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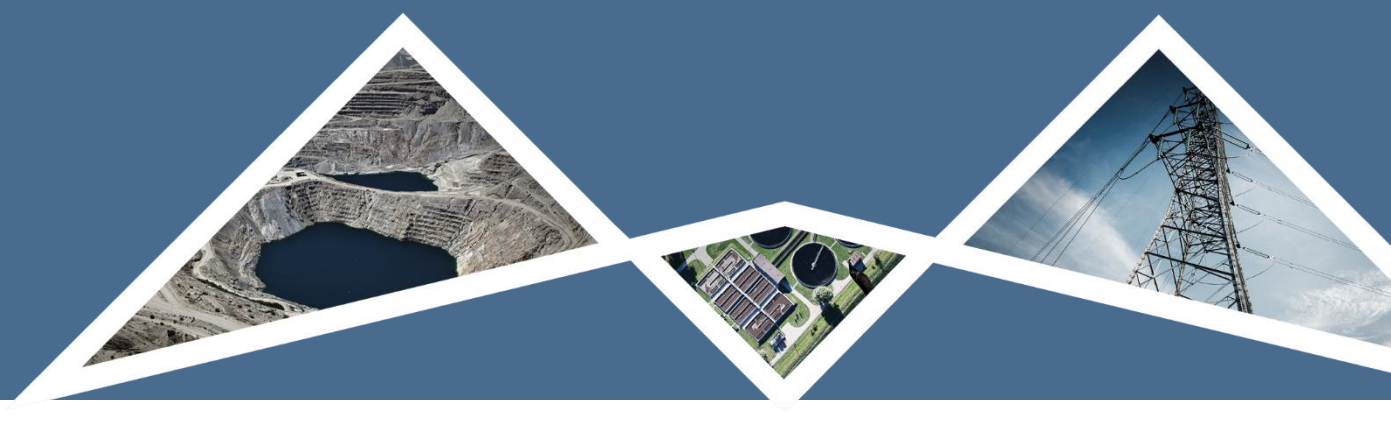
ENVIRONMENTAL MANAGEMENT PROGRAMME

MINE WASTE SOLUTIONS RETURN WATER AND SLURRY PIPELINE PROJECT

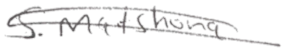


DOCUMENT DETAILS

EIMS REFERENCE: 1469

DOCUMENT TITLE: Environmental Management Programme for the MWS Return Water and Slurry Pipeline Project

DOCUMENT CONTROL

	NAME	SIGNATURE	DATE
COMPILED:	Sinalo Matshona		2022/01/24
CHECKED:	John von Mayer		2022/01/25
AUTHORIZED:	Liam Whitlow		2022/02/01

REVISION AND AMENDMENTS

REVISION DATE:	REV #	DESCRIPTION
2022/01/24	ORIGINAL DOCUMENT	Draft EMPr for public review and comment

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List of Abbreviations

BA	:	Basic Assessment
DFFE	:	Department of Forestry, Fisheries and the Environment
DHSWS	:	Department of Human Settlements, Water and Sanitation
DMRE	:	Department of Mineral Resources and Energy
EA	:	Environmental Authorisation
EAP	:	Environmental Assessment Practitioner
ECO	:	Environmental Control Officer
EIA	:	Environmental Impact Assessment
EIMS	:	Environmental Impact Management Services Pty (Ltd)
EMPr	:	Environmental Management Programme
EO	:	Environmental Officer
MWS	:	Mine Waste Solutions
NEMA	:	National Environmental Management Act
NEM:WA	:	National Environmental Management Waste Act
PPE	:	Personal Protective Equipment
PPP	:	Public Participation Process
TSF	:	Tailings Storage Facility

1 INTRODUCTION

Environmental Impact Management Services (Pty) Ltd (EIMS) has been appointed to undertake a Basic Assessment Process and to subsequently prepare an Environmental Management Programme (EMPr) for the Mine Waste Solutions (MWS) Return Water and Slurry Pipelines Project. A typical EMPr is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented, and that the positive benefits of the projects are enhanced. This EMPr has been compiled as a guideline for the mitigation and management measures to be implemented to avoid, reduce and minimise potential environmental impacts arising out of the construction and operational phases of the project.

2 SCOPE OF THIS DOCUMENT

An EMPr is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented, and that the positive benefits of the projects are enhanced. This EMPr has been compiled as a guideline, in accordance with the Environmental Impact Assessment Regulations (GN R982 of 2014 as amended) for the requirements of an EMPr, to establish the mitigation and management measures that need to be implemented to avoid, reduce and minimise potential environmental impacts arising out of any of the phases applicable to the project.

It should be noted, however, that an EMPr is a working document that should be updated on a regular basis, as and when necessary. The EMPr thus supports an on-going proactive mitigation approach and duty of care to the environment. The EMPr shall allow for risk minimization and will ensure legal compliance. This EMPr will also allow the user to make minor amendments to ensure continual revision and improvement of risk mitigation through the continual re-assessment of risks associated with the activity.

