# Environmental Management Programme Report for the Dorstfontein East Mine Extension of Pit 1 and Water Transportation Pipeline from Dorstfontein West to Dorstfontein East, Emalahleni Local Municipality, Mpumalanga

**Report Prepared for**

## Exxaro Coal Central (Pty) Ltd

exxaro
POWERING POSSIBILITY

**Report Prepared by**

srk consulting

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# Environmental Management Programme Report for the Dorstfontein East Mine Extension of Pit 1 and Water Transportation Pipeline from Dorstfontein West to Dorstfontein East, Emalahleni Local Municipality, Mpumalanga

## Exxaro Coal Central (Pty) Ltd

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# Disclaimer

The environmental management measures provided in this Environmental Management Programme (EMPr) are based on information supplied to SRK Consulting (South Africa) (Pty) Ltd (SRK) by Exxaro Coal Central (Pty) Ltd (Exxaro). This report has been compiled to comply with the specific requirements of the National Environmental Management Act (No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations (2014).

SRK has exercised all due care in reviewing the supplied information provided by Exxaro during the course of the Environmental Assessment Process and has included the requirements of commenting authorities. The appropriateness and practicality of the management measures have been considered in terms of comments received and discussed with Exxaro as necessary. Exxaro is fully responsible for the implementation of the Environmental Management Programme (EMPr).

The EMPr has been provided to Exxaro for review, prior to submission, to determine whether the EMPr is implementable and accurate. SRK cannot be held responsible for failure of Exxaro to comply with the EMPr for any reason whatsoever. The EMPr by nature is a dynamic document and the NEMA provides for continual updating of the EMPr, with approval from the Competent Authority.

SRK does not accept responsibility for any errors or omissions in the information supplied by Exxaro and do not accept any consequential liability arising from commercial decisions, design changes or actions resulting from such decisions and/or changes. Management measures presented in this report relate to the project description and plans as they existed at the time of SRKs investigations, and those reasonably foreseeable. These management measures do not necessarily apply to conditions and aspects that may arise after the date of this report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

# List of Abbreviations

| | |
|---|---|
| BAP | Biodiversity Action Plan |
| BAR | Basic Assessment Report |
| DCM | Dorstfontein Coal Mines (Pty) Ltd |
| DEA | Department of Environmental Affairs |
| DMR | Department of Mineral Resources |
| EA | Environmental Authorisation |
| ECO | Environmental Control Officer |
| EIA | Environmental Impact Assessment |
| EMPr | Environmental Management Programme |
| Exxaro | Exxaro Coal Central (Pty) Ltd |
| I&AP | Interested and Affected Parties |
| LoM | Life of Mine |
| Mtpa | Mega Tonnes Per Annum |
| NEMA | National Environmental Management Act (Act No. 107 of 1998) |
| NEM:WA | National Environmental Management Act (Act No. 59 of 2008) |
| NHRA | National Heritage Resources Act (Act No. 25 of 1999) |
| PPE | Personal Protective Equipment |
| RoM | Run of Mine |
| SAHRA | South African Heritage Resources Authority |
| SHE | Safety Health and Environmental |
| SRK | SRK Consulting South Africa (Pty) Ltd |
| WUL | Water Use Licence |

# Key Definitions

| Term | Definition |
|---|---|
| DMR | Department of Mineral Resources |
| Emergency | An undesired event that results in a significant environmental impact and requires the notification of the relevant statutory body such as a local or provincial authority. |
| Environment | Means the surroundings within which humans exist and that are made up of -<br>I. the land, water and atmosphere of the earth;<br>II. micro-organisms, plant and animal life;<br>III. any part or combination of (i) and (ii) and the interrelationships among and between them; and<br>The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing. |
| Environmental Consultant | An independent environmental consultant with experience in the management of construction contracts. |
| Environmental Impact | A change in the environment, whether adverse or beneficial, wholly or partly, resulting from organisations' activities, products or services. |
| Environmental Management Team | Employees that will be appointed or delegated the responsibility to address environmental considerations in the management cycle of the Project, i.e. policy, planning and design, implementation (preconstruction, construction, operation, and decommissioning), monitoring and corrective action and review. |
| General Waste | General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes<br>(a) domestic waste;<br>(b) building and demolition waste;<br>(c) business waste; and<br>(d) inert waste. |
| Hazardous Waste | Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste have a detrimental impact on health and the environment. |
| Incident | An undesired event that may result in a significant environmental impact, although can be managed through internal response and procedures. |
| Operational Controls | Mechanisms used to effect the EMPr requirements. These may include conditions required by the DMR. |
| Plan | Sets out the intended method and/or specific measures required to mitigate and/or enhance the negative and positive impacts of the proposed project. A plan usually focuses on one project phase, i.e. construction, operation or closure. |
| Project Manager | Overall responsible and accountable person for the site during the construction, operation and decommissioning of the facility. |
| Project Management Team | The responsibility of the EMPr implementation resides with this team. This team includes a Project Manager and appointed contractors and consultants. |
| Programme | Identifies a series of interrelated measures (often contained in detailed plans) for managing the environmental effects of the proposed project. A programme provides broad direction and covers more than one project phase. |
| Engineer | An engineer responsible for overseeing the construction and decommissioning works on site. Also responsible for approval of plans and drawings. |

| Term | Definition |
|---|---|
| Safety, Health and Environmental Officer (SHE Representative) | A representative from each contractor, appointed as a Safety Health and Environmental Officer, assisting the construction manager on Safety, Health and Environmental aspects of the project on the construction site. |
| Sub-contractor and Contractor | Any provider of services, goods or people to Exxaro for the purpose of the proposed Pit 1 expansion and construction of the water pipeline. These may directly or indirectly include contractors, sub-contractors, hired labour agencies and consultants. |

# 1 Introduction and Background

Dorstfontein Coal Mines (Pty) Ltd (DCM) is a joint venture between Exxaro Coal Central (Pty) (Ltd) (Exxaro) and Mmakau Mining (Pty) Ltd. DCM plans to expand the opencast mining of Pit 1 at their Dorstfontein East Mine in a north western direction of approximately 85 Hectares. This will ensure a constant Run of Mine (RoM) of 3 mega tonnes per annum (mtpa). In addition to this, DCM would like to construct a pipeline from the Dorstfontein West Mine to the Dorstfontein East Mine of approximately 11 kilometres (km) for the transportation of process water which will be recycled.

DCM holds 2066 Hectares of coal rights and 1230 Hectares of surface rights, which make up the DCM operations. All of these farms lie within the Emalahleni Local Municipality and Nkangala District Municipality. The proposed project is located near the town of Ga-Nala and approximately 30 km northwest of Bethal and 25 km north east of Secunda.

Opencast techniques are currently employed to mine the DCM reserves. The remainder of the deeper reserves will be mined by conventional mechanised underground bord and pillar mining methods. Opencast mining activities currently targets the No. 2 and 4 seam lower reserves, however all seams thicker than 0.5 m are considered during mining operations, where treatment of coal seams only occurs where studies show a negative value add component on the production and beneficiation costs incurred (Exxaro Coal Central (Pty) Ltd B, 2017).

Initial mining started with the removal of the top soil. Excavated material is placed on pre-determined dumps. Waste from the mining will be backfilled into the voids post mining, during rehabilitation.

Originally the tonnage mined at DCM was set at 300 000 tonnes per month. This target was achieved. The current target for the Pit 1 expansion project is aimed at 180 000 tonnes per month. The Life of Mine for the opencast operations is 7 years, whereby underground mining will commence on the remainder of the coal reserves.

# 2 Project Description

DCM plan to expand the opencast mining of Pit 1 at their Dorstfontein East mine in a north western direction of approximately 85 Ha, ensuring a constant Run of Mine (RoM) of 3 mega tonnes per annum (mtpa). In addition to this, DCM would like to construct a pipeline from the Dorstfontein West Mine to the Dorstfontein East Mine of approximately 11 km for the transportation of process water, which will be recycled. The exploitation of the Pit 1 expansion area will run concurrently with the DCM operations.

It is anticipated that the Mine expansion and pipe construction will include the following infrastructure and activities:

- Selective vegetation clearance would be required for the extension of the Pit 1 expansion and the footprint of the pipeline;
- Stripping and stockpiling topsoil and sub-soil and the establishment of a topsoil stockpile area and berms;
- Mining of the Pit 1 expansion area (Including blasting);
- Erection of the pipeline;
- The development of a maintenance road along the pipeline route;
- Loading, hauling and transportation of RoM, product and materials;

- The dredging, excavation and moving of soil, sand and rock from the non-perennial streams for the erection of the pipeline;
- Erection of pipe racks and culvert at the stream crossings;
- Operation of storm water control systems; and
- The establishment of construction camps by contractors and the operation of earth moving vehicles and equipment.

### 2.1.1 Objectives of the Environmental Management Programme

The key objectives of the Environmental Management Programme (EMPr) are to:

- Formalise and disclose the programme for environmental and social management;
- Ensure that appropriate environmental management measures and requirements are implemented from the start of the proposed project;
- Ensure compliance to environmental legislation and guidelines which may be local, provincial and/or national;
- Ensure sufficient resources are allocated on the project budget so that the scale of the EMPr related activities are consistent with the significance of project impacts;
- Manage identified impacts;
- To set out the mitigation measures and environmental specifications which are required to be implemented during various phases of the development in order to minimize the extent of environmental impacts, to manage environmental impacts and where possible to improve the condition of the environment;
- Verify environmental performance through information on impacts as they occur;
- Ensure precautions against damage and claims arising from damage are taken timeously;
- Provide feedback for continual improvement in environmental performance; and
- Provide a framework for the implementation of environmental and social management initiatives and indicate the functions and responsibilities of responsible persons.

