Ore Grade	58.0% Fe
Estimated Total Disturbance Footprint	350 Ha
Workforce During Construction	150
Workforce During Operations	100

1.3 EMP context

Environmental permitting of mining activities is regulated in the Northern Territory by both the *Mining Management Act* and the *Environmental Assessment Act*. Assessment and approval under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) is also required for those actions that could have a significant impact on a matter protected by the EPBC Act. In the Northern Territory this will be through the bilateral agreement between the Northern Territory and Australian Governments. In late 2013 Sherwin Iron is to submit their Environmental Impact Statement to the Northern Territory Government under the bilateral process.

Specific safeguards and controls proposed to be employed to minimise or remedy environmental impacts identified in the Environmental Impact Statement are included in this Environmental Management Plan, which will eventually become part of the Mining Management Plan for mine operations. Underpinning this is Sherwin Iron's Environmental Management System (EMS) that has been developed in accordance with Australian Standards and legislative requirements. The EMS further outlines key elements such as policies, procedures, staff accountabilities, training, reporting, auditing, and monitoring activities.

Various studies have been undertaken to help inform this Environmental Management Plan and include:

- Acid and Metalliferous Drainage risk and management
- Surface water and groundwater studies
- Baseline dust and noise monitoring
- Short range endemic invertebrate survey
- Bat call recording and analysis
- Flora and fauna surveys (including assessment of pest and weed risk and management)
- Archaeological surveys
- Traffic impact statement
- Biting insect surveys
- Soil surveys
- Erosion and sediment control assessment
- Aquatic fauna surveys.

1.4 EMP objectives

The objectives of this EMP are as follows:

- To define the statutory obligations that must be fulfilled
- To present a range of specific environmental management actions necessary to meet the requirements of the environmental assessment process
- To provide a clear framework for effective environmental management during all phases of the project

- To assign clear and appropriate responsibilities for the implementation of specific environmental undertakings
- To specify monitoring regimes to enable assessment of environmental performance
- To facilitate self-assessment to ensure that mitigation measures are implemented
- To ensure that all employees understand their role in ensuring environmentally sound operations.

1.4.1 Communication objectives

The objectives of communicating environmental issues include:

- Provides access to information for all Sherwin Iron employees
- Ensures that employees are aware of, and understand, their accountabilities for environmental management
- Facilitates internal auditing and reporting
- Enables regulatory reporting
- Encouraging employee involvement in continuously improving environmental systems and procedures
- Providing information on Sherwin Iron's environmental performance to the broader community
- Addressing environmental concerns of local communities.

Various methods of communication will be pursued both internally and externally. In addition to this, new employees will undergo an induction which will include detail on Sherwin Iron's environmental systems and procedures. Management plans will be made available to the public.

1.5 Environmental policy

Sherwin Iron understands that strong community relations, environmental sensitivity and effective corporate governance are all fundamental factors in sustainable development.

Sherwin Iron believes that a commitment to sustainable development is vital to maintaining strong relations with Land Councils, native titleholders and the community at large.

Sherwin Iron endeavours to comply with all applicable legislative requirements particularly occupational health and safety, the environment, native title and cultural heritage laws.

Sherwin Iron recognises, considers and respects that environmental issues may arise from their activities. Sherwin Iron complies with all applicable legal requirements in order to reduce any potential negative impact from its operations.

Sherwin Iron makes a commitment to:

- Comply with all relevant regulatory requirements
- Comply with all environmental management plans
- Continually improve and monitor environmental performance
- Continually improve and reduce environmental impacts
- Incorporate environmental factors into business decisions
- Increase employee awareness and training.

Specifically, Sherwin Iron will research and implement ways to reduce water use; endeavour to prevent and reduce occurrence and severity of environmental pollution events, protect native flora, fauna and sensitive

ecosystems and effectively and efficiently rehabilitate land post mining. In addition, Sherwin will continue to build on existing relationships with key stakeholders, while protecting the visual amenity and cultural and heritage significance of the surrounding environment.

The Environmental Policy is made available to all employees as well as the general public through making it available on Sherwin Iron's website. The Environmental Policy will be reviewed periodically and at minimum every five years. The Environmental Policy is available in Appendix D6 of this EMP.

2 Environmental Management

2.1 Environmental management structure and responsibility

Sherwin's environmental management structure is shown below in Figure 2-1. Responsibilities of the various personnel are detailed in the sub-sections below.

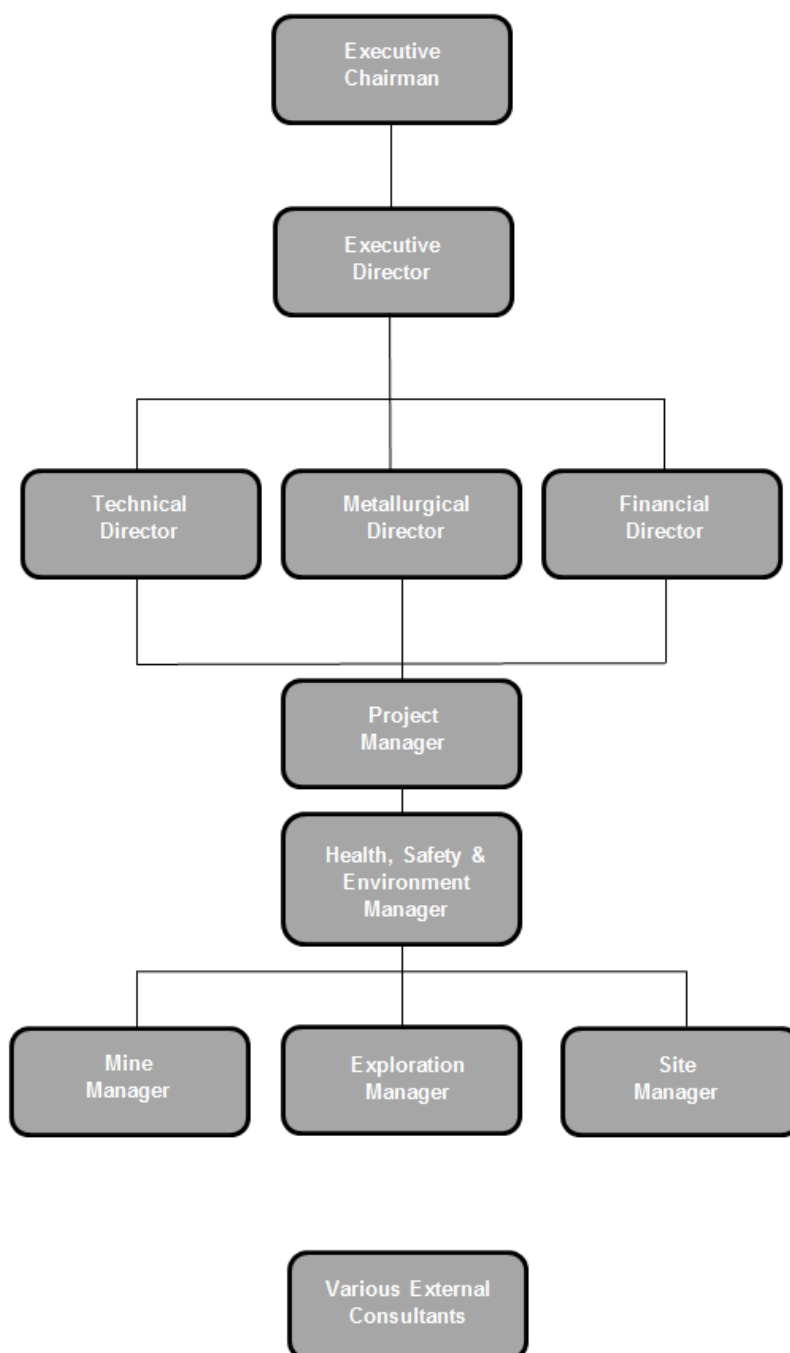


Figure 2-1. Environmental Management Structure

2.1.1 Responsibilities

Sherwin personnel are responsible for implementation of, and compliance with, this EMP. Sherwin may engage contractors to carry out activities such as process plant and haul road construction, upgrades or pit excavations at the mine.

Key personnel (i.e. Mine Manager, Project Manager and Health, Safety and Environment Manager) are responsible for communicating environmental matters and ensuring management practices and procedures are being implemented. All staff, contractors, and consultants will complete a comprehensive site induction. The induction will include safety requirements, site behaviour rules, access protocols and restrictions, cultural requirements and commitments, and a comprehensive review of environmental risks, responsibilities and standards. All project managers will have an additional training session on the use and implementation of the EMP.

Specific environmental roles and responsibilities are detailed in the following sections.

Executive Director – Sherwin

The Executive Director is responsible for the standard of all management, including environmental management. The Executive Director is ultimately responsible for the implementation and overall performance of the Environmental Management System (EMS).

The Executive Director is responsible for ensuring the currency of the Environmental Policy, reviewing objectives and targets, periodically reviewing the performance of the EMS through the senior management review process and providing sufficient resources (human, financial, technical and specialised skills) to effectively manage and operate the facility within the environmental policy framework.

To assist in fulfilling this responsibility, the Executive Director is supported by a series of specialist personnel (refer to hierarchy in Figure 2-1).

Project Manager - Sherwin

Local contractors and employees will be sourced through the Project Manager. The Project Manager will receive feedback from the Mine Manager and the Health, Safety and Environment (HSE) Manager regarding on-ground achievements and conditions, and will liaise directly with higher management for financial guidance and company direction (see Figure 2-1).

The Project Manager shall ensure the following:

- Develop and Implement EMS and procedures in conjunction with the HSE Manager
- Create awareness of the EMS and various EMPs among staff and subcontractors
- Conduct internal audits and reviews on the Environmental Management System and Plans
- Issue and control of EMP relevant documents
- Assist in the reporting, investigation and monitoring of environmental complaints and incidents.

Health, Safety and Environment Manager – Sherwin

The Health, Safety and Environment (HSE) Manager is the first point of contact should an environmental incident occur on site. In addition to this, the HSE Manager is also responsible for actioning all required surveys, monitoring, consultations, reporting requirements and community support as committed to within this EMP. The HSE Manager will be responsible for investigating the cause of any environmental incident, remediation of the site and reporting to authorities. The HSE Manager will inform the Project Manager of outcomes.

The HSE Manager shall ensure the overall implementation and on-going maintenance of the EMS and EMPs.

The HSE Manager is responsible for ensuring that the EMS requirements are established, implemented and maintained in accordance with the ISO 14001:04 standards.

The HSE Manager is responsible for assigning objectives and targets to the applicable Sherwin work areas and for providing adequate resources, including appropriate budgets and manpower at the department level, to ensure that business planning needs are met.

The HSE Manager shall ensure the dissemination of the Sherwin Iron Environmental Policy Statement to all employees and subcontractors. The HSE Manager shall ensure the continued management and review of the EMS and EMPs, ensure environmental complaints are promptly reported and resolved and will provide status reports on the environmental performance of Sherwin Iron.

Mine Manager, Exploration Manager and Site Manager – Sherwin

The Mine, Exploration and Site Managers are responsible for ensuring that onsite environmental safeguards, surveys and monitoring, inspections and remediation are all carried out as committed to within this EMP and as directed by the Health, Safety and Environment Manager. They will report back directly to the Health, Safety and Environment Manager with outcomes and on-ground suggestions.

They will also ensure compliance to the EMS by all employees and contractors whilst working on Sherwin Iron work sites, ensure the prompt identification and reporting of potential or actual environmental incidents or accidents, ensure work activities comply with the EMS and EMP requirements and they will undertake environmental inspection as an integrated part of normal site inspections/job observations.

Various External Contractors as required

All external contractors will be made aware of their environmental responsibilities through a site induction.

Externally contracted environmental consultancy staff will conduct or supervise required audits and surveys as appropriate. Environmental consultants will provide reports on this work, including recommendations on environmental management backed by extensive environmental training and experience. Communications regarding logistics will be directed to the Project Manager, and management recommendations will be directed to the Health, Safety and Environment Manager for consideration. Environmental consultants will also work closely with the HSE Manager with respect to annual EMP review and submission of the MMP.

Emergency response personnel

Specific details of the roles and responsibilities of emergency personnel are provided in Section 2.5.

2.2 Approval and licensing requirement

Construction and operations at the Sherwin mine will most specifically be conducted under proviso of the *Mining Management Act* and compliance with the general object of the Act.

The main Commonwealth and Northern Territory legislation associated with this proposal are listed in Table 2-1 below.

Table 2-1. Relevant Commonwealth and Northern Territory Legislation

RELEVANT LEGISLATION
Commonwealth Legislation
<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>
<i>Environment Protection and Biodiversity Conservation Act 1999</i>
<i>Native Title Act 1993</i>
<i>Environment & Heritage Amendment Act No. 1 2003, No 88 2003 (repealed the Australian Heritage Commission Act)</i>
<i>Aboriginal Land Rights (Northern Territory) Act 1976</i>
<i>National Greenhouse and Energy Reporting Act 2007</i>

RELEVANT LEGISLATION
Northern Territory Legislation
<i>Environmental Assessment Act 1994</i>
<i>Mining Management Act 2001</i>
<i>Northern Territory Aboriginal Sacred Sites Act 1989</i>
<i>Territory Parks and Wildlife Conservation Act 2006</i>
<i>Water Act 1992</i>
<i>Aboriginal Land Act 2004</i>
<i>Bushfires Act 1980</i>
<i>Control of Roads Act 2011</i>
<i>Crown Lands Act NT 2009</i>
<i>Dangerous Goods Act 1998</i>
<i>Environmental Offences and Penalties Act 1996</i>
<i>Heritage Act 2001</i>
<i>Planning Act 1989</i>
<i>Public and Environmental Health Act 2011</i>
<i>Soil Conservation and Land Utilisation Act 2009</i>
<i>Traffic Act 2011</i>
<i>Waste Management and Pollution Control Act 1998</i>
<i>Water Supply and Sewage Services Act 2001</i>
<i>Weeds Management Act 2001</i>
<i>Workplace Health and Safety (National Uniform Legislation) Act 2011</i>

2.3 Reporting

EIS relevant reporting will consist of annual reporting through the MMP process. A full and detailed MMP will be submitted for the initial Mining Authorisation, if there is a major change with mining operations this would trigger resubmission of the MMP, otherwise the MMP is submitted only every 4 years. An Environmental Mining Report will be submitted each year; this will contain an updated version of the Environmental Management Plans as well as any reportable non-conformances. Other reporting will take place as required by other regulatory authorities.