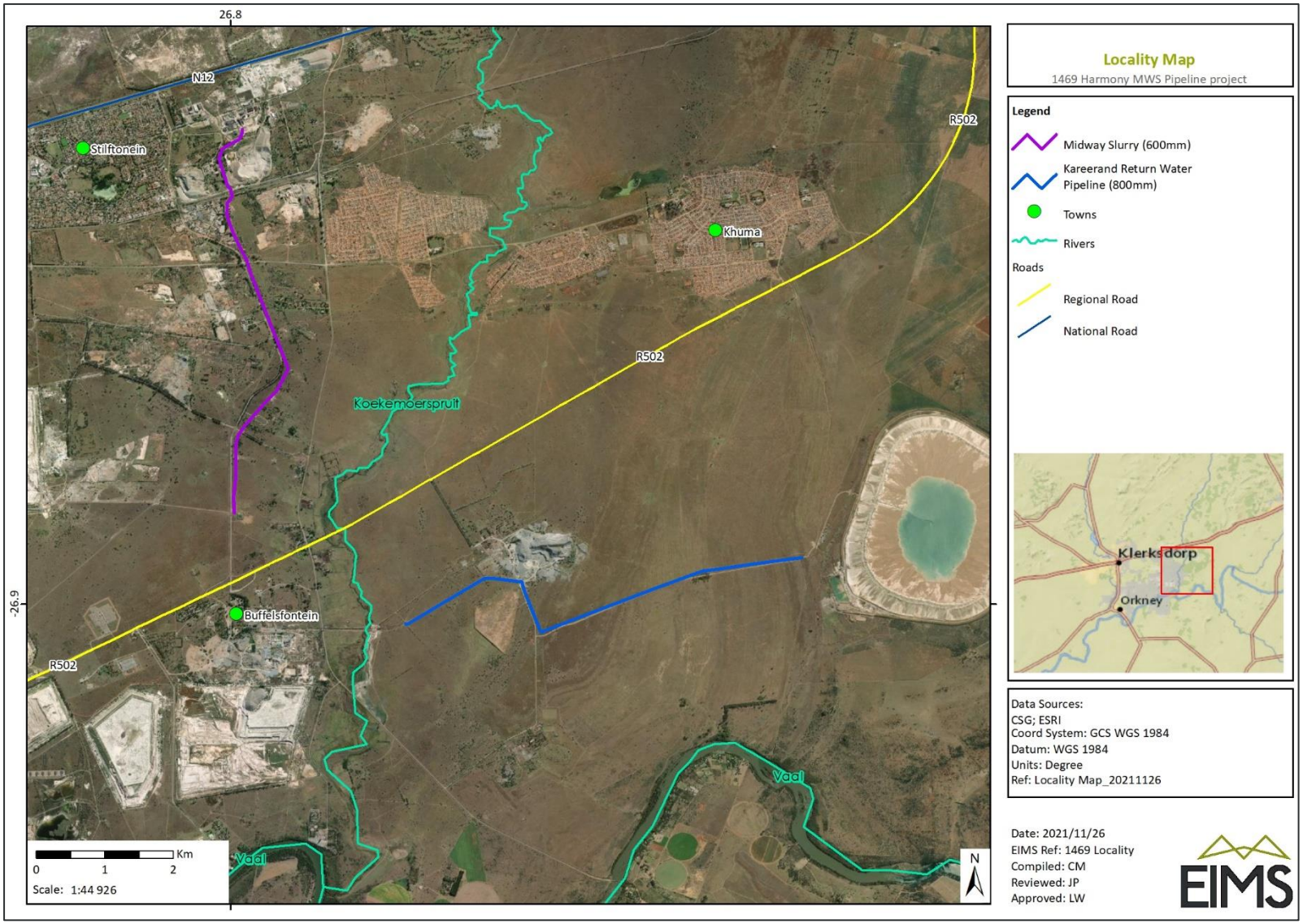

Figure 1: Locality of the proposed pipelines

3 DOCUMENT STRUCTURE

Table 1: EMPr Structure

Appendix 4 Reference	Description	Section in EMPr
Appendix 4(1)(1)(a):	Details of – I. The EAP who prepared the EMPr; and II. The expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 4 Appendix H 1
Appendix 4(1)(1)(b):	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section 5
Appendix 4(1)(1)(c):	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 2
Appendix 4(1)(1)(d):	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified though the environmental impact assessment process for all phases of the development including – I. Planning and design; II. Pre-construction activities; III. Construction activities; IV. Rehabilitation of the environment after construction and where applicable post closure; and V. Where relevant, operation activities;	Section 10
Appendix 4(1)(1)(f):	A description of proposed impact management actions, identifying the manner in which the impact management contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to – I. Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; II. Comply with any prescribed environmental management standards or practices; III. Comply with any applicable provisions of the ac regarding closure, where applicable; and IV. Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Section 10
Appendix 4(1)(1)(g):	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 10
Appendix 4(1)(1)(h):	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 10
Appendix 4(1)(1)(i):	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 10
Appendix 4(1)(1)(j):	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 10
Appendix 4(1)(1)(k):	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 10
Appendix 4(1)(1)(l):	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 7

Appendix 4 Reference	Description	Section in EMPr
Appendix 4(1)(1)(m):	An environmental awareness plan describing the manner in which – I. The Applicant intends to inform his or her Employees of any environmental risk which may result from their work; and II. Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 9
Appendix 4(1)(1)(n):	Any specific information that may be required by the competent authority.	N/A

4 REQUIREMENTS OF AN EAP

In terms of Regulation 13 of the EIA Regulations, 2014, an independent EAP, must be appointed by the Applicant to manage the application. EIMS has been appointed by the Applicant as the EAP and is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations and Section 1 of the NEMA. This includes, inter alia, the requirement that EIMS is:

- Objective and independent;
- Has expertise in conducting EIA's;
- Comply with the NEMA, the Regulations and all other applicable legislation;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the Applicant and the relevant environmental authority.