This EMPr serves as a stand-alone document to be disseminated to, and used by the contractor/s and project managers/supervisors during the construction phase of the project. By its very nature, the EMPr is a dynamic document and updating may be required.

The EMPr has been compiled based on the outcome of work undertaken during the EIA process and represents management commitments of Exxaro once approved by the Competent Authority, whereby the EMPr will be legally binding.

### 2.1.2 The Polluter-Pays Principle

This principle provides for “the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.” The Polluter Pays Principle must be rigorously applied throughout the Construction and Operational Phase of this project.

### 2.1.3 Concurrent Rehabilitation

Concurrent rehabilitation must also be undertaken throughout the Construction Phase of the project with areas that have been impacted on. Rehabilitation should commence as soon as construction is completed in a specific area and not at the end of the construction of the entire project.

# 3 Legislative Requirements

## 3.1 Environmental Management Programme

The EIA application was submitted under the National Environmental Management Act (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations (2014), as amended and the EMPr is thus subject to the requirements of the 2014 EIA Regulations. This EMPr has been developed in fulfilment of these requirements for the construction, operational and decommissioning phases of the project.

The implementation of an EMPr for the proposed activity is a requirement of the NEMA and will be a condition in the Environmental Authorisation (EA), issued by the Competent Authority. As such, failure to comply with this EMPr will constitute an offence and Exxaro and/or their Contractors may be liable for penalties and/or legal action. Therefore, it is important that all responsible parties understand their duties and undertake them with duty and care.

This EMPr should form an integral part of the contract documents, informing the Contractor of his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by the proposed activities associated with the project.

The Contractor should note that obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation. Furthermore, the EMPr is enforceable through additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

It is expected that the Contractor be conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

All prospective contractors must sign the declaration of acceptance of the EMPr, included at the end of this document.

It should be noted that the EMPr is a living document that will be periodically reviewed and updated. As part of on-going implementation, this EMPr will be publicly disclosed during the Stakeholder Engagement Process of this project. An opportunity was offered to participating stakeholders to provide comments for incorporation into the EMPr.

## 3.2 Other Applicable Legislation

Exxaro are responsible for compliance with the provisions for duty of care and remediation of damage in accordance with Section 28 of NEMA and its obligations regarding the control of emergency incidents in terms of Section 30. Accordingly, the Department of Mineral Resources (DMR) must immediately be notified of an incident as defined in subsection 30(1) (a) of NEMA.

Table 3-1 provides an overview of the legislation and respective sections pertaining to the proposed project.

**Table 3-1: Applicable legislation (not limited to)**

| Legislation | Section | Description |
|---|---|---|
| The Constitution (Act No. 108 of 1996) | Chapter 2 | Bill of Rights. |
| | Section 24 | Environmental Rights. |

| Legislation | Section | Description |
|---|---|---|
| National Environmental Management Act (Act No. 107 of 1998) | Section 2 | Defines the strategic environmental management goals and objectives of the government. Applies throughout the Republic to the actions of all organs of state that may significantly affect the environment. |
| | Section 24 | Provides for the prohibition, restriction and control of activities, which are likely to have a detrimental effect on the environment. |
| | Section 28 | The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care. |
| Environment Conservation Act (Act No. 73 of 1989) | Section 19 | Prevention of littering by employees and subcontractors during construction and the maintenance phases of the project. |
| National Environmental Management: Air Quality Act (Act No. 39 of 2004) | Section 32 | Provides provision for the control of dust. |
| | Section 34 | Provides provision for the control of noise. |
| | Section 35 | Provides provision for the control of offensive odours. |
| Occupational Health and Safety Act (Act No. 85 of 1993) | Section 8 | General duties of employers to their employees. |
| | Section 9 | General duties of employers and self-employed persons to persons other than their employees. |
| Hazardous Substances Act (Act No. 5 of 1973) | Act | Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances. |
| National Environmental Management: Waste Act (Act No. 59 of 2008) | Act | Provides for specific waste management measures (disposal and storage) and the remediation of contaminated land. |
| Fertilizers, Farm Feeds Agricultural Remedies and Stock Remedies Act (Act no. 36 of 1947). Regulation R 732 | Act | Provides for the regulation of manufacture and distribution of fertiliser. |

# 4 Qualifications of the Environmental Assessment Practitioners

Table 4-1 provides information on the compilers of this document and their related experience.

**Table 4-1: Compilers of the EMPr**

| Name | Qualifications | Years of Experience |
|---|---|---|
| Manda Hinsch | BSc (Hons), Water Utilisation (1983) Pr.Sci.Nat. | 34 years |
| Andrew Caddick | B.Sc. (Hons), M. Geography and Environmental Management. Pr Sci Nat. | 9 years |

This EMPr was prepared by Andrew Caddick and reviewed by Manda Hinsch. Ms Manda Hinsch is a Partner at SRK, with 35 years' experience in the environmental industry. Ms Manda Hinsch is appropriately qualified and registered with the relevant professional bodies as a Professional Natural Scientists (Pr.Sci.Nat. 400164/09) with the South African Council of Natural Scientific Professions and has extensive experience in compilation, implementation, amendment and assessing environmental compliance of a diverse set of EIA's and EMPrs in terms of the NEMA.

Mr Andrew Caddick holds a Master's degree in Geography and Environmental Science. He is an environmental scientist at SRK with 8 years' experience in the environmental field. His experience lies in the management of EIA and EMPr processes, coordination and execution of stakeholder engagement, and management of multi-disciplinary project teams, mainly for mining related projects. He is also involved in conducting EMPr audits and site assessments. Mr Andrew Caddick is appropriately qualified and registered with the relevant professional bodies as a Professional Natural Scientists (Pr.Sci.Nat. 400021/156) with the South African Council of Natural Scientific Professions.

The curriculum Vitae of the project team can be found in Appendix A of the EIA.

# 5 Impact Management Outcomes

The section provides a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated.

## 5.1 Pre-Construction

- Increase local employment.
- Reduce the impacts on local cultural sense of place.
- To minimise social pathogens and unhealthy behaviour.
- To prevent a significant increase in alien invasive species abundance and spread and to prevent habitat fragmentation with specific reference to the proposed pipeline.
- Prevent erosion, sedimentation, surface water contamination and reduction in water quality.
- Conserve species of conservational concern, and reduce impacts arising from insufficient rehabilitation.
- Prevent the destruction of wetland habitats and conserve the biological structure of wetlands.
- Reduce impacts following pre-construction.
- To minimise visual disturbance and sense of place.
- Minimise land use alternation and soil erosion.
- Protection of archaeological, historical and any other site or land considered being of cultural value.
- Reduce Green House Gas emissions.

## 5.2 Construction

- Protect social - economic environment of local land users.
- To prevent a significant increase in alien invasive species abundance and spread.
- To minimise loss of floral habitat.
- Improve on local economy through utilisation of local resources.
- To minimise loss of floral biodiversity.
- Prevent groundwater contamination.
- Protect surface water flow, water quality and associated pollution.
- Conserve water usage during construction.
- Ensure adequacy clean and dirty water separation.
- Prevention of sedimentation of local streams as a result of erosion.
- Minimise loss of water to the catchment.
- Protection of floral habitats and diversity
- Reduce impacts on faunal ecological integrity through curbing erosion and poaching.
- Ensure adequate planning to prevent habitat destruction.
- Protection of Wetland Habitat and wetland ecological structure.

- Protect hydrological functioning of the wetland systems.
- Minimise emissions to the atmosphere affecting employees, local land users, and climate change.
- Minimise impacts on infrastructure and land occupiers during blasting activities.
- Prevent soil contamination and ensure rehabilitation of contamination.
- Minimise loss of land capability and enhance rehabilitation.
- Prevent destruction of graves.
- Conserve heritage artefacts and buildings.
- Reduce greenhouse gas emissions.
- To minimise cumulative loss of natural vegetation in the region.

## 5.3 Operation

- Protect social - economic environment of local land users.
- Prevent negative social impacts on the health and safety of land users and employees.
- Improve the local financial capital for local communities and landowners.
- To prevent a significant increase in alien invasive species abundance and spread.
- Prevent groundwater contamination.
- Protect surface water flow, water quality and associated pollution.
- Ensure effective and reliable clean and dirty water separation.
- Prevent water wastage and impact on water resources.
- Ensure effective and reliable clean and dirty water separation.
- Prevent siltation of watercourses.
- Protection of floral habitats and diversity.
- Protection of Wetland Habitat and wetland ecological structure.
- Minimise change and effectiveness of wetland service provision.
- Protect hydrological functioning of the wetland systems.
- Prevent soil contamination and ensure rehabilitation of contamination.
- Minimise loss of soil resources.
- Minimise loss of agricultural land.
- Prevent soil sterilisation and contamination.
- Prevent destruction of graves.

## 5.4 Rehabilitation after Closure

- Implement closure actions to reduce closure risks to the planned residual risk timeously;
- Decommission all surface infrastructure that has no beneficial post-closure use.

- Identify potential post-closure uses of the land occupied by mine infrastructure in consultation with the surrounding landowners and land users and then rehabilitate disturbed land to a state that is suitable for its post-closure uses.
- Rehabilitate disturbed land to a state that facilitates compliance with applicable environmental quality objectives (air quality objectives and water quality guidelines).
- Implement water management measures to limit the potential impact, decant has on receiving water bodies.
- Reduce the visual impact of the site through rehabilitation of all disturbed land.
- Rehabilitation that results in landforms that emulate the surroundings and would facilitate drainage.
- Rehabilitate all disturbed land to a state where post-closure management is minimised.

# 6 Approach to Environmental Impact Management

The responsibility of the EMPr implementation will ultimately reside in the Project Management Team of the proposed Pit 1 expansion and construction of the water pipeline.