2.4 Induction

All personnel will undergo general environmental awareness through the induction and the Environmental Officer will receive specific training about their responsibilities under the EMP. Training will ensure that all employees (both contractors and fulltime) understand their obligation to exercise due diligence for environmental matters (DIPNR 2004).

Environmental training will include, but not be limited to:

- A site induction
- Familiarisation with the requirements of the EMP
- Environmental emergency response training
- Familiarisation with site environmental controls
- Targeted environmental training for specific personnel as required.

2.4.1 Records of induction and environmental training

Records of induction and any environmental training undertaken will be maintained and will include:

- Who was trained
- When the person was trained
- The name of the trainer
- A general description of the training content.

2.5 Emergency contacts and response

The following personnel will be available to contact for emergencies.

2.5.1 Contacts

Internal

Mine Site Personnel	Contact Number
Austin Monfries	0408 064 749
David Worthley	0408 965 346
Bruce Christian (Sherwin)	0429 300 300
Colin Jardine (Sherwin)	0417 594 458
Sue Jardine (Sherwin) Site Office	(08) 8975 4284

Darwin Office Personnel	Contact Number
Darwin Office – (Office Hours)	(08) 8941 3844
Executive Director – Rodney Illingworth	0417 908 119
Office Administration manager – Lisa Savill	0411 289 569

External

Emergency Services	Contact Number
NT Emergency Services	000 – Landline 112 – Mobile
Darwin Police	(08) 8978 3969
Katherine Police	(08) 8973 8000
Mataranka Police	(08) 8975 4511
Katherine Fire Station	(08)8973 8014
Poison Information Centre	13 11 26
Pollution Hotline (spills) – 24 hrs	1800 064 567
Hospitals and Medical assistance	Contact Number
Royal Darwin Hospital	(08) 8922 8888
Katherine Hospital	(08) 8973 9211
Mataranka Health Clinic	(08) 8975 4547
Stations	Contact Number
Numul Numul Station	(08) 8975 4955
Flying Fox Station - "Colin" and "Sue"	(08) 8975 4284

Local Councils	NUMBER
Mataranka Council	(08) 8975 4576
Katherine Council	(08) 8972 5500

2.5.2 Response

The Emergency Response Coordinator is the site manager, or their delegate, in charge of handling and controlling any emergency situation that may occur in and around the Sherwin Creek Iron Ore Project. On site responsibilities may be delegated, however, the Emergency Response Coordinator must ensure that the person delegated these responsibilities understands and is capable of performing them. Specific duties of the Emergency Response Coordinator are detailed in the Emergency Response Plan (Appendix D1).

An emergency is a situation which can rapidly escalate, and if not brought under control quickly may well result in major property damage, serious injury or death.

The person discovering an emergency will normally handle that emergency in the first instance. If the accident, fire or other emergency is of such a nature that the person who discovered it cannot handle it, then they are responsible for initiating the first level of the emergency procedures.

It is the objective of the company to establish and maintain a system of emergency procedures which may be applied to any emergency and assist in preservation of life, the prompt attention to the injured and limit the damage to property and process.

In the belief that accidents are caused the company requires any accident to be investigated at the earliest opportunity with the purpose of identifying and then eliminating the cause or causes.

The objective of the 'Emergency Control Management Procedure Manual' (refer to Appendix D1) is to establish routines that may be followed in an emergency and to provide relevant personnel with a statement of their duties.

As far as possible, it is intended to make these procedures common for most situations so that the opportunity for variation, and hence mistakes is reduced to a minimum.

Response plans have been produced for the following types of emergency (refer to Appendix D1):

- Bushfire response plan
- Vehicle fire response plan
- Fatality response plan
- Electric shock response plan
- Injured person response plan
- Chemical spill – oil spill response plan
- Cyclone response plan
- Flooding response plan
- Environmental emergencies response plan (hydrocarbon releases and emergency spill response plan)
- Vehicle incident (not involving fire) response plan
- Missing personnel response plan.

Under Part 3 Division 4 Section 29(1) of the *Mining Management Act* an operator must report environmental incident or serious environmental incident as soon as practicable after the operator for a mining site becomes aware of the occurrence of an environmental incident or serious environmental incident on the site,

the operator must notify the Chief Executive Officer of the occurrence, Section 2.5.5 elaborates on this further.

2.5.3 Minimising damage

Sherwin will follow four basic steps to minimise damage and to control an environmental emergency. These are: prevention, preparedness, response and recovery.

Prevention: strategies will be in place to ensure that environmental incidents do not occur. This includes adequate erosion and sediment control devices, operating under approved Australian Standards, building codes, and appropriate storage of dangerous goods/hazardous materials.

Preparedness: emergency response planning is in place and training is provided to all personnel.

Response: implementation is plans and strategies to manage environmental incidents and coordination of response in a controlled, effective and timely manner.

Recovery: Clean up and site restoration.

2.5.4 Notification to NTG and others

Contact details for notifying relevant government agencies is provided below in Table 2-2.

In the first instance contact should be made with the NT Department of Mines and Energy. Pollution control advice can be provided by the relevant branch of the NT Environmental Protection Authority.

2.5.5 Incident report

An Incident Report (refer to Appendix D1) will specify:

- a. The incident causing or threatening to cause pollution
- b. The place where the incident occurred
- c. The date and time of the incident
- d. How the pollution has occurred, is occurring or may occur
- e. The attempts made to prevent, reduce, control, rectify or clean up the pollution or resultant environmental harm caused or threatening to be caused by the incident
- f. The identity of the person notifying the NT EPA

Table 2-2. DME emergency contacts

Department of Mines and Energy			
Address	Business area	Telephone	Email
Paspalis Centrepoin Building 48-50 Smith St (Cnr Knuckey Street and Smith Street Mall), DARWIN NT 0800, GPO Box 4550, DARWIN NT 0801	Mining Management	+61 8 8999 5511	mineral.info@nt.gov.au

Table 2-3. NTEPA emergency contacts

NT Environmental Protection Authority			
GPO Box 3675, Darwin NT 0801	General	08 8924 4218	ntepa@nt.gov.au
	Pollution Hotline (for reporting Urgent pollution incidents requiring urgent attention)	1800 064 567	
	Pollution Control	08 8924 4218	pollution@nt.gov.au
	Waste and Resource Recovery	08 8924 4218	waste@nt.gov.au
	Environmental Assessments	08 8924 4218	eia.ntepa@nt.gov.au
	Container Deposit Scheme	1800 752 632	containerdeposit@nt.gov.au
	Air Quality	08 8924 4057	pollution@nt.gov.au
	National Pollutant Inventory	08 8924 4057	npi.officer@nt.gov.au
	Environment Grants	08 8924 4002	environmentgrants@nt.gov.au
	Energy Smart Rebate	1800 226 992	energysmart.rebate@nt.gov.au

Table 2-4. DLRM emergency contacts

Department of Land Resource Management			
Katherine, Gulf and VRD, 32 Giles St PO Box 532 Katherine NT 0851	Bushfires	T: (08) 8973 8871 or	
		T: (08) 8973 8872	
		T: (08) 8973 8870 (VRD)	
		F: (08) 8973 8873 or 8973 8899	
	Flora and fauna	All General Enquiries: 8995 5001	
	Weeds	T: (08) 8973 8857	weedinfo@nt.gov.au
	Water	Water Resource Planner: 8973 8840	
		Licensing and Regulation: 8973 8831	waterresources@nt.gov.au

3 Environmental Management Plans

3.1 Introduction

The EMP represents a framework for managing and monitoring risk abatement. It does this by, for each identified environmental risk (see discussion later), presenting a measurable target, actions to achieve the target, monitoring of actions and/or outcomes as well as reporting and contingency if targets have not been met.

The environmental risk assessment (Chapter 3 of the EIS) informs the basis of the EMP. Chapter 3 gives a risk rating for each identified risk, the studies that have occurred to understand the risk and the actions required to mitigate the risk. Broadly, this EMP outlines the strategy to manage, monitor and report on risk abatement.

The layout for the EMP aligns to the general themes from the EIS guidelines, specifically:

- Human Health and Safety
- Hydrology and water quality
- Biodiversity
- Rehabilitation and mine closure
- Historic and cultural heritage impacts
- Socio-economic
- Other risks.

The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program has been provided within the Environmental Management Plans below.

Further detail can be found in the corresponding Appendix for many of the risks identified through the EIS process.

3.2 Environmental Management Plans

Presented below are environmental management plans for each of the identified risk areas.

3.2.1 Health and safety

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D=Decommissioning			Agency
								C	O	D	
Biting insects	Prevent mosquito breeding opportunities on site	Material with the potential to pool water will either be stored in a manner to prevent water pooling or discarded immediately after use	Compliance: No evidence of water pooling on site. Effectiveness: Personnel are not being affected by biting insect problems	The site is to be checked for existing and potential water holding receptacles at least monthly during construction and mining. Baseline mosquito monitoring will be undertaken quarterly in the first 12 months. Further monitoring may be undertaken pending results of the baseline monitoring	Baseline monitoring will be performed quarterly in the first 12 months and preliminary results reported within the first MMP	Increase frequency of site checks, particularly during the wet season, if required. If problems with biting insects are severe, Sherwin will explore the option of spray control of biting insects targeting problem areas	Project manager / Health Safety and Environmental officer	yes	yes	yes	Medical Entomology section of DoH
Biting insects	Prevent mosquito breeding opportunities on site	Runoff sediment ponds to be emptied immediately post storm events to prevent standing water, or designed to be deep and steep sided	Compliance: runoff sediment ponds are empty on inspection or have been designed to be deep and steep sided. Effectiveness: No evidence of mosquito breeding within runoff sediment ponds	Sediment ponds are to be checked monthly during the wet season and as required during the dry season (e.g. after rain events). Baseline mosquito monitoring will be undertaken quarterly in the first 12 months. Further monitoring may be undertaken pending results of the baseline monitoring	Evidence of mosquito breeding on site is to be recorded on a Significant Incident Report form and reported within the MMP	Further strategies may be employed, in accordance with recommendations in the Department of Health and Families document <i>Guidelines for preventing mosquito breeding sites associated with mining sites</i> (NTG 2005)	Project manager / Health Safety and Environmental officer	yes	yes	yes	Medical Entomology section of DoH
Biting insects	No incidence of mosquito borne disease in Sherwin personnel	All personnel will be educated of the risk of mosquito borne disease through onsite inductions. This will include a description of peak abundance periods and personal protective measures including long sleeve shirts and trousers, regular application of insecticide and avoidance of outdoor operations at sundown	Compliance: Evidence of mosquito activity and disease awareness within site induction checklist Effectiveness: No incidence of mosquito borne disease within personnel	Baseline mosquito monitoring will be undertaken quarterly in the first 12 months. Further monitoring may be undertaken pending results of the baseline monitoring	Any incidence of mosquito borne disease is to be reported to the Department of Health as soon as possible and reported within the MMP	Further strategies may be employed, in accordance with recommendations in the Department of Health and Families document <i>Personal protection from mosquitoes & biting midges in the NT</i> (NTG 2010)	Project manager / Health Safety and Environmental officer	yes	yes	yes	Medical Entomology section of DoH
Biting insects	No incidence of mosquito borne disease in Sherwin personnel	Personnel will be educated about the early symptoms associated with exposure to mosquito borne arbovirus and will be instructed of the need to report any observed symptoms	Compliance: Evidence of mosquito activity and disease awareness within site induction checklist. Effectiveness: No incidence of mosquito borne disease within personnel	Baseline mosquito monitoring will be undertaken quarterly in the first 12 months. Further monitoring may be undertaken pending results of the baseline monitoring	Any incidence of mosquito borne disease is to be reported to the Department of Health as soon as possible and reported within the MMP	Further strategies may be employed, in accordance with recommendations in the Department of Health and Families document <i>Personal protection from mosquitoes & biting midges in the NT</i> (NTG 2010)	Project manager / Health Safety and Environmental officer	yes	yes	yes	Medical Entomology section of DoH