The declaration of independence of the EAPs involved and the Curriculum Vitae (indicating the experience with environmental impact assessment and relevant application processes) of the consultants that were involved in the compilation of this report are attached as Appendix 1.

4.1 DETAILS OF THE EAP

EIMS was appointed by the Applicant as the EAP to compile this report. The contact details of the EIMS consultants who compiled the report are as follows:

Name of Practitioner	Mr John von Mayer (Project Manager)	Ms Sinalo Matshona
Tel No.:	011 789 7170	011 789 7170
Fax No.:	086 571 9047	086 571 9047
E-mail:	john@eims.co.za	sinalo@eims.co.za

4.2 EXPERTISE OF THE EAP

EIMS is a private and independent environmental management-consulting firm that was founded in 1993. EIMS has in excess of 27 years' experience in conducting EIA's, including many EIA's for mines and mining related projects. Please refer to the EIMS website (www.eims.co.za) for examples of EIA documentation currently available. John von Mayer is a senior consultant at EIMS and has been involved in numerous significant projects the past 10 years. He has experience in Project Management, small to large scale Environmental Impact Assessments, Environmental Auditing, Water Use Licensing, and Public Participation

5 DESCRIPTION AND SCOPE OF THE PROPOSED PROJECT

The section below provides a detailed description for the proposed return water and slurry pipelines project. Most of the key information presented in this chapter was obtained from the Applicant. The aim of the project description is to describe the proposed activities planned to take place at the facility. Furthermore, the project description is designed to facilitate the understanding of the proposed project related activities which are anticipated to lead to the impacts as identified and assessed in the Basic Assessment Report and this EMPr. Impacts relating to these aspects were identified and mitigation measures and management procedures proposed in Section 10 of this EMPr.

5.1 PROJECT DESCRIPTION

The applicant wishes to install additional pipeline infrastructure to meet the planned Life of Mine (LOM) production rates and increase the volume of return water from Kareerand TSF to the reclamation pump stations. The current slurry and return water infrastructure fail to meet the requirements of the planned LOM and impacts on the long-term sustainability of the MWS operations. The infrastructure planned is an additional 6km return water pipeline (750 mm) from Kareerand Tailings Storage Facility (TSF) to Midway Dam, along the existing return water pipeline and a new 6.2km slurry pipeline (600 mm) from Midway Dam to MWS Processing Plant.

6 ROLES AND RESPONSIBILITIES

The Applicant will be responsible for ensuring overall compliance with the provisions of the EMPr. Implementation is the key to the success of the EMPr. In order to ensure that the EMPr and its mitigation measures are implemented, roles and responsibilities need to be clearly defined and documented prior to commencement. This section serves as a guide on which party is normally responsible for certain tasks. Specific roles are designated in the specific environmental management and mitigation requirements in this EMPr.

6.1 THE PROJECT APPLICANT/PROPONENT

The Applicant is the principal party (Proponent) of the project. The legal accountability for correct implementation of the relevant requirements of the EA and EMPr falls primarily upon the Applicant and must therefore be built into all contractor's contractual agreements. The Applicant's role typically includes:

- Provide for all necessary supervision during the execution of the project including appointment of key personnel to act on his/her behalf during the different phases of the project phase (e.g. project manager). The key personnel will be tasked with ensuring that the various contractors/developers comply with the necessary provisions of the EA and EMPr;
- Ensure that the various contractors and applicable sub-contractors appoint a suitably qualified, competent Environmental Officer (EO) that will be responsible for among others, ensuring compliance (on a monthly basis) with the EMPr and EA throughout the construction of the relevant project components;
- Notify the relevant competent authority of changes in the development resulting in significant environmental impacts;
- Assess the various contractor's environmental performance during construction;
- Ensure compliance with regulations;
- To implement the projects as per the approved project plan;
- To ensure that implementation is conducted in an environmentally acceptable manner;
- To comply with special conditions as stipulated by surrounding landowners during the negotiation process (if any); and
- To inform and educate all Employees about the environmental risks associated with the different activities that should be avoided during the construction process and lessen significant impacts to the environment.

Therefore, ultimately, the Applicant is responsible for the development and implementation of the EMPr and, where relevant, ensuring that the conditions in the EA are satisfied. Where construction activities are contracted out (e.g. to contractors and subcontractors), the liability associated with non-compliance still rests with the Applicant (unless otherwise agreed upon between the authorities, the Applicant and the contracting parties). The Applicant (and not the contractor) is therefore responsible for liaising directly with the relevant authorities with respect to the preparation and implementation of the EMPr and meeting authorisation conditions.

6.2 THE PROJECT MANAGER

During the development, it is envisaged that there may be a number of contractors and sub-contractors undertaking various activities on the project. The Project Manager would oversee all contractors and sub-contractors from a project management point of view. The roles of the Project Manager typically include the following:

- The Project Manager acts on behalf of the Applicant regarding the administration of contracts to sub-contractors, etc.;

- Provides and/or approves scheduling, aspects of co-ordination and estimating;
- Ensures implementation of the project plan within cost, time and quality constraints;
- Ensures that implementation of EMPr is executed as planned; and
- Keeps the asset owner informed of progress made during the life cycle of the project.

6.3 THE ENVIRONMENTAL OFFICER

The applicant or the principal contractor shall appoint an Environmental Officer (EO), who is responsible for the on-site implementation of the EMPr. The Contractor's EO ensures that all Sub contractors working under the Contractor and sub-contractors abide by the requirements of the EMPr.