The sections that follow outline the management cycle and responsibilities of the Project Management Team. Table 6-1 illustrates the range of approaches to be undertaken to manage potential project activities.

**Table 6-1: Approach to Impact Management**

| | |
|---|---|
| Avoidance | Avoiding activities that could result in adverse impacts and/or resources or areas considered sensitive. |
| Prevention | Preventing the occurrence of negative environmental impacts and/or preventing such an occurrence having negative impacts. |
| Preservation | Preventing any future actions that might adversely affect an environmental resource. |
| Minimisation | Limiting or reducing the degree, extent, magnitude or duration of adverse impacts through scaling down, relocating, redesigning and/or realigning elements of the project. |
| Mitigation | Measures taken to minimise adverse impacts on the environment. |
| Enhancement | Magnifying and/or improving the positive effects or benefits of a project. |
| Rehabilitation | Repairing affected resources, such as natural habitats or water resources. |
| Restoration | Restoring affected resources to an earlier (possibly more stable and productive) state, typically ‘background’ or ‘pristine’ condition. These resources may include soils and biodiversity. |
| Compensation | Compensating for lost resources, and where possible, the creation, enhancement or protection of the same type of resource at another suitable and acceptable location. |

## 6.1 Organisational Structure and Responsibilities

In order to plan, construct and operate the proposed project it is important that all parties understand their duties and responsibilities. Exxaro and their contractors will be responsible for the construction of the proposed project and ensure that all activities undertaken by Exxaro are undertaken in compliance with the project’s EA and EMPr. Exxaro will monitor construction activities at a frequency, which will be determined by the construction schedule. The following sections describe the functions of the key team members.

### 6.1.1 Exxaro

Exxaro will be responsible for:

- Ensuring that all team members are aware of their roles and responsibilities;
- Taking overall responsibility for all activities that occur in the proposed project and associated infrastructure;
- Ensuring that all commitments/conditions contained in the EA and EMPr are communicated and adhered to by Exxaro employees to all team members and contractors.

During the ***construction phase*** Exxaro must:

- Appoint a Project Management Team to oversee the Contractor and act as a liaison between the Environmental Control Officer (ECO) and the Contractor;
- Ensure that the Contractor is aware of and adheres to the provisions of this EMPr;
- Ensure that the Contractor remedies problems timeously and to the satisfaction of the authorities;
- Appoint an independent and suitably qualified ECO to ensure that the Contractor abides by the EMPr;
- Ensure that an independent ECO audits the site to ensure compliance with the respective environmental legislation by parties.

During the ***operation phase*** Exxaro must:

- Ensure that the Project Management Team oversees the Contractor/s and act as a liaison between the ECO and the Contractor/s;
- Ensure that the Contractor is aware of and adheres to the provisions of this EMPr;
- Ensure that the Contractor remedy problems timeously and to the satisfaction of the authorities;
- Ensure that an independent ECO audits the site to ensure compliance with the respective environmental legislation by parties.

During ***decommissioning phase*** Exxaro must:

- Ensure that the Project Management Team oversees the Contractor/s and act as a liaison between the ECO and the Contractor/s;
- Ensure that the Contractor is aware of and adheres to the provisions of this EMPr;
- Ensure that the Contractor remedy problems timeously and to the satisfaction of the authorities;
- Ensure that an independent ECO audits the site to ensure compliance with the respective environmental legislation by parties.

### 6.1.2 Operations Manager

The Operations Manager will report to the Exxaro and be responsible for:

- Complying with the EMPr and EA commitments and any other legislative requirements as applicable to their workings;
- Adhering to any instructions issued by the project manager on advice of the ECO.

### 6.1.3 Contractor (including Sub-Contractors)

The Contractor (including Sub-Contractors) will report to the Project Management Team and be responsible for:

- Appointing an Environmental Representative who will ensure that all construction activities on site are undertaken in accordance with the EMPr ;
- Drafting Environmental Method Statements to mitigate environmental impacts;
- Informing all employees and sub-contractors of their roles and responsibilities in terms of the EMPr ;
- Ensuring that all employees and sub-contractors comply with this EMPr;
- Complying with the EMPr and EA commitments and any other legislative requirements as applicable to their workings;
- Adhering to any instructions issued by the project manager on advice of the ECO;
- Submitting an environmental report at identified site meetings on the environmental incidents that have occurred within the period before the site meeting;
- Arranging that all employees and those of the subcontractors receive appropriate training prior to the commencement of construction, taking cognisance of this EMPr and EA.

The Contractor has a duty to demonstrate respect and care for the environment in which they are operating. The Contractor will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the EMPr, environmental regulations and relevant legislation.

### 6.1.4 Environmental Control Officer

The ECO will report to Exxaro and the ECO shall be an independent qualified environmental professional with the relevant environmental expertise and shall be responsible for:

- Fully understanding the commitments in the EMPr and EA ;
- Ensuring that the EA conditions are upheld;
- Familiarising him / herself with the project and EMPr, and ensuring compliance with the relevant legislation applicable to the project and Exxaro Safety Health and Environmental Policy and procedures;
- Advising management on environmental issues and recommendations for the proposed development;
- Informing key, on-site staff through initial environmental awareness briefing of their roles and responsibilities in terms of the EMPr;
- Communicating the contents of the EMPr and EA to the contractor and sub-contractor staff members. Training will be required to ensure all staff members are aware of the requirements of the EMPr;
- Liaising with environmental statutory bodies, including but not limited to, DMR and DWS, where deemed necessary;
- Monitoring the implementation of the EMPr and EA throughout the project, by means of site inspections and meetings;
- Arranging for liaison with Interested and Affected Parties (I&AP)s on environmental issues of concern;
- Authorising the removal of personnel and / or equipment should they contravene the conditions of the EMPr and EA;
- Compiling a checklist of areas of non-compliance;

- Identifying areas of non-compliance, and recommending measures to rectify them in consultation with Exxaro and the Contractor;
- Ensuring follow-up and resolution of all non-compliance;
- Compiling monthly progress reports for submission to the Project Manager and DMR;
- Reporting directly to Exxaro;
- Reviewing and approving Environmental Method Statements submitted by the contractor to mitigate environmental impacts;
- The audit report will be submitted to the Contractor for comment prior to submission to the Exxaro;
- Undertaking a post-construction inspection, which may result in recommendations for additional clean-up and rehabilitation measures; and
- Undertaking regular site inspections to assess compliance with the EMPr and EA and take appropriate action to rectify non – conformances.

### 6.1.5 Safety, Health and Environmental Representative

The Safety, Health and Environmental Representative will report to Project Management Team and be responsible for:

- Ensuring that all environmental and health and safety conditions are undertaken by all staff and contractors on site;
- Overseeing all work done by the ECO; and
- Ensuring that corrective actions are followed up and closed out.

# 7 Lifecycle of the Project

The project will be undertaken in the following phases:

## 7.1 Pre-Construction and Construction

It must be noted that no significant biophysical, social or cultural impacts are envisaged during the pre–construction phase. The construction phase will be temporary in nature. These activities will include, but not be limited to the following:

- Construction and ground preparation for the planned Pit 1 expansion and water pipeline;
- Construction and maintenance of stormwater control measures;
- Contractor camp establishment;
- Stockpiling of topsoil for the pipeline construction as well as for the Pit 1 expansion;
- Trench excavations for the pipeline;
- Laying of the pipeline;
- Backfilling of trenches associated with the pipeline;
- Preparation of mining activities associated with the Pit 1 Expansion;
- Vegetation clearing of the construction footprint;
- Demarcating no-go areas.

## 7.2 Operation

During the operational phase, the following main activities will take place:

- Mining of Pit 1 expansion area;
- Water and storm water management;
- Maintenance of existing and new infrastructure;
- Pumping of water from Dorstfontein East to Dorstfontein West;
- Maintenance of topsoil stockpiles;
- Machinery movement during mining activities;
- Blasting as part of the mining methodology.

## 7.3 Decommissioning

The main activity that will take place during this phase of the project is the demolition and removal of mining related infrastructure. The potential impacts associated with demolition activities are similar to the anticipated impacts to occur during the construction phase. The following activities will be associated with the demolition of majority of the project related Infrastructure:

- Demolish and remove all infrastructure not required post-closure;
- Depending on the material used for the pipe construction (preferably inert material) and the depth of the pipeline underground (more than 500 mm), the pipeline will remain in situ, as long as the end land use objectives can still be obtained.

## 7.4 Closure

The closure phase will pose a number of issues that will need to be addressed following the decommissioning of the proposed project. The following impacts are envisaged during the closure phase:

- Controlling decant water from the mining operations;
- Managing and monitoring the water quality from the decant water and groundwater seepage.

# 8 Checking and Corrective Action

Checking and implementing corrective action, should it be required, forms an important component of the EMPr management cycle. These ensure that:

- The required EMPr management conditions are being implemented;
- The desired outcomes are being achieved;
- Ongoing inspections of operational controls and general state of operation;
- Internal audits to assess the compliance to the EMPr or to focus on a particular performance issue.

Many potential impacts are difficult to monitor quantitatively, such as waste management. However, an ongoing, but pragmatic, inspection regime must be developed that allows potential environmental transgressions to be identified proactively so that mitigation can be quickly and effectively implemented.

There are several mechanisms for implementing corrective action both during construction and operational phases. The main instruments used to address non-compliances are the following:

- Verbal instructions – Minor transgressions from an established procedure;
- Written instructions – Normally following an audit; and
- Contract Notice – Following a breech in contract.

## 8.1 Site Documentation and Reporting

All non-conformances will be recorded and reported to the responsible personnel. These non-conformances will be rated according to a developed weighting system to determine the significance of each incident.