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Biting insects	No incidence of mosquito borne disease in Sherwin personnel	All accommodation will be screened and external lighting will utilise yellow bulbs to discourage mosquitoes	Compliance: All accommodation is screened and external yellow bulb lighting is installed Effectiveness: No incidence of mosquito borne disease in personnel	Accommodation is to be checked for compliance during construction and prior to operations. Annual inspections are to be carried out to ensure all screens are intact and lights working	The first MMP is to contain detail of screens and lighting used in accommodation	Increase inspections of screen integrity and lighting, as required	Project manager / Health Safety and Environmental officer	yes	yes	yes	Medical Entomology section of DoH
Biting insects	No incidence of mosquito borne disease in Sherwin personnel	Medical assistance provided to any person displaying symptoms of mosquito borne disease. Ponds, dams and onsite excavations will be periodically inspected for the presence of mosquito larvae at a frequency to be recommended by NT Department of Health. Detected populations will be managed under recommendations from the Medical Entomology Branch NT	Compliance: Site incident register contains details of assistance provided to personnel displaying signs of mosquito borne disease. Effectiveness: outbreak of mosquito borne disease is managed effectively to reduce the risk of continual exposure to disease risk	Ensure that testing is carried out on affected personnel to determine the type of mosquito borne disease and update incident register as appropriate. Any results from testing and monitoring should be discussed with the NT Department of Health to determine the most appropriate management	Reporting is to be carried out in conjunction with advice from the NT Department of Health, subsequent actions and outcomes are to be discussed within the MMP	Review site excavations to ensure compliant with <i>Guidelines for preventing mosquito breeding sites associated with mining sites</i> (NTG 2005). Further contingency planning to be carried out in consultation with DoH	Project manager / Health Safety and Environmental officer	yes	yes		Medical Entomology section of DoH
Extreme weather and climatic conditions: Flooding	No contamination of environment or injury to / exposure of personnel to materials spilling during flood (hydrocarbons)	Ensure that all chemicals and hazardous materials are stored in areas compliant with AS1940:2004	Compliance: Storage areas are compliant with AS1940:2004 Effectiveness: No evidence of flood damage and/or erosion following rain events and no reports of injury to or exposure of personnel to hazardous materials or chemicals	During construction an audit is to be completed to ensure that all storage areas are compliant with AS1940:2004. Annual inspections are to be carried out during operations	Any non-compliance and / or incidents will be reported within the MMP and recorded on an Incident Report form	Investigate non-compliance to determine what further mitigation actions may need to be incorporated into daily operations. Storage areas can be relocated to an area found to be more suitable	Project manager / Health Safety and Environmental officer	yes	yes	yes	Incidents are to be reported to DME
Extreme weather and climatic conditions: Heat	No reports of personnel suffering effects of heat exhaustion	Personnel are educated on ways of minimising risk of dehydration and early identification of signs of heat exhaustion and heat stroke	Compliance: Site induction includes information on minimising risk and identification of heat exhaustion and stroke. Effectiveness: No reports of personnel suffering the effects of heat exhaustion or stroke	Regular monitoring is to include: ensure personnel are taking adequate water breaks, work is being scheduled appropriately and appropriate Personal Protective Equipment is being used	Any non-compliance and / or incidents will be reported within the MMP. Incidents involving personnel are to be recorded on an Incident Report form	Reduce or change tasks that are conducted during the hottest part of the day. Increase access to rehydration drinks. Review scheduled breaks and PPE to see how these can be improved	Project manager / Health Safety and Environmental officer	yes	yes	yes	DoH
Extreme weather and climatic conditions: Flooding	No contamination of environment from materials spilling during flood	Operations plan to include monitoring of Bureau of Meteorology cyclone warning system during cyclone season	Compliance: Operational plan includes monitoring of BoM cyclone warning system during cyclone season	Monitoring of Bureau of Meteorology cyclone warning system during cyclone season	Non-compliance will be reported within the next MMP. Any incidents are to be recorded on an Incident Report form	Hazardous materials are not stored on site or other methods of storage are explored. Removal of hazardous materials from site during wet season	Project manager / Health Safety and Environmental officer	yes	yes		DME

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Hazardous materials exposure	Personnel are not negatively affected by exposure to hazardous materials	Hazardous materials and wastes are to be stored in appropriately labelled containers within purpose built dangerous goods and chemical storage areas. These should be self-bunded, ventilated and be compliant with AS1940-2004 Storage and Handling of Flammable and Combustible Liquids. Location of on-site information on hazardous materials (MSDS and spill containment materials) will displayed throughout the mine site and accommodation village. This information will also be included in the site induction for all personnel	Compliance: Surface water and groundwater monitoring is undertaken in accordance with the Water Management Plan	Groundwater and surface water monitoring in accordance with the Water Management Plan	Results from water sampling to be included in the updated Water Management Plan to be submitted with the next MMP	Hazardous materials are not stored on site or other methods of storage are explored. Determine why exposure is occurring so that measures can be put in place to reduce risk to personnel	Project manager / Health Safety and Environmental officer	yes	yes		DLPE
Hazardous materials exposure	Personnel are not negatively affected by exposure to hazardous materials	Empty fuel drums are to be stored in areas compliant with AS1940 before being returned to the supplier where possible. Otherwise disposal at the nearest licenced waste disposal facility	Compliance: A log is available showing removal of waste from site - details what was removed, when and to where. Effectiveness: no reduction in surface water or groundwater quality at site	Groundwater and surface water monitoring in accordance with the Water Management Plan	Results from water sampling to be included in the updated Water Management Plan to be submitted with the next MMP	Hazardous materials are not stored on site or other methods of storage are explored. Determine why exposure is occurring so that measures can be put in place to reduce risk to personnel	Project manager / Health Safety and Environmental officer	yes	yes		DLPE
Hazardous materials exposure	Personnel are not negatively affected by exposure to hazardous materials	Ensure all staff and contractors whose responsibilities include hazardous materials are suitably trained	Compliance: A training log is available and demonstrates that the appropriate training has been undertaken by personnel	Training log is to be checked monthly for compliance	Any training undertaken during trial mining is to be detailed in the next MMP	Hazardous materials are not stored on site or other methods of storage are explored. Determine why exposure is occurring so that measures can be put in place to reduce risk to personnel	Project manager / Health Safety and Environmental officer	yes	yes		DLPE
Hazardous materials exposure	Personnel are not negatively affected by exposure to hazardous materials	Update the hazardous materials and hazardous waste inventory monthly	Compliance: hazardous materials and hazardous waste inventory is updated and checked monthly	Waste Inventory is to be checked monthly for compliance	Waste inventory and disposal during trial mining is to be detailed in the next MMP	Hazardous materials are not stored on site or other methods of storage are explored. Determine why exposure is occurring so that measures can be put in place to reduce risk to personnel	Project manager / Health Safety and Environmental officer	yes	yes		DLPE
Transport / road safety	No increase to the number of accidents occurring on the Roper Highway	Personnel are to undergo induction and road safety training, regardless of their experience, prior to operating vehicles on the Roper Highway	Compliance: record of induction Effectiveness: No accidents have occurred involving	Induction log is to be checked monthly for compliance. Site is compliant with AS/NZS 4801:2001	Non-compliance will be reported within the next MMP	Alternate route used for road trains from Sherwin	Project manager / Health Safety and Environmental officer	yes	yes		DoT

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
	attributable to Sherwin construction or operations		Sherwin vehicles								
Transport / road safety	No increase to the number of accidents occurring on the Roper highway attributable to Sherwin construction or operations	Sherwin is to develop a Fatigue Management Plan prior to mine operations	Compliance: Fatigue Management Plan has been developed and initiated Effectiveness: No accidents have occurred that are attributable to fatigue	Personnel travel times and vehicles logs are to be monitored monthly for compliance	Non-compliance will be reported within the MMP	Increased rest times between trips	Project manager / Health Safety and Environmental officer	yes	yes		DoT
Transport / road safety	No increase to the number of accidents occurring on the Roper highway attributable to Sherwin construction or operations	The Roper Highway, from the mine site to Stuart Highway, is to be upgraded from a single lane sealed surface to a double lane sealed surface prior to anticipated expansion of operations above the 1Mtpa currently approved for the road	Compliance: new and modified infrastructure is in place prior to increased operations above 1Mtpa currently approved Effectiveness: No accidents have occurred that are attributable to poor infrastructure/signage as a result of the Sherwin operations	Roads are to be assessed every six months (particularly post wet season) to monitor any deterioration in road structure, obstruction/destruction of signage etc.	Any required modifications to the road network will be detailed within the MMP	Alternate route used for road trains from Sherwin or alternate transport options to be explored such as rail	Project manager / Health Safety and Environmental officer	yes	yes		DoT

3.2.2 Surface water

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
SW Quality	No evidence of contaminated water leaving the site	Ensure that all hydrocarbons and chemicals are stored in accordance with Australian Standards (e.g. ISO1940:2004)	Compliance: All hydrocarbons and chemicals are stored appropriately and in accordance with AS1940:2004 Effectiveness: No contamination of waterways from chemicals.	All hydrocarbon and chemical storage areas are to be audited for compliance prior to mining (post construction phase). Monthly monitoring is to be carried out to ensure that all storage areas remain compliant	Non-compliance will be reported within the MMP	Investigate cause of contamination. Review storage methods and improve as required. Report to DME as per Section 29 of the Mining Management Act. Increase monitoring frequency	Project manager / Health Safety and Environmental officer	yes	yes		DME, DLRM and NT EPA
SW Quality	No reports of contaminated water leaving the site	Sewage (temporary or permanent) is to be appropriately treated, stored or disposed of	Compliance: Sewage is treated prior to discharge, stored in a bunded area, or disposed of to a suitable licensed facility - records of removal must be maintained Effectiveness: No eutrophication of waterways from sewage	Treated sewage is to be tested weekly to ensure the appropriate level of treatment is reached. Any areas where treated sewage is disposed (irrigation) are to be monitored for pooling of water or other signs of contamination. Nearby surface water will be tested for nutrient concentrations at least quarterly to identify any evidence of eutrophication	Results from monitoring are to be compiled and summarised in the MMP. Any evidence of non-compliance is to be reported in a Significant Incident Report form and within the MMP	Increase frequency of monitoring and/or improve method of sewage treatment. Report any contamination event to the DME as per Section 29 of the Mining Management Act	Project manager / Health Safety and Environmental officer	yes	yes		DME, DLRM and NT EPA
SW Quality	No reports of contaminated water leaving the site.	Ensure that any PAF materials encountered during mining are stored/disposed of appropriately	Compliance: PAF materials are adequately identified and exposure to water/oxygen is minimised (i.e. by capping/encapsulation) Effectiveness: No AMD resulting from PAF materials to affect waterways	Ongoing ABA testing and assessment to update mining block model. Monitoring of downstream water quality	Results from monitoring are to be compiled and summarised in the MMP	If AMD is generated, capture, contain and treat (e.g. neutralisation) water	Project manager / Health Safety and Environmental officer	yes	yes		DME, DLRM and NT EPA

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
SW Quantity	No changes in stream hydrology including quantity, flow seasonality and velocity	Creek crossing design is to consider the seasonality of flow and changes in velocity and is to ensure the passage of fish as required. Construction of creek crossings is to comply with general principles in: Kapitzke 2010 <i>Culvert Fishway Planning and Design Guidelines</i> and Fairfull & Witheridge 2003 <i>Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings</i>	Compliance: Creek crossings in compliance with general principles of Kapitzke 2010 and Fairfull & Witheridge 2003. Effectiveness: Culverts and water crossings do not create dams of water and/or increase velocity to a level that impedes on fish passage. Water is free flowing after rain events	Creek crossings will be inspected post-rain events for the first 12 months to ensure they are functioning as designed (i.e. no evidence of fish congregating downstream). Once this has been established monitoring is to take place post-wet season each year of operations	Non-compliance will be reported within the MMP. Modifications of creek crossing structures are to be detailed within the MMP	Investigate why compliance is not being achieved and modify crossing design as appropriate	Project manager / Health Safety and Environmental officer	yes	yes		DME, DLRM and NT EPA
Erosion	No change in surface water quality in downstream environments	Ensure run-off from disturbed areas is managed in accordance with Erosion and Sediment Control Plan (e.g. sediment basins). Potentially contaminated surface water runoff to be directed away from non-contaminated areas (e.g. vegetation)	Compliance: structures are in place to direct potentially contaminated waters from non-contaminated areas. Effectiveness: No evidence of erosion or sedimentation. No contamination downstream of the project areas (e.g. elevated total suspended solids, turbidity)	Monitor structural integrity of any erosion control structures monthly during both construction and operations. Surface water monitoring program	Non-compliance will be reported within the MMP	Investigate why compliance is not being achieved and modify erosion and sedimentation devices and design as appropriate. Notify DME as per Section 29 of the Mining Management Act	Project manager / Health Safety and Environmental officer	yes	yes		DME, DLRM and NT EPA

3.2.3 Groundwater

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
GW Quality	No reports of contaminated water entering groundwater systems	Ensure that all hydrocarbons and chemicals are stored in accordance with Australian Standard 1940: 2004	Compliance: Adherence to appropriate guidelines for storage and handling (AS1940: 2004). Effectiveness: No evidence of contamination from hydrocarbons or other chemicals in groundwater monitoring bores	Monitoring completed as per WMP/MMP	Non-compliance will be reported within the MMP	Investigate cause of contamination. Review storage methods and improve as required. Report to DME as per Section 29 of the Mining Management Act. Increase monitoring frequency	Project manager / Health Safety and Environmental officer				DME, DLRM and NT EPA
GW Quality	No reports of contaminated water entering groundwater systems	Ensure that any PAF materials encountered during mining are stored/disposed of appropriately	Compliance: PAF materials are adequately identified and exposure to water/oxygen is minimised (i.e. by capping/encapsulation) Effectiveness: No AMD resulting from PAF materials to affect waterways	Ongoing ABA testing and assessment to update mining block model. Monitoring of downstream water quality	Results from monitoring are to be compiled and summarised in the MMP	If AMD is generated, capture, contain and treat (e.g. neutralisation) water	Project manager / Health Safety and Environmental officer				DME, DLRM and NT EPA
GW Quality	Potable water is compliant with ANZECC Guidelines quality	Measure water quality parameters of bores supplying the camp against the Australian Drinking Water Guidelines (NHMRC/NRMMC 2011)	Compliance: monitoring is undertaken as per the WMP. Effectiveness: Concentrations of all parameters below guideline values	Monitoring completed as per WMP	Results from monitoring are to be compiled and summarised in the MMP	Increase frequency of monitoring and if required, improve method of potable water treatment and/or investigate alternative water source	Project manager / Health Safety and Environmental officer				DME, DLRM and NT EPA
GW Quantity	No evidence of over-extraction of groundwater resources	Implementation of water saving strategies (i.e. minimise use, recycling of wastewater, use of polymers on roads to reduce requirements for dust suppression) Set operational controls for ground water exploitation (i.e. sustainable safe yield, allowable drawdown and distance to zero drawdown)	Compliance: monitoring is undertaken as per the WMP, with no evidence of significant groundwater drawdown	Monitor bore yields, ground water level behaviour and water quality as per WMP	Results from monitoring are to be compiled and summarised in the MMP	Investigate potential further water saving strategies Seek additional water source(s) that can be sustainably extracted	Project manager / Health Safety and Environmental officer				DME, DLRM and NT EPA