The EO roles will include:

- Preparing activity based Environmental Method Statements where applicable and where required by the EMPr;
- Establishing and maintaining an environmental incident register;
- Taking required corrective action within specified time frame in respect of non-conformances and environmental incidents;
- Assist in finding environmentally acceptable solutions to construction problems;
- Attendance at HSE meetings, toolbox talks and induction programmes (where relevant);
- Inspect the site as required to ensure adherence to the management actions of the EMPr on a daily basis;
- Report any complaints to the EO to be captured in the Consultation register;
- Liaise with the construction team on issues related to implementation of, and compliance with the EMPr;
- Ensure adequate and compliant waste management; and
- Ensuring that environmental signage and barriers are correctly placed and maintained.

6.4 THE AUTHORITIES

The authorities that should be involved include the Department of Mineral Resources and Energy (DMRE). The authorities may be required to perform the following roles:

- Review Monitoring and Audit reports, if required;
- Review whether there is compliance by the Applicant and Contractor with the terms of the EMPr and permit/license conditions. Whenever necessary, the authorities should assist the Applicant in understanding and meeting the specified requirements; and
- The authorities may perform random controls to check compliance. In case of persistent non-compliance, the Applicant will be required to provide an action plan with corrective measures, and have it approved by the authorities.

7 ENVIRONMENTAL MANAGEMENT SYSTEM

The purpose of this EMPr is to ensure that the environment is properly considered during the design, construction, operations, and decommissioning phases, and that negative impacts are minimised or prevented, and positive impacts enhanced. At the same time the EMPr should provide a logical extension of the EIA, specialist studies, or any other technical planning and assessment documentation, to ensure that

recommendations are implemented, and that the project does not deviate from the environmental profile that formed the basis of the assessment.

7.1 RECORD KEEPING

The Applicant, or the Project manager (if assigned) is therefore responsible for the identification, storage, protection, retrieval, retention and disposal of records as part of the EMPr. Records must be legible, identifiable, and traceable.

7.2 RESPONDING TO NON-COMPLIANCES

Non-compliance will be identified and managed through the following four key activities including:

- Inspections of the site and activities across the site;
- Audits of the site and relevant documentation as well as specific activities; and
- Reporting on a monthly basis.

Non-compliance with the EMPr or any other environmental legislation, specifications or standards shall be recorded by the EO in the non-conformance register. This register shall be maintained by the EO and will be sent to the Applicant and Contractor on a regular basis (monthly), and the Applicant shall ensure that the responsible party takes the necessary corrective actions. Non-conformances may only be closed out in the register by the EO upon confirmation that adequate corrective action has been taken and/or documented proof provided. The register should be utilised to measure overall environmental performance.

7.3 ENVIRONMENTAL INCIDENCES

For the purposes of this project, an environmental incident can be divided into three levels, i.e. major, medium and minor. All Major and Medium environmental incidents shall be recorded in the EO's non-conformance and incident register. Minor incidents shall be recorded by the contractor, and by the Applicant (operational phase) in their own incident register. Definitions and explanations of environmental incidents are provided in Table 2.

Table 2: Description of incidents and non-conformances for the purpose of the project

Non-Conformance	Any deviation from work standards, practices, procedures, regulations, management system performance etc. that could either directly or indirectly lead to injury or illness, property damage, damage to the workplace environment, legal transgression or a combination of these.
Major Environmental Incident	An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in widespread, long-term, irreversible significant negative impact on the environment and/or has a high risk of legal liability. A major environmental incident usually results in a significant pollution and may entail risk of public danger. Major environmental incidents usually remain an irreversible impact even with the involvement of long-term external intervention i.e. expertise, best available technology, remedial actions, excessive financial cost etc. Major environmental incidents may be required to be reported to the authorities. The EO shall make the final decision as to whether a particular incident should be classified as a Major incident. An example of a Major environmental incident would be a significant spillage (e.g. 500 litres) of fuel into a watercourse.
Medium Environmental Incident	An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in widespread or localised, short term, reversible significant negative impact on the environment and/or has a risk of legal liability. A medium environmental incident may be reported to the authorities, can result in significant pollution or may entail risk of public danger. The impact of medium environmental incidents should be reversible within a short to medium term with or without intervention. The EO shall make the final decision as to whether a

	particular incident should be classified as a Medium incident. An example of a Medium environmental incident would be a large spill of fuel (e.g. >50 litres) onto land.
Minor Environmental Incident	An incident or sequel of incidents, whether immediate or delayed, where the environmental impact is negligible immediately after occurrence and/or once-off intervention on the day of occurrence. An incident where there is unnecessary wastage of a natural resource is also classified as a minor environmental incident. An example would be leaking water pipes that result in the wastage of water. A minor environmental incident is not reportable to authorities. An example of a minor incident is day to day spills of fuel or oil onto the ground where the spill is less between one and five (5) litres.

The following incident reporting procedures shall apply to this project:

- All environmental incidents shall be reported to the EO, and shall be recorded in the incident registers;
- The EO shall record the incident in the non-conformance and incident register and advise on the appropriate measures and timeframes for corrective action;
- An incident report shall be completed by the relevant party responsible for the incident for all medium and major incidents and the report shall be submitted to the Project Manager and EO within 5 calendar days of the incident;
- The EO shall investigate all incidents and identify any required actions to prevent a recurrence of such incidents; and
- In the event of an emergency incident (unexpected sudden occurrence), including a major spill, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed, the Applicant shall notify the relevant authorities in accordance with Section 30(3) of the NEMA. The Applicant shall engage the EO who shall assess all major incidents and shall advise the Applicant when any such incident must be reported to the authorities as per the above requirement.