The following documentation will be required on site:

- Complaints Register;
- Environmental Incident Register;
- Disposal certificates of waste and sewage generated as a result of the proposed project;
- Non – conformance reports;
- Written corrective action instructions;
- EA;
- EMPr.

The findings of all inspections and internal audits will be structured into instructive reporting providing information to all responsible personnel. Corrective actions must be clearly defined where required. Within the reporting function, a structured review component will be enforced. This review function will assist in prescribing necessary corrective actions.

## 8.2 Monitoring

All programmes and plans forming part of this document will be subject to monitoring. Monitoring will have two elements, namely: routine monitoring against set standards or performance criteria, and periodic review or evaluation. This will focus on the assessment of the effectiveness of the plan or programme.

During the construction phase, the Project Management Team will be responsible for monitoring and inspecting contractors' written records to illustrate compliance with the EMPr. This compliance monitoring is to verify that the responsible parties are adhering to the procedures, management conditions, and specifications contained in this EMPr.

Exxaro will conduct internal audits. Table 8-1, Table 8-2, and Table 9-1 describe the monitoring requirements and general environmental management measures for the proposed project.

## 8.3 General Requirements during Construction

The general requirements during construction are to:

- Ensure proper and continuous liaison between Exxaro and the contractor to ensure that all parties are informed at all times;
- A physical access plan to the construction area (and camp, if to be established) must be compiled and the contractor must adhere to this plan at all times;
- Ensure that the contractor adhere to all conditions of the EA and EMPr for the proposed project;

- Compile an emergency response plan, summarising steps to take in case of emergency (i.e. major hydrocarbon spills);
- Documentation and record keeping of all complaints/incidents and actions taken;
- Document retention for the disposal of waste to landfill, or alternative disposal/re-use;
- Regular site inspections and control over the construction process throughout the construction period; and
- The Contractor shall not be released from site until the Project Manager has signed off the release documentation and is satisfied with the contractor's adherence to the EMPr and EA.

**Table 8-1: General Environmental Management**

| Element | Management Plan |
|---|---|
| Objectives | • All personnel involved in the construction, operation and maintenance of the proposed project need to be made aware of the EMPr;<br>• All personnel involved in the operation and maintenance of the proposed project will be made aware of the environmental consequences of their individual actions, and in a position to minimise the environmental impact of their activities, particularly with respect to potential land, wetland, surface water and groundwater contamination, air emissions, human accidents and waste management of materials removed from the site;<br>• Roles and responsibilities need to be clearly defined to effectively implement the environmental management procedures. |
| Sources | • Materials handling, storage, and processing leading to the generation of wastes or emissions and discharges to air, land or water. |
| Action/Controls | • Exxaro is ultimately responsible for environmental management and costs associated with such management and possible environmental remediation where the case of the incident is not attributed to the contractors responsibility;<br>• Exxaro is responsible to enforce the implementation of the EMPr by its employees;<br>• All contractors are responsible for the implementation of the EMPr as applied to their specific activities;<br>• Exxaro workforce and any contractors, are to undergo an environmental induction covering the EMPr and roles and responsibilities with respect to environmental management;<br>• All workers that have completed the induction should sign that they have understood and will implement the measures required. |
| Monitoring | • Exxaro Safety and Environmental Representative shall be responsible for adequate monitoring of construction activities to ensure compliance with the EMPr. |
| Corrective Actions/Reporting | • All incidents that occurred on site are to be recorded in an Incident Register, which will be made available to the Authorities should they request it;<br>• Exxaro shall implement preventive and corrective actions if necessary in accordance with the requirements of the EMPr, outcomes of environmental audits, and changes to legislation as they may occur from time to time, and report on environmental incidents that may occur on site in accordance with the requirements of the EMPr and environmental legislation to Exxaro management responsible for the site. |

**Table 8-2: Environmental Monitoring**

| Element | Management Plan |
|---|---|
| Objective | • To monitor compliance with the EMPr and EA;<br>• To monitor the effectiveness of management measures stipulated in the EMPr. |
| Sources | • Work performed on the site that may affect the environment. |

| Element | Management Plan |
|---|---|
| Actions/Controls | • Appropriate frequency (weekly) checks during normal operation of the site, to ensure no environmental risks are present as a result of operations/activities and/or tasks;<br>• Appropriate frequency records during normal operation of the site of activities/task undertaken;<br>• Records of waste removed from the site, or placed in storage for removal, during all phases of the development, and appropriate frequency records during normal operation of the facility. |
| Monitoring | • Internal audits by Exxaro are to be undertaken to monitor compliance with the EMPr during operation and closure phases of the proposed project;<br>• Internal audits by Exxaro are to be undertaken to identify any potential risk that may be arising and to promote preventive maintenance and risk reduction as may be required. |
| Corrective Actions/Reporting | • Should non–compliance with the EMPr be identified, corrective measures should be taken to ensure compliance. |

# 9 Specific Water and Environmental Management Requirements

This section of the EMPr deals with key impacts associated with all phases of the project. All activities to be managed, mitigation and management measures to be implemented, and the responsible individuals/organisations who should implement these measures, are detailed in sub-sections which follow. This information forms the core of this EMPr and should be adhered to at all times. The sub-sections, which follow, may be updated as necessary.

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**Table 9-1: Environmental Management Measures for the Proposed Pit 1 Expansion and Water Pipeline**