3.2.4 Biodiversity

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Clearing	Clearing within approved boundaries only	Ensure areas to be cleared are delineated prior to clearing	Compliance: No evidence of clearing outside of approved boundaries. Effectiveness: Areas cleared are restricted to the minimum required for the effectiveness and safety of operation	Inspection of clearing boundary	Non-compliance will be reported within the MMP	Investigate why compliance is not being achieved. Undertake rehabilitation as required. Notify DME as per Section 29 of the Mining Management Act	Project manager / Health Safety and Environmental officer	yes	yes		DLRM
Clearing	Minimise impact from clearing activities	Wherever practicable conduct clearing at a time when impacts will be minimised (not during rain events). Clear using the 'blade up' method (this method is sufficient to remove vegetation whilst retaining the rootstock, topsoil and seed to encourage rapid regeneration)	Compliance: Where practicable, clearing is undertaken only during dry season using the blade up method. Effectiveness: Clearing activities have not created problems with erosion and sedimentation. Regeneration occurs quickly and effectively	Monitor areas subject to clearing post rain events to ensure there are no erosion issues. Monitor regeneration as per rehabilitation and mine closure plan	Non-compliance will be reported within the MMP	Investigate why compliance is not being achieved	Project manager / Health Safety and Environmental officer	yes	yes		DLRM
Clearing	Minimise impact of clearing activities on native fauna	Conduct clearing at times when fauna are active (i.e. morning). Clear using the 'blade up' method (this allows more fauna to escape). Spoil heaps moved towards the existing vegetation. Fauna spotter catchers present	Compliance: Where practicable, clearing is undertaken during the morning using the blade up method with fauna spotter catchers present. Effectiveness: Clearing activities have minimised native fauna mortality	All native faunal mortalities are recorded	A database of fauna mortality maintained	Investigate why compliance is not being achieved	Project manager / Health Safety and Environmental officer	yes	yes		DLRM
Clearing	Minimise impact of clearing activities on native fauna and flora	Carry out rehabilitation as soon as land becomes available	Compliance: All available land is rehabilitated. Effectiveness: Rehabilitated areas support native fauna and flora	Monitor rehabilitation as per rehabilitation and mine closure plan	Non-compliance will be reported within the MMP	Investigate why compliance is not being achieved. Undertake rehabilitation as required	Project manager / Health Safety and Environmental officer		yes	yes	DLRM
Direct impacts to flora and fauna	No impact on native fauna (i.e. injuries or death), especially species of conservation significance	Through the induction process, personnel are provided information relating to the identification of common fauna of the region as well as significant species (e.g. Gouldian Finch).	Compliance: Identification of fauna species is included in the induction package for the mine. Effectiveness: Personnel identify species (e.g. road kill) and report incidents back to management (e.g. via Significant Incident Report form)	Significant fauna species reported to management. Reports compiled annually to identify and monitor risk to fauna	Database of fauna sightings and incidents involving native fauna	Investigate why compliance is not being achieved. If information is not being included in the induction, or is not effectively addressed, ensure that modifications are made	Project manager / Health Safety and Environmental officer	yes	yes		DLRM

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Direct impacts to flora and fauna	No impact on native fauna (i.e. injuries or death)	Keep vehicle speeds to a maximum of 80 km/hr and where practicable avoid periods of peak fauna activity (e.g. sunrise/sunset, night-time). Dead animals removed from mine roads to reduce the likelihood of additional kills of scavenging animals	Compliance: Vehicles abide by vehicle speed limits at all times. Effectiveness: No fauna death due to vehicles travelling too fast or during of peak fauna activity (e.g. sunrise/sunset, night-time)	Database of fauna kills maintained	Incidence of fauna strike will be reported within the MMP. Speed restriction non-compliance will be reported within the MMP	Investigate why compliance is not being achieved. Implement strategies to ensure all personnel abide by site speed limits and avoid unnecessary driving times of peak fauna activity	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM
Direct impacts to flora and fauna	No increase in scavengers. No introductions of non-native flora or fauna species	Food scraps disposed of in a manner that does not attract scavengers, feeding and any other interaction with fauna is not permitted. No non-native fauna are brought to site by Sherwin personnel.	Compliance: No scavengers attracted to the area. No non-native animals introduced. Effectiveness: No additional scavengers or non-native fauna found within the vicinity of the mine	Monitor animal numbers at waste disposal areas	Non-compliance will be reported within the MMP	Investigate why compliance is not being achieved.	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM
Direct impacts to flora and fauna	No increase in the distribution of existing weed species or introduction of new weed species	Weed control and hygiene practices, as detailed in Pest and Weed Management Plan (Attachment I)	Compliance: Activities are in compliance with the Weed and Pest Management Plan. Effectiveness: No increase in the distribution of existing weed species, or introduction of new weed species	Audit of weed hygiene practices to ensure compliance with the Weed and Pest Management Plan. Annual weed survey undertaken (post wet season - nominally March/April)	Non-compliance will be reported within the MMP	Investigate why compliance is not being achieved. Carry out weed management	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM
Direct impacts to flora and fauna	No fauna death during construction and operations of the mine	Drill holes to be capped to prevent entry by fauna	Compliance: All drill holes capped. Effectiveness: No fauna death as a result of uncapped drill holes	Annual audit of drill holes.	Capping evidence is provided within the MMP	Investigate why compliance is not being achieved	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM
Weeds	No increase in weed extent density or the number of weed species within the mining lease	Undertake annual weed survey and carry out weed control	Compliance: Annual weed survey is undertaken and management strategy updated as required. Effectiveness: No increase in weed extent, density or the number of weed species within the mining lease	Annual weed survey to be undertaken (post wet season - nominally March/April) and weed control database maintained	Record of weed survey and control to be provided in the MMP	Investigate why compliance is not being achieved.	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Weeds	No increase in the extent, density or number of weed species within the mining lease	Ensure that soils are not imported into site	Compliance: No soils are brought into site. Effectiveness: No increase in the extent, population of number of weed species within the mining lease	Check inventory of all shipping to site before unloading	Maintain inventory of goods received	Investigate why compliance is not being achieved	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM
Pests	No increase in the extent, population or number of pest species within the mining lease	Dispose of organic materials and periodically burn putrescible waste. Erect exclusion fencing and cattle grids around the site and artificial water points	Compliance: At least weekly burning. Fencing has been installed around the lease area Effectiveness: No increase in pest species	Monitoring of feral animals by appropriate methods (e.g. camera traps). Regular monitoring of fencing	Non-compliance will be reported within the MMP	Investigate why compliance is not being achieved. Active pest control may be required (e.g. culling) if numbers are seen to be increasing to problem levels	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM
Groundwater Dependent Ecosystems	GDEs are not being impacted by the construction or operations of the Sherwin mine	Establish occurrence of GDE within the lease, or potentially impacted by activity on the lease	Compliance: no record of deterioration of GDEs in the vicinity of the mine. No evidence of groundwater drawdown. Effectiveness: Groundwater levels remain stable throughout the lease	Monitor groundwater levels as per the water management plan	Non-compliance will be reported within the MMP.	Investigate why compliance is not being achieved. Increase frequency of monitoring. At worst it may be necessary to cease pumping until cause can be identified and appropriate management put in place. Notify DME as per Section 29 of the Mining Management Act.	Project manager / Health Safety and Environmental officer		yes		DLRM

3.2.5 Rehabilitation and mine closure

								Timing; C=construction; O=Operations; D=Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Rehabilitation	Rehabilitation carried out as soon as land becomes available	Carry out rehabilitation as soon as land becomes available	Compliance: All available land is rehabilitated. Effectiveness: Rehabilitation is successful (attaining success criteria).	Monitor rehabilitation as per Rehabilitation and Mine Closure Plan	Any rehabilitation works undertaken reported within the MMP	Review and update Rehabilitation and Closure Plan as per commitments. Initiate rehabilitation works immediately	Project manager / Health Safety and Environmental officer		yes	yes	DME
Rehabilitation	Rehabilitation areas are healthy and self-sustaining	Carry out progressive rehabilitation as per the Rehabilitation and Mine Closure Plan	Compliance: Effective techniques have been developed leading to successful rehabilitation Effectiveness: Rehabilitated areas support native fauna and flora	Monitor rehabilitation as per Rehabilitation and Mine Closure Plan	Any rehabilitation works will be reported within the MMP	Review Rehabilitation and Closure Plan and modify strategies as appropriate. Further research may be required	Project manager / Health Safety and Environmental officer		yes	yes	DME
Rehabilitation	Rehabilitation areas are healthy and self-sustaining	All topsoil and soil forming materials stockpiled in a manner that best retains chemical, biological and physical properties. Topsoil used as soon as practicable (stockpiled for a maximum of two years)	Compliance: Topsoil used as soon as practicable. Effectiveness: Topsoil used in rehabilitation supports good regeneration from seed bank	Topsoil stockpiles are assessed frequently during the wet season (ensure they are stable and not subjected to erosion). Maintain a stockpile inventory	Any rehabilitation works undertaken reported within the MMP	Investigate why compliance is not being achieved. Review erosion control measures and soil properties more frequently	Project manager / Health Safety and Environmental officer	yes	yes	yes	DME
Rehabilitation	Rehabilitation areas are healthy and self-sustaining	Assess the stability of rehabilitated landforms	Compliance: Required remediation works are undertaken (e.g. erosion control) Effectiveness: There is no evidence of erosion in rehabilitation areas	Continual monitoring of rehabilitated landforms until vegetation reaches maturity	Results of assessment and additional works required to stabilise the landforms reported in the MMP	Investigate why compliance is not being achieved. Review the Erosion and Sedimentation Plan	Project manager / Health Safety and Environmental officer		yes	yes	DME

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Rehabilita tion	Rehabilitation areas are healthy and self- sustaining	Develop appropriate closure criteria	Compliance: Suitable and measurable criteria are developed for inclusion in the Rehabilitation and Closure Plan to be submitted with the MMP Effectiveness: Monitoring demonstrates that rehabilitation is successful	Assess rehabilitation against the success criteria	A Rehabilitation and Closure Plan is submitted with the MMP	Review and amend Rehabilitation and Closure Plan as required. Support further research into rehabilitation and measurements of success	Project manager / Health Safety and Environmental officer		yes	yes	DME
Consultati on	Rehabilitation areas are healthy and self- sustaining	Undertake/continue stakeholder consultation to determine an acceptable post mining land use	Compliance: documented agreement of final land use. Effectiveness: Rehabilitation is progressing towards agreed final land form	Minutes of consultation meetings	Results of consultation are reported within the MMP	Continue stakeholder consultation throughout the life of mine	Project manager / Health Safety and Environmental officer	yes	yes	yes	
Weeds	Rehabilitation areas are free of weeds	Implement Weed and Pest Management Plan	Compliance: Weed and Pest Management Plan is applied Effectiveness: No weeds evident in rehabilitation areas	Annual weed survey of rehabilitation areas	Non-compliance (evidence of weeds within the rehabilitation areas) will be reported within the MMP	Review and amend Weed and Pest Management Plan as required. Undertake weed control	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM

3.2.6 Historic and cultural heritage

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Cultural Heritage	Manage archaeological sites where they cannot be avoided by mining or construction	No unauthorised disturbance to archaeological sites during construction and mining	Compliance: Records of regular inspections, management interventions etc. Effectiveness: No disturbance to archaeological sites during construction and mining	Assess integrity of barriers and other demarcation measures opportunistically and at least twice yearly. Use photographic and visual assessment as required	Annual report following consultation with traditional owners	Immediate cessation of work in the area. The location of the site shall be recorded and checked against maps and GIS data. Incident shall be investigated and reported. Consultation with site custodians and/or Government to determine any further actions (e.g. restoration of site)	Mine manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Cultural Heritage	Manage archaeological sites where they cannot be avoided by mining or construction	Compliance with internal protocols and procedures where they do not conflict with the Heritage Act (NT)	Compliance: Comply with all conditions set under Section 76 of the Heritage Act (NT) Effectiveness: No disturbance to archaeological sites during construction and mining	Visual assessment of sites at least twice yearly	Annual report following consultation with traditional owners	Immediate cessation of work in the area. The location of the site shall be recorded and checked against maps and GIS data. Incident shall be investigated and reported. Consultation with site custodians and/or Government to determine any further actions (e.g. restoration of site)	Mine manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Cultural Heritage	Manage archaeological sites where they cannot be avoided by mining or construction	Comply with requests of traditional Aboriginal owners where they do not conflict with the Heritage Act (NT)	Compliance: Comply with the Heritage Act (NT). Effectiveness: No disturbance to archaeological sites during construction and mining	Visual assessment of sites at least twice yearly	Annual report following consultation with traditional owners	Immediate cessation of work in the area. The location of the site shall be recorded and checked against maps and GIS data. Incident shall be investigated and reported. Consultation with site custodians and/or Government to determine any further actions (e.g. restoration of site)	Mine manager / Heritage Liaison Officer	yes	yes	yes	DLPE

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Cultural Heritage	Protect known and new archaeological sites not approved for disturbance	No disturbance to Aboriginal sacred sites during construction and/or mining	Compliance: Comply with the Aboriginal Sacred Sites Act (NT) Effectiveness: No disturbance to Aboriginal sacred sites during construction or mining	Assess integrity of barriers and other demarcation measures opportunistically and at least twice yearly. Use photographic and visual assessment as required	Annual report following consultation with traditional owners	Immediate cessation of work in the area. Incident shall be investigated and reported Corrective actions shall be implemented. Consultation with site custodians, NLC and AAPA to determine any further actions (e.g. restoration of site)	Mine manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Cultural Heritage	Protect known and new archaeological sites not approved for disturbance	Comply with internal protocols and procedures where there is no conflict with the Aboriginal Sacred Sites Act (NT)	Compliance: Internal protocols and procedures are in no way in conflict with the Aboriginal Sacred Sites Sct (NT) Effectiveness: No disturbance to Aboriginal sacred sites during construction or mining	As determined by and following consultation with the AAPA and traditional owners. Visual evidence or reports of interference	Annual report following consultation with traditional owners	Immediate cessation of work in the area. Incident shall be investigated and reported Corrective actions shall be implemented. Consultation with site custodians, NLC and AAPA to determine any further actions (e.g. restoration of site)	Project manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Cultural Heritage	Protect known and new archaeological sites not approved for disturbance	Comply with all conditions related to Authority Certificates and Restricted Work Areas	Compliance: No breach of conditions in Authority Certificates and Restricted Work Areas. Record of works and inspections Effectiveness: No disturbance to Aboriginal sacred sites during construction or mining	As determined by and following consultation with the AAPA and traditional owners. Visual evidence or reports of interference	Annual report following consultation with traditional owners	Immediate cessation of work in the area. Incident shall be investigated and reported Corrective actions shall be implemented. Consultation with site custodians, NLC and AAPA to determine any further actions (e.g. restoration of site)	Project manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Cultural Heritage	Record and protect language, traditional ecological and cultural knowledge	Information is to be appropriately recorded in a custom-designed database or GIS	Compliance: Records of traditional and cultural knowledge entered into database Effectiveness: Protection of language and traditional and cultural knowledge in the region	Monitor effectiveness of recording through discussions with Traditional Owners at least annually	On request of traditional owners	Immediate cessation of work in the area. Implement appropriate management strategies	Project manager / Heritage Liaison Officer	yes	yes	yes	DLPE