8 REVIEW AND REVISION OF THE EMPR

It is important to note that this EMPr is made legally binding on the Applicant through the WML and the approval of the EMPr by the decision-making authority. It is important to consider that the EMPr is a dynamic document which may require such alteration and /or amendment as the project evolves. Conditions under which the EMPr would require revision include:

- Changes in legislation;
- Occurrence of unanticipated impacts or impacts of greater intensity, extent and significance than predicted;
- Inadequate mitigation measures (i.e. where environmental performance does not meet the required level despite the implementation of the mitigation measure);
- Secondary impacts occur because of the mitigation measures; and
- Instances where the implementation of the specified management, as a result of changes in circumstances, may become impractical or unreasonable to implement.

The Applicant in consultation with the EO should be responsible for ensuring that the registration and updating of all relevant EMPr documentation is carried out. It shall be the responsibility of the Applicant, in consultation with the EO, to ensure that all personnel are performing according to the requirements of the document control

procedure, and to initiate the revision of controlled documents, when required by changes in process or operations.

The EO must undertake a risk assessment of any proposed changes to the EMPr. This risk assessment must be included in the applicable monthly audit report, and where applicable supported by the necessary proof of public consultation. It is important to note that if alterations and/or amendments are required; these may only be affected with written approval from the competent authority and in accordance with the relevant legal processes.

9 ENVIRONMENTAL AWARENESS PLAN AND TRAINING

Training and environmental awareness is an integral part of a complete EMPr. The overall aim of the training will be to ensure that all site staff are informed of their relevant requirements and obligations pertaining to the relevant authorisations, licences, permits and the approved EMPr and protection of the environment.

The Applicant and contractor must ensure that all relevant employees are trained and capable of carrying out their duties in an environmentally responsible and compliant manner and are capable of complying with the relevant environmental requirements. To obtain buy-in from staff, individual Employees need to be involved in:

- Identifying the relevant risk;
- Understanding the nature of risks;
- Devising risk controls; and
- Given incentive to implement the controls in terms of legal obligations.

The Applicant shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. Emergency Response Plan

The Applicant must identify potential emergencies and develop procedures for preventing and responding to them. There are several options for dealing with high priority impacts and risks, as the paradigm has two components, probability and consequence. The design of control measures rests on understanding the cause and effect. Best practise is to intervene with the ultimate factors where feasible, rather than treat the outcomes. Emergency response therefore has the option of reducing probability or reducing the consequence while reducing the probability is the preferred option. Below are some common emergency preparedness approaches:

- Threat consequence if a risk eventuates, when the risk becomes an issue;
- Combine reducing the probability and treating the consequence;
- Offset environmental losses by investing in other assets;
- Not manage some of the risks because there are too many; and
- Make provision to manage residual impacts or issues that arise because of shortcomings in risk identification and rating, avoidance and mitigation or because a rare event has occurred.

Residual impacts are those impacts that despite reducing the probability and consequence might still occur. In these cases, parties will have to be compensated, pollution cleaned up and damage to the environment remediated.

The Applicant shall be required to develop and implement an Emergency Preparedness and Response Plan prior to commencing work. The Applicant must ensure that the Emergency Preparedness and Response Plan makes provision for environmental emergencies, including, but not limited to;

- Fire Prevention;
- Fire Emergency Response;

- Spill prevention;
- Spill Response;
- Accidents to Employees; and
- Use of hazardous substances and materials, etc.

The Applicant and Contractor must ensure that lists of all emergency telephone numbers/contact persons (including fire control) are kept up to date and that all numbers and names are posted at relevant locations throughout the lifespan of the project.

9.1 SPILL RESPONSE PROCEDURE

The Contractor must ensure that all Employees, staff and labourers are informed and instructed regarding implementation of spill prevention measures and spill response procedures. In the event of a spill, the following general requirements shall apply, and the detailed spill procedure must cater for these requirements;

- Immediately reporting of spills by all Employees and/or visitors to the relevant supervisor and EO (this requirement must be including in induction training);
- Take immediate action to contain or stop the spill where it is safe to do so;
- Contain the spill and prevent its further spread (e.g. earth berm or oil absorbent materials for spill to land or by deploying booms and/or absorbent material for a spill to water);
- Dispose of any contaminated soil or materials according to appropriate waste disposal procedure. Note: Waste from spills of hazardous materials shall be disposed of as hazardous waste at a suitably licensed waste disposal facility;
- The Contractor's EO shall record details of the spill in their respective incident registers;
- Photographic evidence shall be obtained of the spill clean-up.

In the case of large spills, the services of a specialist spill response agency shall be required, who shall advise on appropriate clean-up procedures and follow-up monitoring (if required). The incident procedures as defined in Section 10 shall also apply.

The Applicant must also, (as per Section 30 of the NEMA) notify the Director-General (DHSWS, DFFE and DMRE), South African Police Services, Provincial Environmental Authority, the Local Municipality, and any persons whose health may be affected of the nature of an incident including:

- Any risks posed to public health, safety and property,
- Toxicity of the substance or by products released by the incident and
- Any step taken to avoid or minimise the effects of the incident on public health and the environment.