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | Mitigation Measure and Management Measures | Timeframe | Executing Party | Monitoring Party | |
| Ensure contractors are aware of the required management measures stipulated in the EMPr. | 1. | This EMPr must form part of the contractual agreements with the specific contractors. | Once-off | Project Manager | Contractor | Pre-Construction |
| Ensure all construction staff is familiar with the Environmental Awareness Plan. | 2. | The contractor is expected to have safety “tool box” talks in accordance with the risks and trends associated with the project. Proof of these talks shall be kept on site. | Daily | Contractor | ECO | Pre-Construction , Construction and Decommissioning |
| | | The contractor will develop a specific emergency procedure and plan. | Once off | Contractor | ECO | Pre-Construction |
| Increase employment opportunities. | 3. | Identify opportunities for the employment /procurement and training of people and contractors from the local area. | Once-off | Contractor | Project Manager | Pre-Construction and Decommissioning |
| | 4. | Develop a recruitment and training strategy that the main construction contractors will have to adhere to. | Once-off | Contractor | Project Manager | Construction and Decommissioning |
| | 5. | Monitor implementation of local recruitment and training strategies, including monitoring of corruption and nepotism. | Once-off | Contractor | Project Manager | Pre-Construction, Construction and Decommissioning |
| | 6. | Employ and train the youth and females where possible. | Once-off | Contractor | Project Manager | Pre-Construction, Construction and Decommissioning |
| | 7. | Communication with locals regarding job opportunities and skills requirements to manage expectations. | Once-off | Contractor | Project Manager | Pre-Construction, Construction and Decommissioning |
| | 8. | Procurement of suppliers must be as per the SLP and Exxaro policy and standards. | Once-off | Contractor | Project Manager | All Phases |
| Minimise social pathogens and unhealthy behaviour. | 9. | Ensure a grievances procedure is in place for local people to log grievances. | Prior to Construction | Project Manager | Exxaro Operations | Pre-Construction, |
| | 10. | Implement local recruitment and training strategies and policies, and clearly communicate these locally through relevant authorities and media. | Prior to Construction | Project Manager | Exxaro | All Phases |
| | 11. | Do not recruit informally at the gate but follow a formal recruitment process. | Daily | Project Manager | Exxaro | All Phases |
| | 12. | Make use of local accommodation for workers, as opposed to a construction camp where feasible. | Prior to Construction | Project Manager | Exxaro | Pre-Construction, |
| | 13. | Inform Exxaro employees and neighbouring landowners and inhabitants about local recruitment strategies and policies, and give regular updates. | When needed | Project Manager | Exxaro | Pre-Construction, |
| | 14. | Monitor the surrounding area for illegal informal settlement and develop a strategy to deal with illegal settlement. | Prior to Construction | Project Manager | Exxaro | Pre-Construction, |
| | 15. | Ensure that all contractors and their employees attend inception training, addressing Exxaro standards and requirements, Exxaro Safety Health and Environmental policies, relevant South African regulations, the environmental management plan, and recruitment strategies. | Prior to Construction | Project Manager | Exxaro | All Phases |
| Protect social - economic environment of local land users. | 16. | Where possible, pipeline infrastructure should be located as far away from private infrastructure as possible. | Monthly | Contractor | ECO | Pre-Construction and Construction |
| | 17. | Where possible, pipeline infrastructure should run along existing farm and regional roads to avoid disturbing rural/agricultural features. | Monthly | Contractor | ECO | Pre-Construction and Construction |
| | 18. | Where possible, allow surface farmers to continue farming activities despite pipeline presence. | Daily | Contractor | ECO | Pre-Construction and Construction |
| | 19. | Inform Exxaro employees and neighbouring landowners and inhabitants about operation activities (specifically for blasting). | Monthly | Exxaro | Exxaro | Operation |
| Minimise loss of agricultural land and crop yields. | 20. | Timeous communication with farm leaser on open pit expansion land to give sufficient notice as to when construction will commence so he/she may plan accordingly. | Prior to Construction | Project Manager | ECO | Pre-Construction and Construction |
| | 21. | Disbursement of agreed upon compensation package for loss of portion of the farmers potential harvest, or compensation for the entire. | Prior to Construction | Project Manager | ECO | Pre-Construction and Construction |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | Mitigation Measure and Management Measures | Timeframe | Executing Party | Monitoring Party | |
| Minimise damage caused by blasting activities. | 22. | Alert adjacent land owners of construction blasting activities and times in a timeous manner. | Prior to each blast | Project Manager | ECO | Pre-Construction, Construction, and Operation |
| | 23. | Ensure requirements for human health and safety relating to blasting are adhered to avoid unnecessary damage to infrastructure and/or crops. | During each blast | Project Manager | SHE Representative | Pre-Construction, Construction, and Operation |
| | 24. | Stakeholder engagement channels and grievance procedure mechanisms need to be developed prior to construction and need to be ongoing and frequent. | Prior to construction | Project Manager | ECO | Pre-Construction, Construction, and Operation |
| Prevent groundwater contamination. | 25. | All spillages will need to be cleaned up as soon as practically possible. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 26. | Proper management of stormwater drainage infrastructure should be ensured. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 27. | Maintain construction vehicles and encourage contractors to report, react and manage all spills and leaks so that action can be taken to immediately minimise contamination to the groundwater. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 28. | Employees will report spillages as soon as they are discovered and the spillages will be cleaned up immediately. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 29. | Grouting and capping of boreholes located within the footprint of construction activities be required prior to construction activities | Prior to construction | Contractor | ECO / SHE Representative | Pre-Construction |
| | 30. | Groundwater monitoring of boreholes should continue as per the WUL and approved monitoring programme | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 31. | Spill kits will be made available in areas of likely spillage. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 32. | All hydrocarbon storage containers will be stored within a bunded areas which are water tight and able to contain 110% of the stored volume. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 33. | All equipment utilising hydrocarbons will be stored on a hard standing surface. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 34. | Should privately owned boreholes be affected surrounding the Pit 1, Exxaro will supply the owners with potable water for domestic use. | Quarterly | Exxaro | Project Manager | Operation, Decommissioning. |
| Rehabilitate mining areas. | 35. | All mined areas should be flooded as soon as possible to bar oxygen from reacting with remaining pyrite. | As soon as possible following operation. | Contractor | ECO / SHE Representative | Decommissioning |
| | 36. | The final backfilled opencast topography should be engineered such that runoff is directed away from the opencast areas. | Following operation | Exxaro | SHE Representative | Decommissioning |
| | 37. | The final layer (just below the topsoil cover) should be as clayey as possible and compacted if feasible, to reduce recharge to the opencasts. | Following operation | Exxaro | SHE Representative | Decommissioning |
| | 38. | Surface water monitoring of the streams will be essential. | Following operation | Exxaro | SHE Representative | Decommissioning |
| | 39. | Quarterly groundwater sampling should be done to establish a database of plume movement trends, to aid eventual mine closure. | Following operation | Exxaro | SHE Representative | Decommissioning |
| | 40. | The drilling of boreholes into mining areas is recommended so that recovery of water in mining areas can be monitored. | Following operation | Exxaro | SHE Representative | Decommissioning |
| Minimise AMD potential. | 41. | Limiting the amount of water entering the voids left by the mined out areas can be achieved by replacing spoils in such a manner as to be free-draining and preventing the collection and pooling of water on rehabilitated mined land and thus reducing the volumes of water infiltrating into the old box cut. | Following operation | Exxaro | SHE Representative | Decommissioning |
| | 42. | An impermeable or partially permeable layer should be recreated at variable depth within the rehabilitated landscape. | Following operation | Exxaro | SHE Representative | Decommissioning |
| | 43. | Treating of decanting mine water to acceptable water quality levels can be achieved by the installation of a treatment plant. Exxaro must continue with the investigations to the most effective way to possibly treat water on site if needed at the end of LoM. | Following operation | Exxaro | SHE Representative | Decommissioning |
| Prevent erosion and sedimentation. | 44. | Construct in the dry season and install silt bunds. | Monthly | Contractor | ECO | Pre-Construction and Construction |
| | 45. | Erosion control measures will be implemented as soon as erosion has become evident. Water velocity will be reduced as far as feasible. | Monthly | Contractor | ECO | Pre-Construction and Construction |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | **Mitigation Measure and Management Measures** | **Timeframe** | **Executing Party** | **Monitoring Party** | |
| | 46. | All litter and debris will be continuously removed during construction. | Monthly | Contractor | ECO | Pre-Construction and Construction |
| | 47. | Erosion can be limited by ensuring that mine vehicles and human movement is limited to project specific dedicated access ways. | Monthly | Contractor | ECO | All Phases |
| | 48. | To prevent the erosion of top soils, management measures may include berms, soil traps, hessian curtains and stormwater diversion away from areas susceptible to erosion. It must be ensured that topsoil stockpiles are located outside of any wetland and riparian areas and areas susceptible to erosion. Stockpiles should be placed away from areas known to contain hazardous substances such as fuel and if any soils are contaminated, it should be stripped and disposed of at a registered hazardous waste dumping site. | Monthly | Contractor | ECO | All Phases |
| Prevent surface water contamination and reduction in water quality. | 49. | Operate using best practises by storing hazardous substances in an adequately sized bunded area, with appropriate safety equipment. | Monthly | Contractor | ECO | Construction |
| | 50. | Place spill kits on site which are operated by trained staff members for the *adhoc* remediation of minor chemical and hydrocarbon spillages. | Monthly | Contractor | ECO / SHE Representative | Construction and Decommissioning |
| | 51. | Access to the construction site will be controlled. | Daily | Contractor | ECO / SHE Representative | All Phases |
| | 52. | Refuelling areas will be bunded and nozzles protected from spillage during refuelling. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 53. | Vehicular access to the stream will be restricted. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 54. | Proper management of stormwater drainage infrastructure should be ensured. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 55. | Hazardous substances stored on site will be stored within a designated bunded areas fitted with a sump and value. Collection of water within the bunded areas will be deemed hazardous and disposed of as such.. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 56. | Bunded areas will be water tight and inspected for leaks on a frequent basis. Leaks to the bunded areas will be rectified as soon as possible. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 57. | Drip trays will be utilised for the collection of leaks from vehicles and machinery parked for long period of time. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 58. | Should a spill occur, this will be handled at the source of the leak and prevented from transpiring to nearby watercourse. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 59. | Ensure that routine maintenance on all vehicles is undertaken as per maintenance schedule and records are kept. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 60. | Sewage spillages will be seen as hazardous waste and will be handled as such. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 61. | Frequent monitoring of the pipeline should be done to ensure leakages are identified and repaired timeously. | Monthly | Exxaro | SHE Representative | Operation |
| | 62. | Runoff from compacted and built-up surfaces should be slowed down by the strategic placement of berms. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| Ensure adequate clean and dirty water separation. | 63. | Construct diversion drains around the site timeously prior to operation. | Prior to Construction | Contractor | ECO / SHE Representative | Construction and Operation |
| | 64. | Ensure adherence to GNR 704 of the NWA. | Prior to Construction | Exxaro | ECO / SHE Representative | Construction and Operation |
| Minimise Turbidity of local streams. | 65. | Construct sediment collection paddocks downstream of the working activities to minimise uncontrolled runoff from the site. | Prior to Construction | Exxaro | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 66. | Minimise the areas that are to be stripped of vegetation. | Monthly | Exxaro | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 67. | Adequate storm water management should be considered in the detailed design of the proposed infrastructure in order to minimize undue erosion. | Prior to Construction | Exxaro | ECO / SHE Representative | Construction and Operation |
| | 68. | Stormwater runoff will be directed towards natural watercourses. | Weekly | Exxaro | ECO / SHE Representative | Construction and Operation |
| | 69. | The point where the diversion re-enters the natural system must enter the system at the same elevation as the receiving aquatic environment as well as consist of an energy dissipation structures thereby preventing erosion and incision of the natural watercourse. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | **Mitigation Measure and Management Measures** | **Timeframe** | **Executing Party** | **Monitoring Party** | |
| | 70. | The point where the diversion re-enters the natural watercourse must enter the system where possible at an acute angle to prevent the creation of turbulent flow, erosion and incision. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| Prevent surface water contamination through ineffective waste management and housekeeping. | 71. | Waste will be disposed of in accordance to the waste management procedure. Monthly volumes of water will be measured and reported to Exxaro. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 72. | Housekeeping will be kept up to standard. Housekeeping should be done after every shift. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 73. | A waste management plan will be compiled and approved for implementation of site. This management plant should focus on the waste hierarchy of the NEM:WA. | Prior to Operation | ECO / SHE Representative | ECO / SHE Representative | Pre-Construction, Construction, and Operation |
| | 74. | No waste may be disposed of to land without the necessary legal permits. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 75. | Waste will be removed from site by an accredited waste removal company and legally disposed of. Disposal certificates will be kept on site for audit purposes. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| | 76. | Sufficient waste receptacles will be placed around the site allowing the separation of waste at source. | Monthly | Contractor | ECO / SHE Representative | All Phases |
| Conserve Species of Conservational Concern. | 77. | Should any floral or faunal SCC be encountered within the linear development during the construction phase, the following should be ensured:<br>- Effective relocation of individuals to suitable similar habitat in the vicinity of the linear development must be ensured.<br>- All rescue and relocation plans should be overseen by a suitably qualified specialist. | Monthly | Contractor | ECO / SHE Representative | Construction |
| | 78. | It is recommended that site clearing takes place in a phased manner to allow for any faunal species present to move away from the linear development. | Monthly | Contractor | ECO / SHE Representative | Construction |
| | 79. | Avoid placement of the linear development within the sensitive wetland habitat unit. | Monthly | Contractor | ECO / SHE Representative | Construction |
| | 80. | Avoid placement of the linear development within the sensitive wetland habitat unit. If this is unavoidable, wetland crossing are to be made at an acute angle to the wetland, and where possible directional drilling is to be used, running the pipe below the wetland surface whilst avoiding any excavation activities directly within the wetlands themselves. | Monthly | Contractor | ECO / SHE Representative | Construction |
| | 81. | Restrict vehicles to travelling only on designated roadways to limit the ecological footprint of the proposed development activities. | Monthly | Contractor | ECO / SHE Representative | Construction |
| | 82. | Should new road development be necessary during construction activities, the roads should be ripped and rehabilitated at the end of construction activities. | Monthly | Contractor | ECO / SHE Representative | Construction |
| Reduce impacts arising from insufficient rehabilitation | 83. | Restrict vehicles to travelling only on designated roadways to limit the ecological footprint of the proposed development activities. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 84. | No dumping of waste should take place. If any spills occur, they should be immediately cleaned up. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 85. | No trapping or hunting of any faunal species is to take place. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 86. | A rehabilitation plan must be compiled and implemented at the start of the project. | Prior to Construction | Exxaro SHE Representative | ECO / SHE Representative | Pre-Construction |
| | 87. | Rehabilitation should be conducted concurrently during construction. | Monthly | Contractor | ECO / SHE Representative | Construction |
| | 88. | All soils compacted as a result of construction activities should be ripped and profiled. Special attention should be paid to alien and invasive plant control within these areas. | Following Construction specific activities. | Contractor | ECO / SHE Representative | Construction |
| | 89. | As far as possible, indigenous grassland species, including grasses should be used to revegetate bare areas. It is suggested that species such as *Cynodon dactylon* and *Eragrostis sp* be used for revegetation purposes. | Following Construction specific activities. | Contractor | ECO / SHE Representative | Construction |