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	contingency	Responsibility	C	O	D	
Cultural Heritage	Record and protect language, traditional ecological and cultural knowledge	Intellectual property rights are to be protected through agreement with traditional Aboriginal owners	Compliance: IP Agreement is in place Effectiveness: Protection of language and traditional and cultural knowledge in the region	Monitor effectiveness of intellectual property Agreement through discussions with Traditional Owners at least annually	On request of traditional owners	Immediate cessation of work in the area. Implement appropriate management strategies	Project manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Cultural Heritage	Avoid disruption to ceremonial activities	Internal site access protocols are to be negotiated with traditional Aboriginal owners and complied with at all times	Compliance: Internal protocols have been developed detailing internal site access Effectiveness: Physical access to all ceremonial sites is guaranteed and maintained	Monitor effectiveness of internal protocols through discussions with Traditional Owners at least annually	Annual report following consultation with traditional owners	Access issue is to be noted and discussed with the relevant authorities. Outcome is to be detailed to TO's	Project manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Cultural Heritage	Maintain continued engagement with traditional Aboriginal owners, regarding cultural heritage management	Sherwin is to Conduct positive and on-going relationship with traditional Aboriginal owners in respect of management of cultural heritage in the project area	Compliance: Records of Liaison Committee meetings. Records of other consultations with traditional Aboriginal owners. Periodic review of Cultural Heritage Management Plan Effectiveness: open and positive dialogue with local Traditional Owners regarding cultural heritage management	Monitor effectiveness of ongoing consultations through discussions with Traditional Owners	Annual report following consultation with traditional owners	Discuss issues with traditional owners and the relevant authority to determine amicable outcome	Project manager / Heritage Liaison Officer	yes	yes	yes	DLPE

3.2.7 Socio-economic

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Social	Consider all interests and concerns related to the project	All stakeholders are to be identified and consulted prior to project approval	Compliance: Economic and Social Impact Assessment (ESIA) is produced as well as risk assessment and development of Social Management Plans Effectiveness: Records of consultation required for the EIS are kept and show all concerns have been addressed	Monitor the number of complaints that are received monthly and if required review the Complaints Management Procedure	Complaints Management Procedure. Log of complaints to be provided annually with the MMP	Stakeholder groups will be contacted and their interests and concerns integrated into the Stakeholder Engagement Plan	Project Manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Social	Maintain strong, positive relationships with all impacted stakeholders	All complaints are to be acknowledged and a resolution sought within 10 working days	Compliance: Records are obtained from web-based feedback system. Records of meetings with external stakeholders are kept as well as mine site liaison committee records and reports Effectiveness: Complaints are addressed quickly and efficiently and result in strong and positive relations with stakeholders	Monitor the number of complaints that are received and if required review the Complaints Management Procedure	Complaints Management Procedure. Log of complaints to be provided annually with the MMP	Stakeholder groups will be contacted and their interests and concerns integrated into the Stakeholder Engagement Plan	Project Manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Social	Maintain strong, positive relationships with all impacted stakeholders	Ongoing and regular consultation is to be undertaken with all stakeholders	Compliance: Evidence of ongoing and regular stakeholder engagement is able to be provided on request Effectiveness: Annual social and cultural sustainability report is produced showing maintenance of strong and positive relationships with all stakeholders	Monitor web-based traffic as well as any consultations undertaken each month	Consultations undertaken each year will be detailed within the MMP	Stakeholder groups will be contacted and their interests and concerns integrated into the Stakeholder Engagement Plan	Project Manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Economic	Maximise participation of traditional owners in mining operations	Local Aboriginal people are to comprise 30% of the mine's operational workforce	Compliance: Employment records and records related to development of Aboriginal owned and operated local businesses are available Effectiveness: Participation in work required under the CHMP	Monitor and assess the number of applications for work and training monthly. Review Employment Procedure and protocol as required	Employment statistics will be provided in the MMP	Stakeholder groups will be contacted and their interests and concerns integrated into the Stakeholder Engagement Plan to assist in increasing involvement	Project Manager / Heritage Liaison Officer	yes	yes	yes	DLPE

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Social	Maximise participation of traditional owners in mining operations	Mine tours are to be provided every 3 months (minimum)	Compliance: Records of mine tours Effectiveness: Traditional Owners are participating in mining activities	Assess number of people attending mine tours monthly and review the Stakeholder Feedback Protocol and Procedure as required	Number of mine tours help during the year is to be reported within the MMP	Stakeholder groups will be contacted and their interests and concerns integrated into the Stakeholder Engagement Plan to assist in increasing involvement	Project Manager / Heritage Liaison Officer	yes	yes		DLPE, Department of Business
Economic	Maximise participation of traditional owners in mining operations	>30% of goods and services contracts are to be allocated to local businesses	Compliance: Contracts are in place with local businesses. Effectiveness: At least 30% of goods and services come from local businesses	Assess percentage of goods and services attributed to local businesses annually and review the Social Engagement Policy as required	Percentage of locally sourced goods and services to be detailed within the MMP	Replacement suppliers and contracts will be sourced from a list of alternatives	Project Manager / Heritage Liaison Officer	yes	yes		DLPE, , Department of Business
Social	No significant or permanent negative impact on health of community members	100% of health matters attributable to mining are to be managed onsite	Compliance: Sherwin have developed their Health Management Plan. All medical treatments done on site are documented Effectiveness: Camp-based medical facility provides all required health care to personnel	Monitor number of incidents and health concerns experienced each month at the mine site. Update the Drug and Alcohol Policy and/or Sherwin Standard Operating Procedure as required	Number of incidents and health issues raised will be provided within the MMP	If a major accident or catastrophic incident occurs the Emergency Response Plan is activated	Project Manager / Heritage Liaison Officer	yes	yes		DLPE, DoH
Social	No significant or permanent negative impact on health of community members	Sherwin is to take all necessary precautions to ensure that there are no incidences of injury to community members that result from mining activities	Compliance: Regional health and safety statistics shows no increase attributable to Sherwin Effectiveness: There are no reports received from community regards concern for health impacts attributable to Sherwin operations	Monitor number of incidents and health concerns experienced each month at the mine site. Update the Drug and Alcohol Policy and/or Sherwin Standard Operating Procedure as required	Number of incidents and health issues raised will be provided within the MMP	If a major accident or catastrophic incident occurs the Emergency Response Plan is activated	Project Manager / Heritage Liaison Officer	yes	yes	yes	DLPE, DoH
Social	No significant negative impact on regional or community crime rates	An alcohol, drug and illicit substance policy is developed and implemented. Approved wet mess facilities will be provided at the camp. Drug and alcohol testing procedures will be implemented on site. Management procedures for the prevention of theft and vandalism will be implemented	Compliance: Alcohol, drug and illicit drug Policy has been developed and implemented Effectiveness: Regional crime statistics show no increase in crime in the region. Internal incident reports demonstrate that incidents are not resulting from misuse of alcohol or drugs	Monthly drug and daily alcohol testing will be carried out at site. Results of these tests are to be compiled every six months and the Drug and Alcohol Policy reviewed as required.	A log of alcohol and drug testing results will be provided on request	Meet with local authorities to discuss and plan alternative actions	Project Manager / Heritage Liaison Officer	yes	yes		DLPE, Department of the Attorney-General and Justice

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Social	Operate all aspects of the mine in a safe manner	A Traffic Management Plan is developed and implemented	Compliance: A Traffic Management Plan has been developed and implemented for the Sherwin operations Effectiveness: No traffic incidents on site	Roads are to be monitored for any deterioration and level of safety at least monthly. Personnel are to report any issues as soon as possible to management to ensure prompt maintenance work can be carried out. The Traffic Management Plan should be reviewed at least annually	Traffic incidents will be logged and provided as required	Review Traffic Management Plan as required	Project Manager	yes	yes		DME
Social	Operate all aspects of the mine in a safe manner	Management procedures and secure facilities for hazardous materials and explosives are implemented	Compliance: Hazardous materials and explosives are stored in accordance with AS1940:2004 and AS2187 Effectiveness: No incidents are recorded resulting from inappropriately stored or handled hazardous materials or explosives	Storage areas are to be monitored weekly to ensure compliance and identify any required maintenance	Any non-compliance will be reported to the DME as per the Mining Management Act	Areas not functioning appropriately should be cleared of any hazardous materials or explosives as soon as the problem is identified. Non-compliance is to be reported to the DME as per the Mining Management Act	Project Manager	yes	yes	yes	DME
Economic	30% of goods and services will be provided by local community business	An economic sustainability plan will be developed and implemented. Mutually beneficial business opportunities will be identified and developed. Supply chain opportunities for local suppliers will be identified and targeted where possible	Compliance: Contracts are in place with local businesses Effectiveness: At least 30% of goods and services come from local businesses	Monitor the percentage of goods and services attributed to local businesses and the number of new local businesses created in the region annually	The percentage of goods and services attributed to local businesses and the number of new local businesses created in the region annually will be reported in the MMP	Alternative suppliers engaged as and when shortfalls in supply occur. Improvements to systems in place	Project Manager	yes	yes		DLPE, Department of Business
Economic	100% of all Aboriginal employees and applicants will undertake literacy, numeracy and life skills training	A dedicated training officer will be engaged. Training systems for suitable local Aboriginal employees will be developed and implemented. Mining promotions and awareness sessions will be held at local communities and schools. Career paths for students at local community schools will be identified and developed	Compliance: Employment and training records can be provided on request Effectiveness: High retention rates for indigenous staff and evidence of career development/advancement	Monitor the training completion rate monthly	The training completion rate recorded monthly will be reported in the MMP	Further consultations with local communities will be help to determine any more strategies that can be undertaken to increase employment and retention rate	Project Manager / Heritage Liaison Officer	yes	yes		DLPE, Department of Business

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Economic	Aboriginal people will comprise 30% of the mine's operational workforce	A Local Employment Protocol that facilitates inclusion of Aboriginal people will be developed and implemented. Joint Ventures to encourage a high degree of Aboriginal participation will be developed and implemented	Compliance: Employment records and records related to development of Aboriginal owned and operated local businesses are available Effectiveness: Participation in work required under the CHMP	Monitor the number of applications for work, employee placements and retention Rate of Aboriginal people monthly	The number of applications for work, employee placements and retention Rate of Aboriginal people recorded monthly will be reported within the MMP	Revise training plans and operations. Engage additional non-Aboriginal employees on an as needs basis	Project Manager / Heritage Liaison Officer	yes	yes	yes	DLPE, Department of Business
Social	No incidences of unauthorised access to Aboriginal Land Trusted areas	Develop and implement policies and procedures that control workforce access to Aboriginal land. Conduct cultural awareness sessions	Compliance: Records of complaints and investigations of complaints. Copies of permits where access is granted. Records of ongoing discussion with traditional Aboriginal owners Effectiveness: No incidences of unauthorised access to Aboriginal Land Trusted area	Monitor the number of logged incidences of trespass annually	Non-compliance will be reported within the MMP	Review policies and procedures as required	Project Manager / Heritage Liaison Officer	yes	yes	yes	DLPE
Social	No reportable environmental incidents	Develop and implement Environmental Management Plans. Plan and conduct mining operations so that visual impacts are minimised	Compliance: Environmental Management Plans exist and records of complaints and investigations of complaints are made available on request Effectiveness: No reportable environmental incidents have been recorded	Monitor water quality parameters as per the Water Management Plan	As per commitments in the Water Management Plan	Emergency Response Plan will be activated. Report to the DME as per the Mining Management Act	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE and DME
Social	Regional access roads are suited to transport of iron ore and no negative impact on regional and community access	Upgrade and maintain Roper Highway. Upgrade community access roads where requested by traditional owners	Compliance: Roper Highway has been upgraded or alternative methods of ore transport have been implemented Effectiveness: no negative impact on regional and community access	Roads are to be assessed every six months (particularly post wet season) to monitor any deterioration in road structure, obstruction/destruction of signage etc.	Any required modifications to the road network will be detailed within the MMP	Alternative road access is negotiated or implemented	Project Manager	yes	yes		DLPE, Dept of Transport

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Economic	No significant negative impact on availability of housing and 100% of mine workers accommodated onsite	Provide financial support through contract revenue for improved housing. Construct a suitably sized accommodation camp onsite	Compliance: A suitably sized accommodation camp has been constructed. Effectiveness: No significant negative impact on availability of housing	Monitor personnel satisfaction with the accommodation provided at least every six months to determine any requirement for additional housing or facilities	Any chances to accommodation arrangements will be reported within the MMP	Alternative accommodation at hotels in nearby communities or at camps on stations will be sought. Additional accommodation units will be sourced and brought to camp. Non-essential personnel will be rostered off and removed from camp	Project Manager / Heritage Liaison Officer	yes	yes		DLPE and DME
Social	No significant negative impact on existing community health services. 100% of mine related health matters are managed onsite	Develop and implement approved Health Management Plan. Develop approved medi-vac procedure. Provide financial support to communities for training of Aboriginal medical staff and upgrading of health facilities. Construct onsite medical facilities for mine related purposes. Develop Emergency Response Plan	Compliance: Health management plan has been developed and implemented. There is a construction of a camp-based medical facility. Sherwin have upgraded the community health facilities at Ngukurr and Minyerri Effectiveness: Medial facility treatment records demonstrate no significant negative impact on existing community health services	Monitor number of incidents and health concerns experienced each month at the mine site	Reporting is to be carried out in conjunction with advice from the NT Department of Health, subsequent actions and outcomes are to be discussed within the MMP	Consultation with the DoH to determine alternative actions	Project Manager / Heritage Liaison Officer	yes	yes		DoH
Economic	No negative impacts on supply of goods and other services to communities. No decrease in the quantity or quality of products available at nearby communities	Provide financial support to upgrade and improve available services through contract revenue. Participate with traditional Aboriginal owners to improve capacity to operate businesses. Contract supply of goods and services to the mine from local suppliers	Compliance: Contracts are in place with local suppliers. Effectiveness: No negative impacts on supply of goods and other services to communities. No decrease in the quantity or quality of products available at nearby communities	Monitor the volume of goods available in store annually	Reporting as requested by the relevant authority	Consult with stakeholders to find ways to further engage with local businesses	Project Manager	yes	yes		DLPE
Social	No negative impacts on regional tourism ventures. No decline in numbers of tourists accessing the region	Upgrade Roper Highway to reduce improve access and risk to tourist traffic posed by heavy vehicles hauling iron ore. Complete an assessment of alternative routes and methods for transporting ore. Provide support for development of tourism related businesses in local communities	Compliance: Regional tourism statistics Effectiveness: no discernible decline in number of tourists in the region that can be attributed to Sherwin	Monitor tourism numbers annually in consultation with Tourism NT	Reporting as requested by the relevant authority	Consult with stakeholders to develop strategies to increase tourism in the region	Project Manager	yes	yes		DLPE and Tourism NT