9.2 MEASURES TO CONTROL OR REMEDY ANY CAUSES OF POLLUTION OR DEGRADATION

The broad measures to control or remedy any causes of pollution or environmental degradation as a result of the proposed activities taking place on the project are provided below:

- Limit the size of the area to be disturbed as far as is practically possible;
- Ensure that the environmentally sensitive areas are adequately demarcated throughout the construction phase;
- Ensure topsoil, subsoil and rock dumps are provided with adequate storm water runoff measures;

- Contain potential pollutants and contaminants (where possible) at source;
- Handling of potential pollutants and contaminants (where possible) must be conducted in bunded areas and on impermeable substrates;
- Ensure the timeous clean-up of any spills;
- Implement a waste management system for all waste streams present on site;
- Investigate any I&AP claims of pollution or contamination as a result of the project activities; and
- Rehabilitate the site in line with the requirements of the rehabilitation / decommissioning plan.

10 IMPACT MANAGEMENT AND MITIGATION MEASURES

This section provides management and mitigation measures that need to be implemented at the relevant phases of the proposed project to ensure that the identified impacts are properly managed and mitigated to avoid or minimise degradation of the surrounding environment and to positively impact the socio-economic aspects of the area. Table 3 below encapsulates the management and mitigation measures for all identified impacts. This table also includes the party responsible for ensuring compliance with each management or mitigation measure, the party responsible for monitoring (and frequency thereof) compliance and the performance indicators that can be utilized to ensure that the target for each management and mitigation measure is achieved.

Table 3: Impact Management and Mitigation Measures

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
		10.1 COMPLIANCE			
10.1.1	LEGAL COMPLIANCE WITH LEGISLATION				
A	Identify and comply with all relevant national, provincial and local legislation, including associated regulations and bylaws and shall establish and maintain procedures to keep track of, document and ensure compliance with environmental legislative changes.	Applicant	Planning Construction Operation Decommissioning	Ensures compliance with the legislation.	Ongoing throughout the project
B	Should there be changes in legislation and/or regulations the Applicant shall take the necessary actions to incorporate such changes and to pass these requirements on to the Contractors.	Applicant	Planning Construction Operation Decommissioning	Ensure compliance with the legislation.	Ongoing throughout the project
10.1.2	COMPLIANCE WITH EMPR				
A	This EMPr should be adhered to during the lifetime of the project and updated when needed as per Section 8 of this report. The Applicant is responsible for the maintenance, update and review of the EMPr. The EO shall include any recommendations for proposed amendments/ alterations of the EMPr to the Applicant who shall engage the competent authority, to the extent required, with regards to such changes.	Applicant	Planning Construction Operation Decommissioning	Ensure compliance with the EMPr.	Ongoing throughout the project
10.1.3	APPOINTMENT OF CONTRACTORS				
A	The Applicant is responsible to appoint a Project Manager to assist in appointing contractors and managing of processes. The contractors should be suitably qualified for the job and should preferably be sourced locally as far as reasonably possible.	Applicant Project Manager	Planning Construction (only if required) Operation (only if required) Decommissioning	Appoint suitably qualified contractors sourced locally as far as reasonably possible.	As necessary at the start of the project

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
		10.2 PLANNING AND DESIGN			
10.2.1	IMPACTS ON EXISTING INFRASTRUCTURE AND SERVICES				
A	Identify all infrastructure and services within proximity of the proposed facility during the planning phase and attempt to plan around the identified infrastructure and services as far as reasonably possible. If any construction sensitive infrastructure and services (underground or above-ground) exist, they should be clearly marked, and contractors should avoid these.	Applicant Project Manager Contractor	Planning	No existing infrastructure is damaged or existing services are halted without notice because of construction.	Once off before construction
B	Communicate with surrounding land users to help identify existing infrastructure and services within the area. If any services are to be temporarily halted during construction the relevant landowner and/or affected parties must be notified timeously (at least two weeks prior) prior to the service disruption. Appropriate alternative supply must be arranged for the service recipients if repair will require a significant amount of time.	Applicant Project Manager	Planning Construction	Identification of surrounding infrastructure and services to prevent damage or the halting of important services. Ensures effective communication with surrounding occupiers.	Ongoing for the duration of construction.
10.2.2	TRAFFIC IMPACTS				
A	The Applicant, Project Manager and contractors should ensure that all construction vehicles using public roads are in a roadworthy condition, that they adhere to the speed limits and that their loads are secured and that all local, provincial and national regulations are adhered to. The Applicant/ Contractor must ensure that regular users of the nearby roads are not unreasonably delayed due to construction activities.	Applicant Project Manager Contractors	Construction Operation Decommissioning	Ensure that no unreasonable traffic delays are caused because of the project and that all traffic regulations are adhered to.	Ongoing for the duration of construction activities

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
B	If any damage is caused to nearby public roads or local access roads because of construction, the Applicant should notify the relevant authorities and communicate with them on a solution to repair the damage.	Applicant Project Manager	Construction Operation Decommissioning	To prevent damage to roads and to ensure that if damage occurs because of activities relating to the plant that it is remediated as soon as possible.	Ongoing throughout the project
		10.3 CONSTRUCTION			
		10.3.1 VEGETATION AND HABITATS			
A	The construction and final development footprints should be demarcated, and all proposed activities should be restricted to the proposed development areas	Project manager Environmental Officer	Planning	Reduce disturbance of the sensitive areas.	Ongoing throughout construction
B	Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible. Maintain small patches of natural vegetation within the construction site to accelerate restoration and succession of cleared patches. All activities must be restricted to the very low sensitivity areas. No further loss of medium sensitivity areas should be permitted. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (Demarcation must be clearly visible and effective and the no-go area must remain demarcated throughout the construction phase);	Project manager, Environmental Officer	Life of operation	Maintain indigenous vegetation and prevent the spread of alien vegetation.	Ongoing throughout construction
C	All construction/operational and access must make use of the existing access and maintenance roads;	Environmental Officer & Design Engineer	Construction/Operational Phase	Reduce disturbance of the surrounding environmentally sensitive areas.	Ongoing for the duration of the project