| | 90. | Establishment of reintroduced vegetation must be monitored during the operational phase | Monthly | Exxaro | SHE Representative | Operation |
| Protect faunal and floral habitats and diversity. | 91. | Appropriate sanitary facilities must be provided during the construction phase and all waste must be removed to an appropriate waste facility. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 92. | Fertilize and re-vegetate topsoil stockpiles as soon as possible. | Monthly | Contractor | SHE Representative | Operation |
| | 93. | The construction and operational footprint must be kept as small as possible in order to minimise impact on the surrounding environment. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 94. | It is recommended that site clearing take place in a phased manner to allow for any faunal species present to move away from the linear development. | Monthly | Contractor | ECO / SHE Representative | Construction |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | **Mitigation Measure and Management Measures** | **Timeframe** | **Executing Party** | **Monitoring Party** | |
| | 95. | Access paths will be made available for migration of faunal species across the pipeline construction footprint. | Monthly | Contractor | ECO / SHE Representative | Construction |
| | 96. | Areas where pipeline construction has been complete, will be backfilled and rehabilitated as soon as possible to re-establish faunal migration. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation |
| | 97. | All construction must be done in such a manner so as to ensure species migration will take place by ensuring a suitable structure height to allow species to move under or over the pipelines and roads. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation |
| | 98. | Edge effect control needs to be implemented within construction areas, with specific consideration to erosion control and alien floral species management. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation |
| Minimise proliferation of Alien Vegetation. | 99. | Implement an alien plant management and eradication program. | Quarterly | Exxaro | ECO / SHE Representative | Construction and Operation |
| | 100. | Removal of alien vegetation should commence during the construction phase and continue during the operational and decommissioning phases. | Quarterly | Exxaro | ECO / SHE Representative | Construction and Operation |
| | 101. | Care should be taken with the choice of herbicide to ensure that no additional impact or loss of indigenous plant species occur due to the use of the herbicides. | Quarterly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 102. | No vehicles should be allowed to drive through riparian areas during the eradication of alien and weed species. | Quarterly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 103. | Removal of alien and weed species must take place in accordance with existing legislation process and procedures. | Quarterly | Exxaro | ECO / SHE Representative | Construction and Operation |
| Minimise impact on faunal and floral habitats as a result of waste management. | 104. | No dumping of waste should take place. If any spills occur, they should be immediately cleaned up. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 105. | It must be ensured that mining related waste or spillage and effluent do not affect the sensitive habitat boundaries and associated buffer zones or any other surrounding natural habitat. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 106. | In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 107. | No construction-related waste material is to enter wetland or other natural habitats. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| Conserve the ecological and biological structure of wetland habitats. | 108. | Access roads for support vehicles, and vehicles used in the construction of the crossings, should not encroach into the freshwater features | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 109. | Rehabilitation should be conducted in a manner that ensures that the wetland features' conditions are reinstated to as natural a state as possible. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 110. | The wetland features must be rehabilitated immediately after the construction phase. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 111. | During the construction phase of the development, all wetland areas other than the immediate areas of crossing are to be demarcated as no-go areas for vehicles and construction personnel. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| Minimise Wetland Destruction. | 112. | Wetland areas other than the immediate areas of crossing are to be demarcated as no-go areas for vehicles and construction personnel. | Monthly | Contractor | ECO / SHE Representative | Construction and Operation |
| | 113. | Vegetation removal should be kept at a minimum to avoid loss of freshwater features' assimilation and attenuation abilities. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| Minimise Change and effectiveness of Wetland Service Provision. | 114. | In a case where it is impossible to avoid development within the watercourse, it is advisable to minimise the extent and duration of the activities (i.e. during construction, rehabilitation, and the use of less invasive methods such as directional drilling techniques) within the watercourse in order to reduce impacts on the biodiversity and Eco services provision. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 115. | Any storage facilities and all other non-essential activities should be located away from the identified wetlands in order to avoid water and soil contamination, which would affect the structure and function of these resources. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 116. | An annual alien vegetation management plan should be implemented throughout the operational phase of the project. | Annually. | Exxaro | SHE Representative | Operation and Decommissioning |
| Protect the wetlands hydrological functioning | 117. | Rehabilitation should be conducted in a manner that ensures that the wetland features' conditions are reinstated to as natural a state as possible. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 118. | As much vegetation growth as possible should be promoted within the wetland features in order to protect soils. In this regard, special mention is made of the need to prevent the loss of large areas of the freshwater features' vegetation and the use of indigenous vegetation species' where hydro seeding and rehabilitation planting (where applicable) are to be implemented. | Monthly | Contractor | ECO / SHE Representative | Construction, Operation, and Decommissioning |
| | 119. | Flow continuity and connectivity of the freshwater features must be reinstated post- construction activities. | Monthly | Contractor | SHE Representative | Operation |
| | 120. | Regular monitoring of water quality must be implemented in order to ensure the impacts of runoff and decant of water into wetland resources is prevented or minimised. | Monthly | Contractor | SHE Representative | Operation |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | Mitigation Measure and Management Measures | Timeframe | Executing Party | Monitoring Party | |
| Minimise the impact on wetland and riparian habitats. | 121. | No construction of infrastructure may take place within riparian and wetland areas and associated buffer zones unless authorisation is granted by the DWS. | Monthly | Contractor | ECO | Construction |
| | 122. | As far as possible, all mining activity and infrastructure should be excluded from the wetland and riparian areas and associated 100 m buffer zone. | Monthly | Contractor | ECO | Construction |
| | 123. | If this is not possible, pipelines should be designed to cross drainage lines at right angles and be placed outside of the active channels. | Monthly | Contractor | ECO | Construction |
| | 124. | All areas of increased ecological sensitivity should be designated as No-Go areas and be off limits to all unauthorised construction vehicles and personnel. | Monthly | Contractor | ECO | Construction |
| | 125. | All development footprint areas and areas affected by the proposed mining development should remain as small as possible and any disturbance of sensitive habitat must be actively avoided. | Monthly | Contractor | ECO | Construction |
| | 126. | Construction vehicles must remain on demarcated roads and should not encroach into the wetland areas or their associated buffer zones. | Monthly | Contractor | ECO | Construction |
| | 127. | It must be ensured that contractor laydown areas are located outside of wetland and riparian areas and associated 100 m buffer zones and excluded from clearing activities in order to minimise vegetation loss and resultant erosion and sedimentation. | Monthly | Contractor | ECO | Construction |
| Minimise impacts arising from dust generation. | 128. | Regular irrigation by water especially during windy conditions at the site, access road and construction material and debris with just enough moisture to keep the dust down without creating significant runoff. | Monthly | Contractor | ECO | Construction, Operation and Decommissioning |
| | 129. | Should water not be available as a result of drought conditions then chemical suppressants need to be considered. | Monthly | Contractor | ECO | Construction |
| | 130. | Construction material and debris will be kept wet with just enough moisture to keep the dust down without creating undue runoff. | Monthly | Contractor | ECO | Construction |
| | 131. | Volumes of water used for dust suppressant will be monitored monthly. | Monthly | Contractor | ECO | Construction |
| | 132. | A dust-monitoring programme must be implemented that effectively monitors dust related impacts from the project area. | Monthly | Contractor | E ECO/ SHE Representative | Construction and Operation |
| | 133. | When and where applicable, soil stockpiles that will not be used should be re-vegetated as soon as possible, or kept wet during windy periods. | Monthly | Exxaro | SHE Representative | Operation |
| | 134. | Speed limited will be restricted to 40 km/h. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 135. | A continuous PM10 and PM2.5 monitor should be installed at the mine or if possible at sensitive receptors in close proximity to the mine | Monthly | Exxaro | SHE Representative | Operation, and Decommissioning |
| | 136. | Conduct periodic independent audits of monitoring systems and the implementation of management plans to ensure that the system is maintained and that suitable data is obtained for decision-making. | Monthly | Exxaro | SHE Representative | Operation, and Decommissioning |
| Reduce carbon emissions. | 137. | All vehicles and equipment used during the pre-construction phase will be serviced and maintained on a regular basis. | Monthly | Contractor | ECO | Construction |
| | 138. | Where applicable, use a fuel sources with low sulphur content | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 139. | Prohibit unnecessary idling of vehicles. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| Minimise impacts on infrastructure and land occupiers during blasting activities. | 140. | Reduce Charge Mass/Delay over decreasing distance towards POI's of concern. | During each Blast | Exxaro | SHE Representative | Operation and Decommissioning |
| | 141. | Relocate POI's of concern at least 600 m. | Prior to blasting | Contractor | ECO | Construction |
| | 142. | Re-drill boreholes further away which will be impacted on by the blasting activities, should these boreholes be utilised at a later stage. | Prior to blasting | Contractor | ECO | Construction |
| | 143. | Notify all affected parties in advance prior to any blasting activity. | Prior to blasting | Exxaro | SHE Representative | Operation and Decommissioning |
| | 144. | Prior to blasting a 500 m radius must be cleared of people and animals. | Prior to blasting | Exxaro | SHE Representative | Operation and Decommissioning |
| | 145. | Immediate action will take place should thresholds exceed legal requirements for air blast (134 dB) and ground vibration (12.5 mm/s). | During each Blast | Exxaro | SHE Representative | Operation and Decommissioning |
| | 146. | Increase stemming length. | Prior to blasting | Exxaro | SHE Representative | Operation and Decommissioning |
| | 147. | Put in controls for management of stemming lengths. | Prior to blasting | Exxaro | SHE Representative | Operation and Decommissioning |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | Mitigation Measure and Management Measures | Timeframe | Executing Party | Monitoring Party | |
| Reduce Fumes generated during blasting. | 148. | Use the correct products for the blasting activities. | Prior to blasting | Contractor | Blast Foreman | Operation and Decommissioning |
| | 149. | Control the product quality. | Prior to blasting | Contractor | Blast Foreman | Operation and Decommissioning |
| | 150. | Same day charge and blast. | Prior to blasting | Contractor | Blasting Foreman | Operation and Decommissioning |
| Minimise visual disturbance and sense of place. | 151. | Natural vegetation, wherever practical, must be retained on and around the preconstruction sites. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 152. | Cleared areas will be kept as small as possible. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 153. | All lights used for illumination (except for lighting associated with security) should be faced inwards and shielded to avoid light escaping above the horizon. | Quarterly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 154. | Construction activities will have screened from sensitive receptors and rubble removed from site on a regular basis. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 155. | Litter and dust management measures should be in place at all times. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 156. | The sites should be kept neat and tidy at all times. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 157. | On site pre-construction activities will be limited to be undertaken between 6am and 6pm. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 158. | The topsoil stockpile should be vegetated to reduce the visual impact associated with the bare soil. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 159. | External signage should be kept to a minimum, and where possible should be attached to existing buildings. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| Minimise the emission of noise pollution during construction and operation activities. | 160. | Cover the dust source with closely-knit vegetation. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 161. | Keep speed limit below 40 km/h. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 162. | Hauling vehicles with low noise levels to be used and must be maintained in a good order at all times. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 163. | Conduct baseline noise monitoring prior to constriction activities. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 164. | Implement a noise monitoring programme to measure against the baseline noise assessment. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 165. | The project will investigate using equipment and applying technology that results in the generation of less noise than existing equipment and technology. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 166. | Building activities to take place during daytime only. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 167. | Safe blasting methods to be used under controlled conditions. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 168. | The roll over mining method must include the construction of a noise barrier on the north west side of each current pit area using the removed topsoil and stripped overburden. | Prior to Operation | Contractor | SHE Representative | Operation |
| | 169. | It is strongly recommended that the high-pitched alarms be replaced with devices that produce high levels of broadband noise. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation. |
| | 170. | Emergency generators to be placed in such a manner that it is away from residential areas. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | Mitigation Measure and Management Measures | Timeframe | Executing Party | Monitoring Party | |
| Minimise soil erosion. | 171. | Protect the existing topsoil stockpile area from impacts of erosion, compaction and contamination. If necessary, vegetate and/or cover with appropriate and suitable indigenous grass species. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 172. | Maintain vegetation cover on rehabilitated land and topsoil stockpiles. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 173. | Construct soil erosion protection measures should erosion be identified. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| Reduce soil sterilisation | 174. | All vehicles should be serviced on a regular basis at the specific demarcated areas. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| | 175. | Any spillage from vehicles should be cleaned up as soon as possible. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| | 176. | Rehabilitate areas where the planned tasks have been completed. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| | 177. | Topsoil stockpiles should be protected from contamination of waste, waste water and hazardous materials. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 178. | Waste piles should be placed on impervious layer to prevent direct soil contact. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 179. | Excavate and dispose of any contaminated soil at the appropriate landfill as per waste classification. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| Minimise land use alterations. | 180. | Restrict vehicle movement to areas of need. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 181. | Keep stripped soils with vegetative cover intact (after trees have been removed and relocated where applicable in accordance with the relevant permission), and stockpile utilisable soils in accordance to the Soil Conservation Plan. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 182. | All soils compacted as a result of the pre-construction activities falling outside the infrastructure footprint areas should be ripped and profiled. | Monthly | Contractor | ECO | Construction |
| Prevent soil contamination and ensure rehabilitation. | 183. | Existing established roads should be used wherever possible. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 184. | Access roads should be designed with a camber to avoid ponding and to encourage drainage to side drains, where necessary, culverts should be installed to permit free drainage of existing watercourses. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 185. | The side drains of the roads can be protected with sediment traps and/or gabions to reduce the erosive velocity of water during storm events and where necessary geo-membrane lining can be used. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 186. | Losses of fuel and lubricants from the oil sumps and steering racks of vehicles and equipment should be contained using a drip tray with plastic sheeting filled with absorbent material. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |
| | 187. | Using biodegradable drilling fluids, using lined sumps for collection of drilling fluids, recovering drilling muds and treating them off-site, and securely storing dried waste mud by burying it in a purpose-built containment area. | Monthly | Contractor | ECO/ SHE Representative | Construction, Operation, and Decommissioning |