3.2.8 Noise and vibration

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Amenity - Noise	Noise does not cause nuisance at site such that the company receives a complaint	Noise is to be managed through installation of mufflers on machinery and large mobile plant. There will not be any other significant sources of noise at Sherwin. As far as possible, material drop heights into or out of trucks will be minimised. All engine covers will be kept closed while equipment is operating Use of exhaust brakes will be eliminated, where practicable. Where practical, machines will be operated at low speed or power and will be switched off when not being used rather than left idling for prolonged periods. Machines found to produce excessive noise will be removed from the site or stood down until repairs or modifications can be made. Roads will be kept smooth and free of potholes and bumps All site workers will be made aware of the potential for noise impacts and encouraged to take practical and reasonable measures to minimise the impact during the course of their activities, including: - avoiding the use of loud radios - avoiding shouting and slamming doors - informing truck drivers of designated vehicle routes, parking locations and delivery hours - minimising reversing - avoiding metal to metal	Compliance: Noise abatement strategies are evident Effectiveness: No complaints regarding excessive noise at site and near the camp	No specific noise monitoring will be undertaken on site, however a daily assessment will be made of effectiveness of noise mitigation measures and changes made as required	Any complaints received during mining will be reported through the Incident Report form and reported within the MMP. Non-compliance will be reported to the DME as per the Mining Management Act	Work at site is to cease until cause of excessive noise is identified. Monitoring will be undertaken once works recommence to document conditions at site for further recommendations if required, including development of a Noise Management Plan. The incident is to be reported to the DME as per the Mining Management Act (Environmental Nuisance)	Project Manager / Health Safety and Environmental officer	yes	yes		DME and NTEPA

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
		contact on material closing engine covers while equipment is operating									
Vibration	blasting activity at the mine does not impact the surrounding environment including personnel	Blasting at the mine is to only take place between 7am and 7pm Monday to Saturday and 9am and 6pm on a Sunday or public holiday. Blasting activities are to be advertised at least 48 hours before the commencement of blasting	Compliance: Activities likely to cause significant vibration are carried out in compliance with Noise guidelines for development sites in the Northern Territory January 2013 and the Mining Management Act Effectiveness: No complaints regarding excessive vibration at site and near the camp	No specific vibration level monitoring will be undertaken on site, however a daily assessment will be made of effectiveness of mitigation measures and changes made as required	Any complaints received during mining will be reported through the Incident Report form and reported within the MMP. Non-compliance will be reported to the DME as per the Mining Management Act	Non-compliance is to be reported to the DME as per the Mining Management Act and advice will be sought from NTEPA on further management strategies	Project Manager / Health Safety and Environmental officer	yes	yes		DME and NTEPA

3.2.9 Air and dust

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Dust	Dust does not cause nuisance at site such that the company receives a complaint	A water cart is to be used over high dust areas (e.g. Internal haul road to ROM Pad and around the mine site) and enforce speed limits on dirt tracks. Dust mitigation polymer is to be utilised at site whenever possible Stockpiles are to be kept to a low profile so wind is less likely to spread dust	Compliance: water cart is utilised on site and speed limits have been enforced Effectiveness: Zero complaints are received in relation to dust emissions at site	No specific dust monitoring will be undertaken on site, however a daily assessment will be made of effectiveness of dust mitigation measures and changes made as required (e.g. increased water truck movements). Should complaints be made regular dust monitoring will be initiated and compared to baseline levels developed during the pre-mining phase	Any complaints received during construction of operations will be reported within the next MMP and additional management proposed, including regular monitoring. Non-compliance will be reported to DME as per the Mining Management Act	Increase use of polymer over a wider area, including outside of the mining footprint. Determine reason for excess dust and adjust management to suit. Initiate regular monitoring and reporting to consent authority	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DME / NTEPA
Air Quality	No decline in air quality at site	Ensure tuned machinery to reduce pollution	Compliance: Machinery working in optimum condition - evidenced by regularly tuning Effectiveness: Zero complaints are received regarding air emissions at site	No specific greenhouse gas monitoring will be undertaken on site	Any complaints received during trial mining will be reported within the next MMP and additional management proposed, including regular monitoring. Non-compliance is to be reported to the DME as per the Mining Management Act	Review equipment used to see if there is a cleaner option. Increase equipment tuning and maintenance. Initiate monitoring	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DME / NTEPA

3.2.10 Waste management

								Timing; C=construction; O=Operations; D=Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Water Quality	No detrimental impact on surface water or groundwater	Hazardous materials and wastes to be stored in appropriately labelled containers within purpose built dangerous goods and chemical storage areas. These should be self-bunded, ventilated and be compliant with AS1940-2004 Storage and Handling of Flammable and Combustible Liquids	Compliance: All hazardous materials and wastes are stored in accordance with AS1940-2004 Effectiveness: No decline in surface water or groundwater quality	Storage and handling is in accordance with AS1940-2004. Monitoring to be carried out in accordance with the Water Management Plan	Evidence of appropriate storage procedures to be detailed in the MMP	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME
Water Quality	No detrimental impact on surface water or groundwater	Empty fuel drums are to be stored in plastic lined, earth walled and bunded areas and returned to the supplier where possible. Otherwise disposal at the nearest licenced waste disposal facility. A log is to be kept showing removal of any waste from site	Compliance: Fuel drums are stored in areas compliant to AS1940 or returned to the supplier and a log is kept showing removal of any waste from site Effectiveness: No decline in surface water or groundwater quality	Storage of fuel drums. Monitoring to be carried out in accordance with the Water Management Plan	Evidence of appropriate storage procedures to be detailed in the MMP	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME
Water Quality	No detrimental impact on surface water or groundwater	Monitor downstream surface water and groundwater including visual assessment for the presence of hydrocarbons	Compliance: Surface water and groundwater monitoring is undertaken in accordance with the Water Management Plan Effectiveness: No decline in surface water or groundwater quality	Monitoring to be carried out in accordance with the Water Management Plan	Evidence of appropriate storage procedures to be detailed in the MMP	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Pest Management	No increase in feral animals or biting insect numbers at site	Putrescible waste and domestic rubbish is to be regularly burnt and covered to assist in deterring feral animals	Compliance: A log is available showing frequency of burning/burying of waste Effectiveness: No feral animals are seen scavenging at the landfill site, likewise there is no evidence of mosquito breeding	Log of waste management is to be checked monthly for compliance	Log of waste management is to be presented with each MMP. Non-compliance will be reported to the DME as per the Mining Management Act	Increase management strategies, e.g. bury waste weekly. Investigate non-compliance and establish/review management to ensure there is no recurrence. Direct management (e.g. culling) of feral animals may be required if numbers and level of nuisance increases	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME
Pest Management	No increase in feral animals or biting insect numbers at site	Remove all potential water holding receptacles as soon as possible	Compliance: No evidence of water pooling on site. Effectiveness: Personnel are not affected by biting insect problems	The site is to be checked for existing and potential water holding receptacles at least monthly during construction and operations	Any monitoring undertaken during the MMP reporting phase is to be reported within the MMP	Increase management strategies, e.g. inspect site daily. Investigate non-compliance and establish/review management to ensure there is no recurrence. Direct management (e.g. spraying for mosquito control) may be required if numbers and level of nuisance increases	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME
Soil contamination	No evidence of soil contamination	Spills are to be remediated as soon as possible and documented as appropriate	Compliance: Spill kits are available around the site, particularly in areas where hazardous materials and chemicals are stored and staff are trained in their use Effectiveness: No evidence of soil contamination on site	Spill kits are to be checked monthly to ensure equipment is available when required	Any non-compliance during construction and operations will be detailed in the MMP and reported to the DME as per the Mining Management Act	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater and/or soil should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME
Soil contamination	No evidence of soil contamination	Non-biodegradable waste (e.g. cans, glass, hazardous or hydrocarbon waste, etc.) is to be separated and disposed of at the nearest approved waste disposal facility	Compliance: A log is available showing removal of waste from site - details of what was removed, when and to where Effectiveness: No evidence of soil contamination on site	Log of waste management is to be checked monthly for compliance	Waste inventory and disposal during construction and operations is to be detailed in the MMP as appropriate. Non-compliance will be reported to the DME as per the Mining Management Act	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater and/or soil should be taken and analysed to inform management strategies	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME

								Timing; C=construction; O=Operations; D=Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
						Daily monitoring should be conducted until contamination event has been rectified					
Soil contamination	No evidence of soil contamination	Hazardous materials and wastes are to be stored in appropriately labelled containers within purpose built dangerous goods and chemical storage areas. These should be self-bunded, ventilated and be compliant with AS1940-2004 Storage and Handling of Flammable and Combustible Liquids	Compliance: Surface water and groundwater monitoring is undertaken in accordance with the Water Management Plan Effectiveness: No evidence of soil contamination on site	Groundwater and surface water monitoring in accordance with the Water Management Plan	Non-compliance will be reported to the DME as per the Mining Management Act	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater and/or soil should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME
Soil contamination	No evidence of soil contamination	Empty fuel drums are to be stored in areas compliant with AS1940 before being returned to the supplier where possible. Otherwise disposal at the nearest licenced waste disposal facility	Compliance: A log is available showing removal of waste from site - details of what was removed, when and to where Effectiveness: no reduction in surface water or groundwater quality at site	Groundwater and surface water monitoring in accordance with the Water Management Plan	Non-compliance will be reported to the DME as per the Mining Management Act	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater and/or soil should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME
Soil contamination	No evidence of soil contamination	Ensure all staff and contractors whose responsibilities include hazardous materials are suitably trained	Compliance: A training log is available and demonstrates that the appropriate training has been undertaken by personnel Effectiveness: No evidence of soil contamination on site	Training log is to be checked monthly for compliance	Any training undertaken is to be detailed in the MMP as appropriate	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater and/or soil should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Soil contamination	No evidence of soil contamination	Update the hazardous materials and hazardous waste inventory monthly	Compliance: hazardous materials and hazardous waste inventory is updated and checked monthly Effectiveness: No evidence of soil contamination	Waste Inventory is to be checked monthly for compliance	Waste inventory and disposal during construction and mining is to be detailed in the MMP	Investigate cause of incident and report as necessary. Clean up spill and determine further work required. Samples of surface water and/or groundwater and/or soil should be taken and analysed to inform management strategies. Daily monitoring should be conducted until contamination event has been rectified	Project Manager / Health Safety and Environmental officer	yes	yes	yes	DLPE / DME

3.2.11 Bushfire management

Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	Timing; C=construction; O=Operations; D= Decommissioning			Agency
								C	O	D	
Bushfire	To manage fire risk effectively both within and external to the mine site (e.g. during site clearing operations) and within the mine site	Appropriate firefighting equipment and signage must be made available at all times	Compliance: Fire fighting equipment is available and regularly serviced/replaced Effectiveness: Control of fires that occur within or adjacent to site	Fire fighting equipment is to be serviced every six months or as appropriate for the type of extinguisher. Signage and other PPE equipment should be checked annually and serviced/replaced/updated as required	Non-compliance will be reported within the MMP as required	Investigate why non-compliance has occurred. Report as necessary. Service equipment as soon as non-compliance is identified	Project Manager	yes	yes	yes	DLRM / NT Fire and Rescue Service
Bushfire	To manage fire risk effectively both within and external to the mine site (e.g. during site clearing operations) and within the mine site	Firefighting training will be provided to personnel and a fire warden must be selected for each crew/shift/work area	Compliance: Training has been provided to personnel and is documented within a Training Register. A fire warden is selected for each shift Effectiveness: Control of fires that occur within or adjacent to site	Relevance of training should be assessed every six months. The training registered should be checked every six months to make sure all personnel are up to date with required training	Non-compliance will be reported within the MMP as required	Investigate why non-compliance has occurred. Report as necessary. Initiate training	Project Manager	yes	yes	yes	DLRM / NT Fire and Rescue Service
Bushfire	To manage fire risk effectively both within and external to the mine site (e.g. during site clearing operations) and within the mine site	Ensure that all personnel are aware of locations for firefighting equipment, muster points, emergency evacuation plans, and emergency contact lists as per the EPP (Emergency Procedures Plan)	Compliance: Clear signage around the site and all personnel are aware of location of equipment and contacts Effectiveness: Control of fires that occur within or adjacent to site	Emergency contact list is to be checked for relevance every six months. Signage is to be assessed for legibility and relevance every six months	Non-compliance will be reported within the MMP as required	Investigate why non-compliance has occurred. Report as necessary. Update site information, install new signage	Project Manager	yes	yes	yes	DLRM / NT Fire and Rescue Service
Bushfire	To manage fire risk effectively both within and external to the mine site (e.g. during site clearing operations) and within the mine site	Instill a 'No Fire' policy	Compliance: Personnel are aware of the 'No Fire' policy on site Effectiveness: Control of fires that occur within or adjacent to site	Contents of the site induction should be reviewed periodically to remain relevant	Non-compliance will be reported within the MMP as required	Investigate why non-compliance has occurred. Report as necessary. Update induction as required. Increase personnel awareness through signage, regular safety meetings etc	Project manager / Health Safety and Environmental officer	yes	yes	yes	DLRM / NT Fire and Rescue Service
Bushfire	To manage fire risk effectively both within and external to the mine site (e.g. during site clearing operations) and within the mine site	Spark arrestors are to be fitted to all machinery	Compliance: Evidence that all machinery have been fitted with spark arrestors Effectiveness: Control of fires that occur within or adjacent to site	All vehicles and machinery is to be checked annually for compliance	Non-compliance will be reported within the MMP as required	Investigate why non-compliance has occurred. Report as necessary. Fit spark arrestors as required	Project Manager	yes	yes	yes	DLRM / NT Fire and Rescue Service