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
D	All laydown, chemical toilets etc. should be restricted to least concern sensitivity areas. Any materials may not be stored for extended periods and must be removed from the project areas once the construction/closure phase has been concluded. No permanent structures should be permitted at laydown area. No storage of vehicles or equipment will be allowed outside of the designated project areas.	Environmental Officer Design Engineer	Construction/Operational Phase	Reduce disturbance of the surrounding environmentally sensitive areas.	Ongoing throughout construction
E	A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that, it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on-site unless necessary. All contaminated soil/yard stone shall be treated in situ or removed and be placed in containers	Environmental Officer Contractor	Life of operation	Ensure that an approved spill management plan is in place, ensure that the contractor has the necessary equipment required for adequate clean-up.	Ongoing
F	Leaking equipment and vehicles must be repaired immediately or be removed from the project areas to facilitate the repair.	Environmental Officer Contractor	Life of operation	Ensure that all construction vehicles are in good condition, prevent the pollution of soils and surrounding environment.	Daily throughout construction
H	Storm water discharge must be managed and restricted in such a manner that it does not cause erosion or flooding (flow paths, velocity and effects) and the water quality must be managed.	Environmental Officer ECO Design Engineer	Life of operation	Ensure that stormwater runoff is managed appropriately	Monthly throughout construction
I	It should be made an offence for any staff to /take bring any plant species into/out of any portion of the project areas. No plant species whether indigenous or exotic should be brought into/taken from the project areas, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Project manager, Environmental Officer Contractor	Life of operation	Prevent introduction of alien invasive species and protect existing environmentally sensitive areas.	Ongoing throughout construction

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
J	A fire action plan needs to be complied with and implemented to restrict the impact unplanned fires might have on the surrounding areas.	Environmental Officer Contractor	Life of operation	Ensure that a proper fire management plan is in place for adequate response in the event of fire breakouts on site.	Ongoing throughout construction
10.3.2 FAUNA					
A	An Environmental Control Officer (ECO) that is qualified and competent within the field of environmental management must be on site when construction begins to identify faunal species that will be directly disturbed and to relocate fauna/flora that is found during the activities.	Environmental Officer Contractor	Life of operation	Ensure successful rescuing of plant species that may be of conservation concern.	Ongoing throughout construction
B	No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this;	Environmental Officer Contractor	Life of operation	Ensure that construction personnel do not interfere with wildlife species onsite.	Ongoing throughout construction
C	The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on fauna	Project manager, Environmental Officer & Design Engineer	Construction/Operational Phase	Prevent the disturbance of faunal communities as a result of construction activities.	Ongoing throughout construction
D	All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. A speed limit of 40 km/h towards the construction site must be enforced to ensure that road killings and erosion is limited.	Health and Safety Officer	Life of operation	Ensure that vehicle operators are aware of speed limits and prevent unnecessary killing of animals.	Ongoing throughout construction
E	The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into highly sensitive areas outside of the project area (i.e., Nature Reserve) and the surrounding environments, i.e. the wetlands. Signs must be put up to enforce this	Project manager, Environmental Officer	Construction/Operational Phase	Reduce disturbance of the surrounding environmentally sensitive areas.	Once off prior to construction commencing

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
10.3.3 ALIEN VEGETATION					
A	The existing MWS alien invasive plants management plan should be implemented to prevent introduction and spread of alien invasive species.	Project manager, Environmental Officer Contractor	Life of operation	Control alien the introduction and spread of invasive plants onsite.	Quarterly monitoring
B	The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas	Project manager, Environmental Officer Contractor	Construction/Operational Phase	Ensure that the construction area is clearly visible to construction workers and reduce disturbance of the surrounding environmentally sensitive areas.	Ongoing throughout the construction phase.
10.3.4 WASTE MANAGEMENT					
A	Waste management must be a priority and all waste must be collected and stored effectively.	Environmental Officer Contractor	Life of operation	Ensure that all waste generated on site is appropriately stored onsite.	Weekly for the duration of the project
B	A minimum of one toilet must be provided per 15 persons. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.	Environmental Officer Health and Safety Officer	Life of operation	Avoid the spillage of ablution facilities into the environment.	Daily throughout construction
C	The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility	Environmental Officer Health and Safety Officer	Life of operation	Ensure good housekeeping and reduce the risk of spillage into the environment.	Ongoing throughout construction
D	Refuse bins will be emptied and secured Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 7 days.	Environmental Officer Contractor Health and Safety Officer	Life of operation	Ensure removal of waste from the construction site, prevent spillage of waste in the surrounding environment and attraction of pests such as rodents and flies.	Ongoing throughout construction.