| Objective | No | Monitoring | | | | Project Stage |
|---|---|---|---|---|---|---|
| | | Mitigation Measure and Management Measures | Timeframe | Executing Party | Monitoring Party | |
| Minimise loss of soil resources. | 188. | Instructions must be included in contracts that will restrict construction work and construction workers to the clearly defined limits of the construction site | Monthly | Contractor | ECO | Construction |
| | 189. | Locate all topsoil stockpiles in areas where they will not have to be relocated prior to replacement for final rehabilitation | Monthly | Contractor | ECO | Construction |
| | 190. | Map all stockpile locations | Monthly | Exxaro | ECO/ SHE Representative | Construction and Operation |
| | 191. | Topsoil should never be used as a filling material for roads | Monthly | Exxaro | ECO/ SHE Representative | Construction and Operation |
| | 192. | Height of stockpiles be restricted between of 4 – 5 metres maximum. For extra stability and erosion protection, the stockpiles may be benched | Monthly | Exxaro | ECO/ SHE Representative | Construction and Operation |
| | 193. | Reducing slope gradients as far as possible along road cuts and disturbed areas to gradients at or below the angle of repose of those disturbed surfaces. | Monthly | Exxaro | ECO/ SHE Representative | Construction and Operation |
| | 194. | Use drainage control measures and culverts to manage the natural flow of surface runoff. | Monthly | Contractor | ECO | Construction |
| | 195. | Soils should be loosely packed during stockpiling | Monthly | Contractor | ECO | Construction |
| | 196. | Use recycled grey water from washing facilities to spray un-vegetated areas to combat dust | Monthly | Exxaro | ECO/ SHE Representative | Construction and Operation |
| | 197. | Pipelines will be placed at depths to allow for continuation of the previous land use. | Monthly | Contractor | ECO | Construction |
| Protection of archaeological, historical and any other site or land considered being of cultural value. | 198. | Known sites should be clearly marked in order that they can be avoided during pre-construction activities. | Once off | Contractor | ECO | Pre-Construction |
| | 199. | The contractors and workers should be notified that archaeological sites might be exposed during the construction activities. | Once off | Contractor | ECO | Construction |
| | 200. | Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| | 201. | Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| | 202. | In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by South African Heritage Resources Authority (SAHRA). A heritage official should be part of the team executing these measures. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| | 203. | Maintain a buffer zone of 10 metres during construction and mining phase from the historical power line. | Monthly | Contractor | ECO | Construction |
| | 204. | The contractors and workers should be notified that archaeological sites might be exposed during the construction activities. | Once off | Contractor | ECO | Construction |
| | 205. | Change the trajectory of the proposed pipeline route. If impact cannot be prevented a Phase 2 study is required followed with a destruction permit application from SAHRA | Once off | Contractor | ECO | Pre-Construction |
| | 206. | However, care should be taken that, when development commences, if any archaeological and/or historical sites are discovered, a qualified archaeologist be called in to investigate the occurrence. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| Protection of graves | 207. | Fenced off and install a gate around graves. | Once off | Contractor | ECO | Construction |
| | 208. | Maintain a buffer zone of 100 metres during construction and mining phase form all graves. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| Protection of Palaeontological findings | 209. | If any palaeontological material is exposed during digging, excavating, drilling or blasting, SAHRA must be notified. All development activities must be stopped and a palaeontologist should be called in to determine proper mitigation measures, especially for shallow caves. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| Reduce impacts on topographic character. | 210. | Bush clearance will only take place in designated areas and as minimal as possible. | Once off | Contractor | ECO | Construction |
| | 211. | The construction site will be kept neat, tidy, and free of litter. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| | 212. | Rubble will be removed frequently. | Monthly | Contractor | ECO/ SHE Representative | Construction and Operation |
| Minimise mining waste. | 213. | Mining will be conducted strictly according to the mine plan submitted to the DMR. | Monthly | Exxaro | SHE Representative | Construction and Operation |
| | 214. | Optimally exploit this resource in terms of tonnage of rock mined and cost as provided for in the mine plan. | Monthly | Exxaro | SHE Representative | Construction and Operation |
| Reduce greenhouse gas emissions. | 215. | Plant and machinery will be maintained so that no unnecessary emissions are expelled. | Monthly | Exxaro | SHE Representative | Construction and Operation |
| | 216. | Appropriate technology and machinery will be utilised for the job at hand. | Monthly | Exxaro | SHE Representative | Construction and Operation |
| | 217. | A Green House Gas Emissions assessment will be calculated as part of the initiative to reduce greenhouse gas emissions. | Monthly | Exxaro | SHE Representative | Construction and Operation |
| Minimise cumulative impacts | 218. | Through the implementation of all the above-mentioned mitigation measures, the overall significance of the activity's impact can be lowered to LOW. | Monthly | Exxaro | ECO/ SHE Representative | Construction, Operation, and Decommissioning |