								Timing; C=construction; O=Operations; D= Decommissioning			Agency
Theme	Target	Actions	Performance Indicators	Monitoring Methods	Reporting	Contingency	Responsibility	C	O	D	
Bushfire	No fires occur within the mining lease	Ensure that fire breaks are maintained around the lease and infrastructure areas – fire breaks are to be a minimum of 4m wide and graded, or slashed to a maximum height of 50mm with all slashed material removed	Compliance: Fire breaks have been installed around the site - 4m wide and slashed to a maximum height of 50mm Effectiveness: No fires have occurred within the mining lease	Assess fire breaks annually before high fire season (mid to late dry)	Non-compliance will be reported within the MMP, including a summary of any additional actions taken	Increase the width of firebreaks and reduce the height of slashed vegetation. Maintain fire breaks more frequently	Project manager / Health Safety and Environmental officer	yes	yes	yes	Bushfires NT / DLRM
Bushfire	No fires occur within the mining lease	Ensure that all potential fuel loads (piles of vegetation, cardboard boxes etc.) are cleared away as soon as practicable, particularly during the dry season	Compliance: no large piles of potential fuel loads are present on site Effectiveness: No fires have occurred within the mining lease	Fortnightly inspections to be carried out of site housekeeping to ensure no potential fuel loads	Non-compliance will be reported within the MMP	Increase inspections to weekly	Project manager / Health Safety and Environmental officer	yes	yes		Bushfires NT
Bushfire	No fires occur within the mining lease area	Develop a Fire Management Plan	Compliance: A Fire Management Plan has been developed Effectiveness: No fires have occurred within the mining lease	Audit for compliance prior to construction	Non-compliance will be reported within the MMP. The Fire Management Plan should be updated every five years		Project manager / Health Safety and Environmental officer	yes	yes		Bushfires NT