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
10.3.5 NOISE					
A	Noise must be kept to an absolute minimum during the working hours to minimize all possible disturbances to amphibian species and nocturnal mammals.	Environmental Officer Contractor	Construction	Prevent disturbance to faunal communities	Daily throughout construction.
B	All construction work must be limited to normal working hours from 7:00 in the morning to 17:00 in the afternoon to avoid nuisance of any surrounding landowners.	Environmental Officer Contractor	Construction	Prevent nuisance of surrounding landowners	Ongoing throughout construction
10.3.6 COMPLAINS REGISTER					
A	A complaints register should be opened and maintained onsite. Any surrounding landowner complaints related to the activity should be recorded on the register and addressed immediately. The measures taken to address the complaints should be recorded on the register. The appointed ECO must check this register regularly.	Environmental Officer Contractor Applicant ECO	Construction	Prevent nuisance of surrounding landowners and prevent unnecessary delays that may be caused by conflicts between the construction team and surrounding landowners.	Monthly throughout construction
10.3.7 SOIL POLLUTIONS					
A	An approved spill procedure to be followed in the event of a spillage incident must be made available onsite and all site personnel should be trained on the on proper spill clean-up measures.	Environmental Officer Contractor	Construction	Minimise impacts of soil pollution, ensure that the contractors are well equipped with adequate tools to respond to a spill incident. Ensure adequate spill clean-up is undertaken.	When necessary in the of a spill
B	The contractors used for the construction should have spill kits available prior to construction to ensure that any fuel, oil, or hazardous substance spills are cleaned-up and discarded correctly.	Environmental Officer Contractor	Construction		Ongoing throughout construction
C	During construction activities, all rubble and waste generated must be removed from the site.	Environmental Officer Contractor	Construction		Ongoing throughout the project
D	Any contaminated soils must be remediated or removed and discarded at an appropriately licensed facility.	Environmental Officer Contractor	Construction		Ongoing throughout construction

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
10.3.8 TRAINING					
A	All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project areas to inform contractors and site staff of the presence of Red/Orange List species, their identification, conservation status and importance, biology, habitat requirements, spill response procedure and management requirements the Environmental Authorisation and within the EMPr.	Environmental Officer	Life of operation	Ensure that site personnel is aware of site sensitivities.	Ongoing throughout the project
10.3.9 EROSION					
A	Where possible, existing access routes and walking paths must be made use of, and the development of new routes limited.	Project manager Environmental Officer	Life of operation	Prevent loss of vegetation and ensure less erosion.	Ongoing throughout the project
B	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events.	Project manager Environmental Officer	Life of operation	Ensure re-establishment of indigenous vegetation.	When necessary throughout construction
10.3.10 WETLANDS					
A	Existing roads must be used as much as possible.	Project manager Environmental Officer Contractor	Planning, Construction and Operational	Prevent loss of wetland functionality and ensure low negative impacts to surrounding watercourses.	Ongoing throughout construction
B	Avoid unnecessary vegetation clearing and avoid preferential surface flow paths.	Project manager Environmental Officer Contractor	Construction	negative impacts to surrounding.	Ongoing throughout construction
C	Storage of potential contaminants in bunded areas	Project manager Environmental Officer Contractor	Construction		Ongoing throughout construction

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
D	All contractors must have spill kits available and be trained in the correct use thereof.	Contractor	Construction		Ongoing throughout construction
E	All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping".	Project manager Environmental Officer Contractor	Planning, Construction and Operational		Ongoing throughout construction
F	15 m post mitigation buffer zones should be implemented on the delineated wetlands except for the wetland through which the return water pipeline traverses (HGM 1) which cannot be avoided. The delineated wetlands should be demarcated and marked as no-go areas for the duration of construction activities onsite.	Project manager Environmental Officer Contractor	Construction		Monthly throughout construction
G	No cleaning or servicing of vehicles, machines, and equipment in water resources and near the wetlands on site. Cleaning and servicing of vehicles should be conducted in designated bunded areas at the MWS Plant Operations.	Project manager Environmental Officer Contractor	Planning, Construction and Operational		Ongoing throughout construction
H	Adequate sanitary facilities and ablutions must be provided for all personnel throughout the project area.	Project manager Environmental Officer Contractor	Construction		Ongoing throughout construction
I	Have action plans on site, and training for contractors and employees in the event of spills, leaks, and other impacts to the aquatic systems.	Project manager Environmental Officer Contractor	Construction		Ongoing throughout construction
J	All waste generated on-site must be adequately managed and separated and recycling of different waste materials should be supported.	Project manager Environmental Officer Contractor	Construction		Monthly throughout construction

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
K	Demarcate footprint areas to be cleared to avoid unnecessary clearing.	Project manager, Environmental Officer Contractor	Construction		Once off at the start of construction
L	Exposed areas must be ripped and vegetated to increase surface roughness.	Project manager Environmental Officer Contractor	Construction		Monthly throughout the project
M	All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site.	Project manager Environmental Officer Contractor	Construction		Daily throughout the project
10.3.11 HERITAGE AND PALEONTOLOGY					
A	Implement a chance find procedures in case where possible heritage finds are uncovered.	Applicant ECO Heritage Specialist	Construction	Ensure compliance with SAHRA recommendations and the NHRA.	Ongoing throughout construction
A	If heritage resources or fossil remains are discovered during any phase of construction, either on the surface or exposed by fresh excavations the Chance Find Protocol must be implemented by the ECO in charge of these developments.	Applicant Contractor ECO Heritage Specialist	Construction	Ensure compliance with SAHRA recommendations and the NHRA.	Ongoing throughout construction
10.4 SITE CLOSURE AND REHABILITATION					
10.4.1 SITE CLOSURE					
A	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species	Environmental Officer Contractor	Closure Phase/Rehabilitation phase	Ensure the site is returned to pre-construction conditions, prevent erosion or introduction of alien invasive species.	Quarterly for up to two years after the closure
B	All footprints are to be rehabilitated and landscaped after construction is complete. Rehabilitation of the disturbed areas existing in the project areas must be made a	Environmental Officer Contractor	Closure Phase/Rehabilitation phase		When necessary

Item No.	Mitigation Measure	Responsible Party	Phase	Target	Monitoring Frequency
	priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species that are endemic to this vegetation type;				