3.3 Environmental management maps

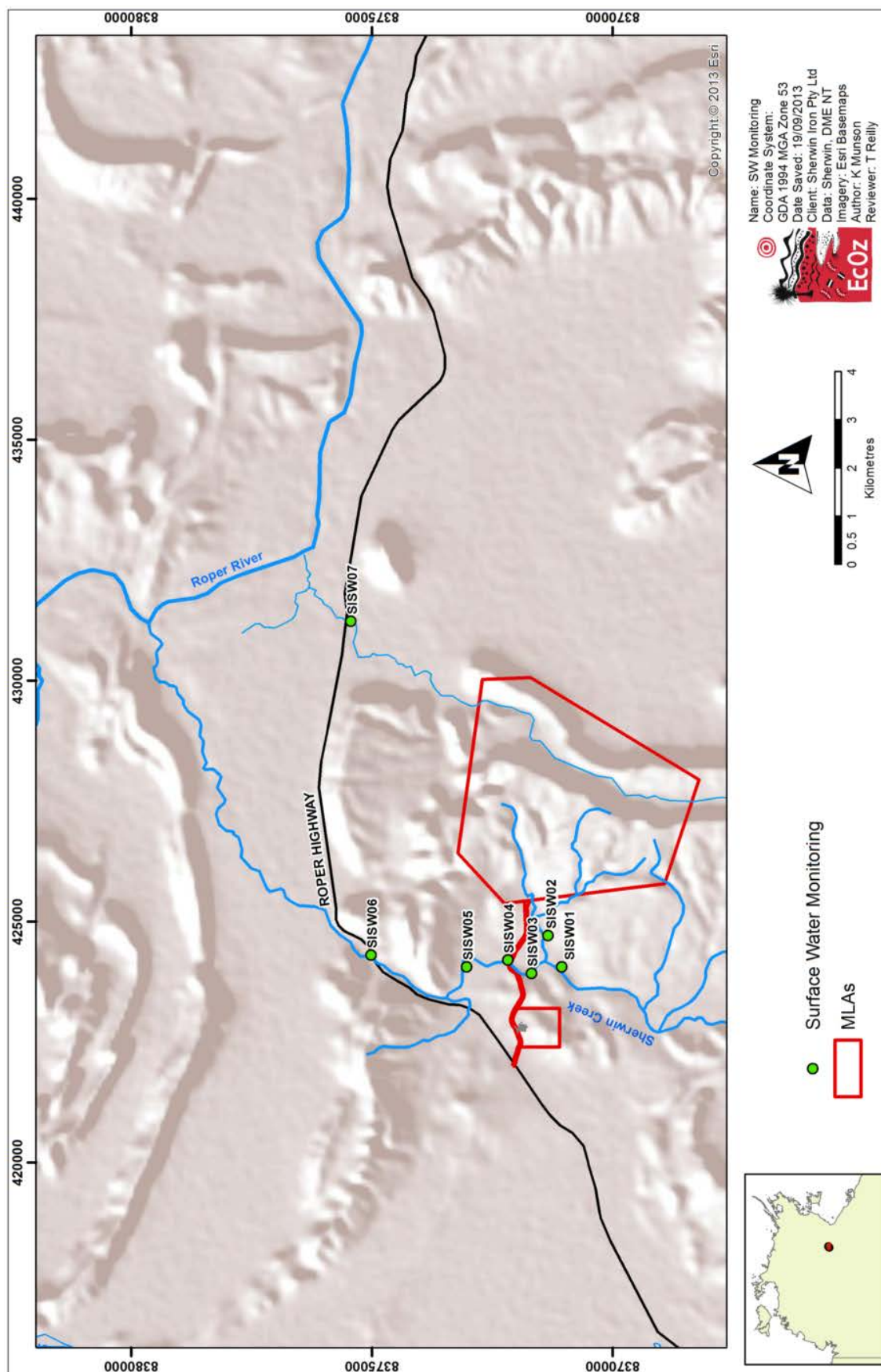


Figure 3-1 Surface water monitoring sites

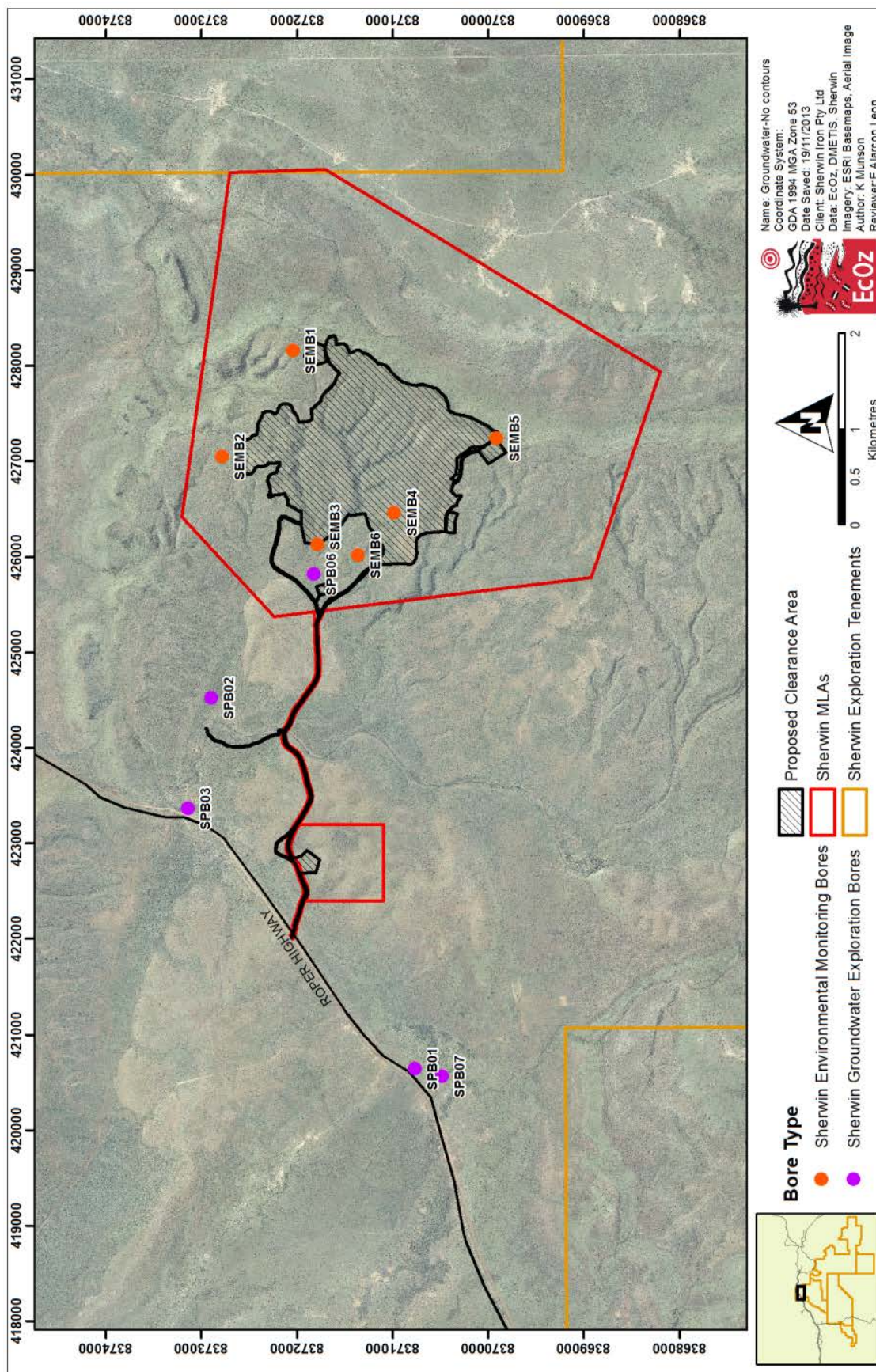


Figure 3-2 Location of environmental monitoring bores

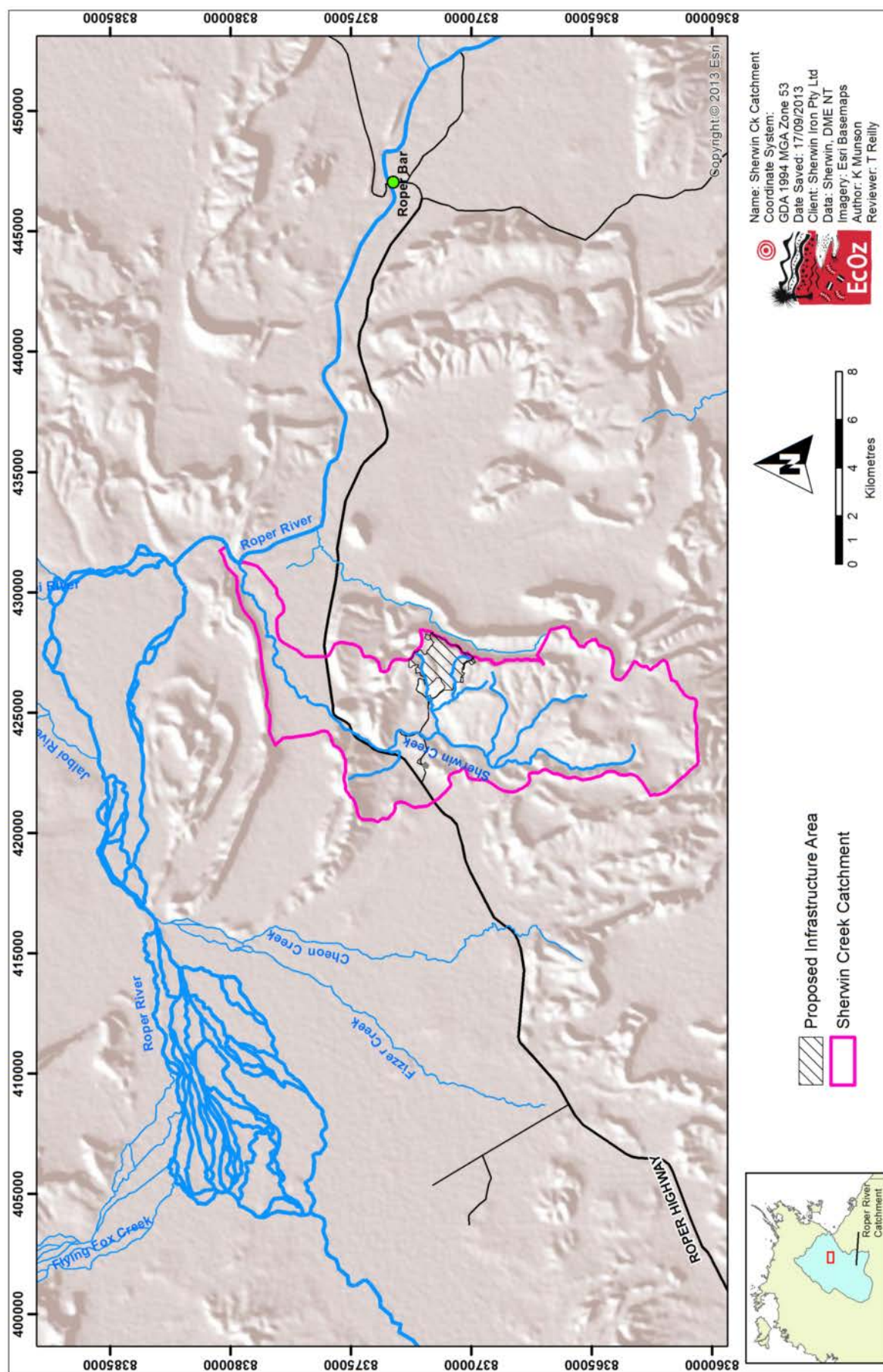


Figure 3-3 Sherwin Creek catchment and associated waterways

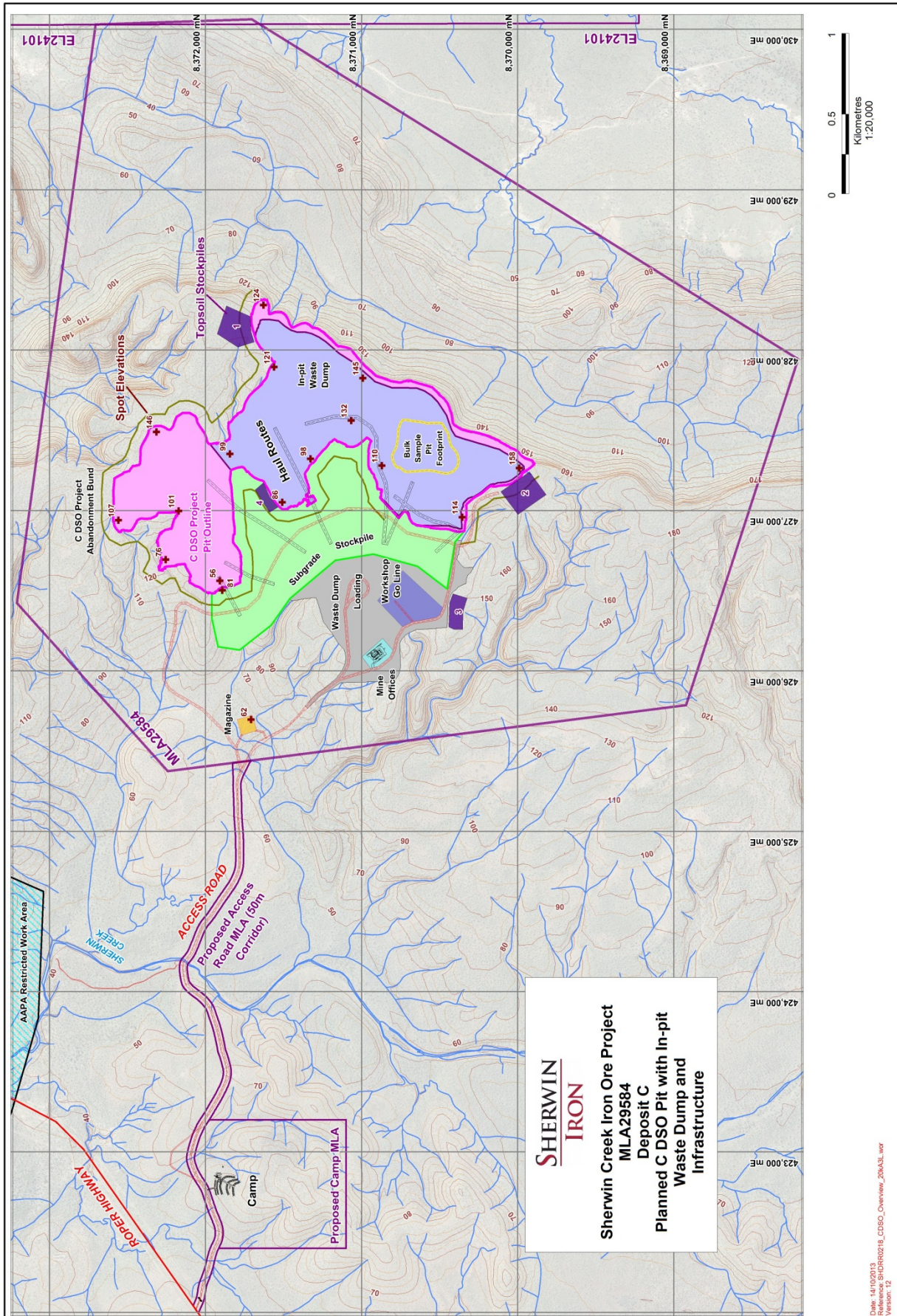


Figure 3-4 Map showing infrastructure and site layout

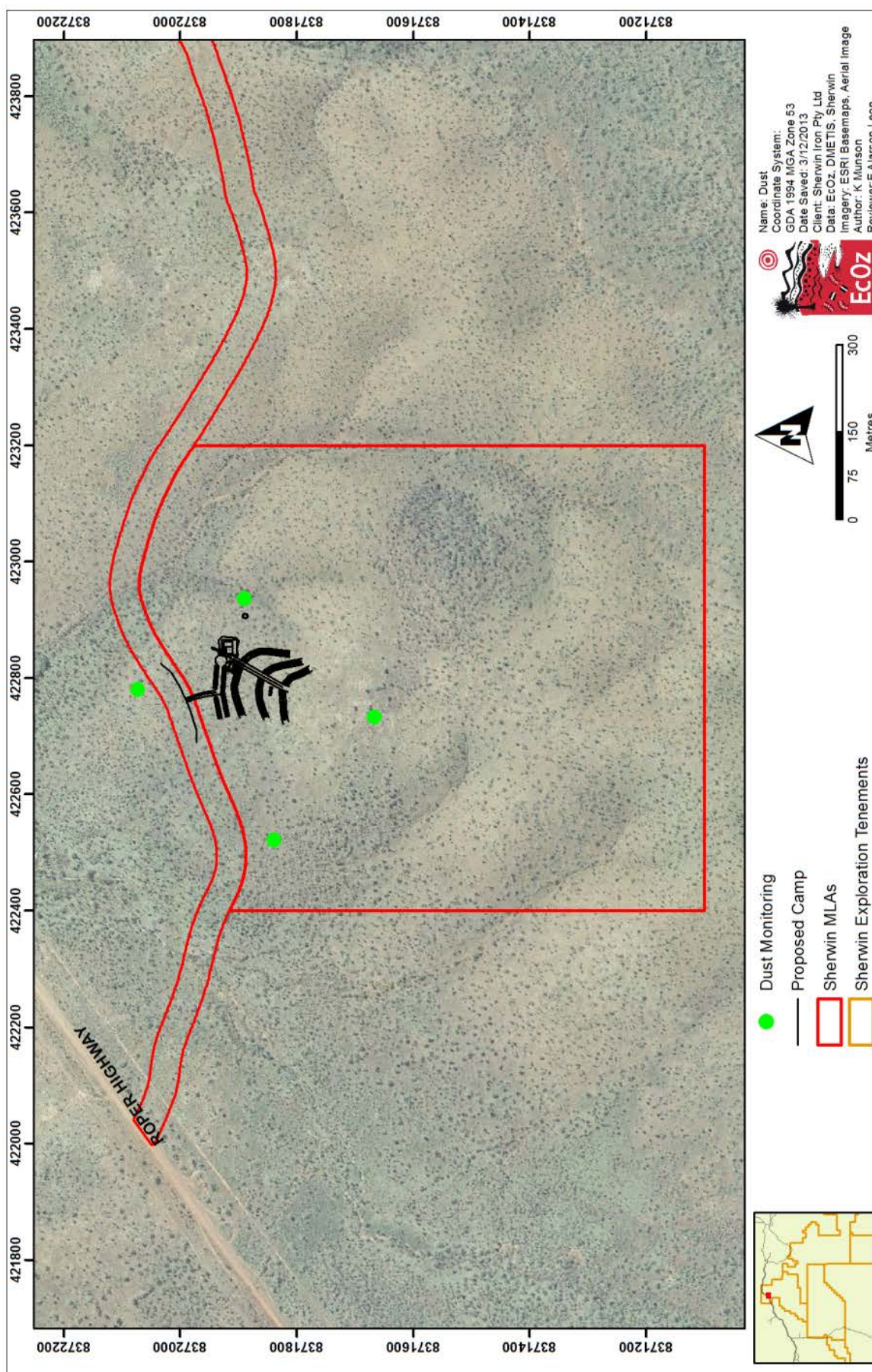


Figure 3-5 Map showing location of dust monitoring points

3.4 Environmental schedules

Sherwin have various forms, reports and registers that have been developed to aid in the project's day-to-day environmental management, these include:

- Site induction checklist
- Complaints and incidents register
- Environmental training register
- Waste register
- Environmental Monitoring - Site Inspection Record.

4 Monitor and review

4.1 Monitoring and measurement

Sherwin Iron requires the monitoring, auditing and review of environmental activities across its operations to ensure compliance with all legislative requirements, company objectives and the on-going prevention of incidents. The following list identifies the applicable environmental monitoring tools for this project:

- Environmental aspects register
- Workplace inspection(s)
- Daily reports
- Weekly reports
- Formal management observation (Time in Field Observations)
- Monitoring (e.g. Groundwater)
- Verification for critical controls and performance standards.

4.2 Evaluation of compliance

Reviewing environmental management at Sherwin Iron is achieved through a number of processes. The processes used by the Environmental Management System (EMS) include:

- Environmental Issues Review
- Business Planning Process
- Risk Management Process
- Internal audits
- External audits.

The HSE Manager is responsible to ensure that the EMS is reviewed at least annually and include all relevant internal and external EMS documentation including:

- Company policies
- Company standards
- Procedures
- Supporting material
- Legislation, Acts, Regulations, etc.

The overall focus of these processes is to demonstrate how Sherwin Iron assesses environmental performance. Where possible the information is gathered and handled in accordance with the Australian/NZ Standard ISO 14031:2013 - Environmental Management - Environmental Performance.

Sherwin Iron EMS builds on the ISO14001 requirement to assess the effectiveness and suitability of policy, objectives and targets set by the organisation. It aims to measure overall environmental performance. Sherwin Iron measures a number of parameters against KPIs to enable it to monitor:

- Management System Performance
- Plant (operational) Performance
- Condition of the ambient environment.

4.3 EHS management review

The Health, Safety and Environment Manager is responsible for presenting to Sherwin Iron's senior management team annually a review of:

- Sherwin Iron's Environmental performance
- Sherwin Iron's Environmental compliance
- Relevant Environmental Statistics and data
- The suitability and effectiveness of the Environmental Management system and Environmental Management Plans.

4.4 Non-conformance and corrective and preventive action

Sherwin Iron uses ISO 9001:2008 Quality management systems - Requirements for handling, investigating, mitigating impacts, correcting and preventing the recurrence of non-conformances.

All non-conformances or actions arising from monitoring, auditing and review activities are to be managed, tracked and closed out using the action tracking register.

All actions arising from monitoring, auditing or review activities are utilised to effect change and improvement in the EMS and subsequent EMPs.

The HSE Manager must ensure all environmental non-conformances and actions are addressed and closed out within a 3 month timeframe.

Changes in documented procedures, due to corrective actions will be recorded and implemented. Non-conformance includes the failure to conform to ISO 14001, applicable legal and other requirements, EMS procedures, environmental management plans, operational controls and work instructions, environmental incidents and recommendations from external reports.

A critical element of corrective action taken, appropriate to the problem and impact, is to avoid recurrence of the problem.

4.5 Control of records

All environmental management records generated shall be identified, collected and stored in accordance with Sherwin Iron EMS requirements and ISO 14001, as per the existing ISO 9001:2008 procedure: QP_013_Document and Data Retention Procedure.

Environmental records generated include but are not limited to the following:

- Management review minutes and agendas

- Internal and external audit reports
- Non-conformance and corrective action reports
- Training records
- Procedures and instructions registers
- Records of customer and public complaints
- Maintenance reports on environmentally significant systems, wastewater collection and pumping stations.

The development, review, revision and dissemination of environmental documentation will be controlled. This shall include the use of a standard numbering system ensuring version control.

The numbering system shall follow a standard convention.

The controlled copy of all environmental management documents shall be maintained on the Sherwin Iron secure HSE drive. A copy of the controlled document which can be copied and printed by all site personnel is available on the Sherwin Iron “central” drive. These printed copies shall be treated as “uncontrolled”.

4.6 Internal audits

To ensure compliance with Sherwin Iron and Project requirements, formal audit programs have been established to validate whether the EMS and activities employed by Sherwin Iron and subcontractors:

- Conform to agreed/specified requirements
- Are suitable and effective
- Meet statutory/regulatory obligations
- Require improvement
- Internal compliance audits (as determined by the HSE Manager).

Where such audits or inspections reveal non-conformance with the contract, the EMS requirements and plans and/or deficiencies in these, the project and/or contractor shall rectify such non-conformance and/or deficiencies within the time period specified by the auditing team and advise the auditing team of all actions taken to remedy non-conformance and/or deficiencies.

Annual self-assessments are conducted on each project and office location to establish the depth of maturity of the site Environmental Management System.

4.7 Management review

The effectiveness of the environmental management system plan will be reviewed as required or at least once every twelve months.

The agenda for management reviews will typically include, but is not limited to the following:

- On-going maintenance and compliance with the EMPs
- Management effectiveness
- Changes to environmental legislation or standards
- Resource adequacy for management of the EMPs

- Achievement of objectives and targets
- Results of internal and external audits
- Non-compliance or non-conformance and resulting corrective action
- Training
- Customer and public complaints
- Improvements and or innovations in environmental management
- Environmental management compliance and non-compliance costs
- Review of environmental impacts and aspects, and associated risk rankings.

5 References

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Fairfull, S & Witheridge, G 2003, Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings, NSW Fisheries, Cronulla.

Kapitzke, IR 2010, *Culvert Fishway Planning and Design Guidelines*, James Cook University, Townsville, Australia.

NHMRC & NRMCC 2011, *Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy*, National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra.

6 Acronyms

AAPA	Aboriginal Areas Protection Authority
AMD	Acid mine drainage
BoM	Bureau of Meteorology
CHMP	Cultural Heritage Management Plan
DLPE	Department of Lands, Planning and the Environment
DLRM	Department of Land Resource Management
DME	Department of Mines and Energy
DoH	Department of Health
DoT	Department of Transport
DSO	Direct Shipping Ore
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management Systems
ESCP	Erosion Sediment Control Plan
ESIA	Economic Social Impact Assessment
GDE	Groundwater dependent ecosystem
HSE	Health safety and environment
MMP	Mining Management Plan
Mtpa	Million tonnes per annum
NLC	Northern Land Council
NT EPA	Northern Territory Environmental Protection Authority
NTG	Northern Territory Government
ROM	Run of mine
SCIOP	Sherwin Creek Iron Ore Project
WMP	Water Management Plan