# 10 Environmental Awareness Plan

It is important to ensure that the Contractors and employees associated with the proposed Pit 1 expansion and construction of the water pipeline receive the appropriate level of training and awareness to ensure that continual environmental due diligence and conservation is exercised at all levels of work carried out. Employees, contractors and sub-contractors must be made aware of their responsibilities in terms of relevant legislation, guidelines as well as this EMPr and EA.

Environmental conditions will be included in the contracts issued to the contractors, making them aware of the potential environmental impacts and risks associated with the proposed project. The importance of implementing the conditions in the EMPr and the necessity of good housekeeping practices will be made known to the contractors and employees of Exxaro and the contractors in order to prevent accidental spillages and avoid subsequent environmental impacts.

Training needs will be identified based on the EMPr requirements and capacity of Exxaro employees and contractors. In order to ensure environmental due diligence and protection of environmental harm, it is vital that all employees are trained to perform their designated role in alignment with the EMPr and EA.

## 10.1 Aim of the Environmental Awareness Plan

The aim of the environmental awareness plan is to:

- Promote environmental education and conservation within the working place;
- Inform employees and contractors on the applicable environmental procedures and programmes;
- Provide job specific training on the specification of environmental conservation and protection applicable to the respective construction activities.

## 10.2 Environmental Awareness Training

The training pertaining to the environmental awareness will include the following:

- All personnel (construction and operation staff) will undergo induction, which as a minimum will include Safety, Health and Environmental awareness;
- All attendees will sign an acknowledgement register upon receiving and understanding the induction;
- Environmental risks will be identified together with the specific job training that may be required to address these risks. Construction and operation staff will be trained on the implementation of emergency procedures where relevant.

## 10.3 Content of the Environmental Awareness Training

The environmental awareness training material will include, but not limited to, the following:

- Definitions as stipulated in this EMPr;
- How and why environmental protection is necessary;
- Nature of the proposed project which can affect the environmental status quo;
- Management measures required to prevent environmental impacts;
- Awareness of emergency and spills response procedures;

- Environmental conditions in the induction should focus on the following:
    - Good house-keeping practices;
    - Air pollution control;
    - Waste Management;
    - Erosion and sedimentation control;
    - Heritage conservation;
    - Water resource demand management and conservation;
    - Proper use of sanitation facilities; and
    - Chemicals and materials storage, use and handling.

Environmental training can be done verbally or in written format, depending on the most effective means of training for the target audience. The contents of this EMPr must be included in the training material, and proof of such training kept on record.

# 11 Management Plans

## 11.1 Overview

The following management plans need to be implemented during construction, operation and decommissioning of the proposed project:

- Construction Management Plan;
- Construction Control Plan;
- Soil Management Plan;
- Rehabilitation Plan; and
- Operation Management Plan.

Many of the issues to be addressed in these plans are regulated in existing laws, regulations and guidelines. In addition, it is recognized that the content of several plans will be generic, in the sense that existing procedures are documented in standard code of practice, and that adaption of such generic plans will only be possible as a dynamic process during construction, operation and decommissioning.

Plans presented below, therefore contain specific actions as well as undertakings to prepare additional plans as required prior to the commencement of certain activities during the detailed design phase. Exxaro recognise the need for ongoing development and revision of all plans to ensure their continual improvement.

## 11.2 Construction Management Plan

The construction management plan to be implemented by the contractor shall include the following key measures:

### 11.2.1 Management of Construction Campsite

1. The contractor shall comply will all relevant laws and regulations concerning water provision, sanitation, wastewater discharge and liquid and solid waste handling and disposal. The contractor is referred to the requirements of the NEMA and the NEM:WA and related regulations.
2. The campsite will be access controlled to prevent the access of livestock and local fauna.
3. The contractor shall not locate the campsite, or sanitation facilities, in any areas in which vegetation is pristine, nor within 100 m from any watercourse, unless authorised by a WUL, nor in any area that can cause nuisance or safety hazards to surrounding land users, inhabitants or the general public.
4. The contractor shall at all times carefully consider the machinery required for the desired task while minimizing the extent of environmental damage.
5. The contractor shall keep construction campsites clean and tidy at all times. The contractor shall not leave domestic waste uncontained, and temporary storage shall be enclosed to keep out people and animals. No permanent domestic waste disposal shall be permitted at the campsites. All domestic refuse is to be removed to an existing licensed landfill site.
6. The contractor shall take specific measures to prevent the spread of veld fires, caused by activities at the campsites. These measures may include appropriate instruction of employees about the fire risks and the construction of firebreaks around the site perimeter.

7. The contractor shall prevent accelerated erosion from the construction campsite and shall not discharge polluted runoff into drainage lines or nearby watercourses.
8. All vehicles and plant will be allocated a dedicated parking area in the camp site. Plant still standing for long periods of time will be provided with a drip tray in order to contain any possible hydrocarbon spills. Drip trays will be provided with absorbent material on a permanent basis.
9. Adequate firefighting equipment shall be made available and maintained on site.
10. Decommissioning of the campsite will involve removal of all compacted platforms and slab foundations or as agreed with the land owner.

### 11.2.2 Management of Fuels and other Hazardous Materials

11. The contractor shall comply with all applicable laws, regulations, permits and approval conditions and requirements relevant to the storage, use and proper disposal of hazardous materials.
12. The contractor shall manage all hazardous materials and wastes in a safe and responsible manner, and shall prevent contamination of soils, pollution of water and/or harm to people or animals as a result of the use of these materials.
13. Should hazardous substances contaminate soil, soil will be removed and disposed of at a registered hazardous waste disposal facility.
14. The contractor shall not construct fixed fuel storage or refuel any vehicle or equipment within 100 m from a watercourse or wetland, within a floodplain, or where there is the potential for spilled fuel to enter a watercourse or groundwater. Should it not be possible to establish such facilities outside the 100 m zone, the contractor shall ensure that the necessary precautions to prevent and clean up spillages.
15. The contractor shall enclose all fixed storage.
16. The contractor shall place on – site tools and equipment, such as pumps, compressors, and generators on impermeable sheeting (i.e. polyethylene or other similar materials) to prevent hydraulic fluid or fuel leaks from contaminating soils or groundwater or entering any watercourse or wetland.
17. The contractor shall take all reasonable precautions to prevent fuel and lubricant spills during the course of construction. To this end, the contractor shall ensure that regular audits are performed to verify that no leakage or defective equipment is brought onto site.
18. The contractor shall ensure that there is sufficient spill containment and absorbent material available on site to manage accidental spills. The contractor shall immediately clean up accidental spillages of fuel and oils, or other hazardous substances.

### 11.2.3 Management of the Construction Footprint

19. The contractor shall prevent littering and the random discard of solid waste on the site.
20. The contractor shall manage hazardous waste.
21. The contractor shall minimize the risk of fires.
22. The contractor shall prevent trespassing on the site.
23. The contractor shall prohibit, and actively monitor and prevent, poaching or harassment of wild animals by contract employees.

24. At the start of every working day the contractor shall patrol open trenches and rescue any animals that are trapped in it, either by catching and releasing (e.g. frogs and toads) or be driven out (e.g. dangerous snakes).
25. The contractor shall ensure that contract employees remain within the construction right of way or on approved roads providing access to the construction right of way.
26. The contractor will ensure that travelling speeds do not exceed 10 km/h and shall ensure that this restriction is enforced. This may include, but not limited to, the monitoring of vehicle speeds and the erection of speed limit signs.

### 11.2.4 Management of Dust and Noise Nuisance

27. The contractor shall control dust along the construction footprint to ensure that no detrimental effects to occupiers of the land or public are caused. Control measures to be considered include the use of water browsers to wet down surfaces that have been denuded and which have the potential to generate dust.
28. Wetting of denuded areas, including the topsoil stockpile, will be done in such a manner than only enough water is utilized for dust suppression, and to ensure no unduly runoff is caused.
29. The contractor shall comply with legal requirements for the management of noise impacts.
30. The contractor's employees shall not make recreational use of all – terrain vehicles or motorcycles on site.
31. An appropriate freeboard will be enforced for trucks hauling dirt, sand, soil and other lose materials. All material transported by trucks will be covered to prevent undue nuisance dust during transportation.

### 11.2.5 Construction Waste Management Plan

32. Temporary storage of construction waste will be limited to within the construction camp site, and areas designated.
33. The contractor shall be responsible for the collection and removal of waste from the construction site.
34. Building rubble is to be kept separate from other construction waste. Rubble is to be kept clean of brick ties, plastics, papers and cement bags at all times.
35. Rubble stockpiles and waste structures shall be positioned to permit easy access by removal trucks.
36. Waste bins should not be allowed to overflow and are to be emptied regularly. No littering is permitted on site.
37. The contractor shall arrange for the removal of waste on a weekly basis to a registered landfill site. Records of this disposal shall be kept on site.
38. The contractor shall conduct site clean-up on a daily basis (chicken run). This will focus on the eradication of litter.
39. Hazardous waste will be separated from domestic waste and stored is demarcated bins. Hazardous waste bins will be stored on a hard standing surface, covered and made watertight.
40. Safe disposal certificate will be obtained from the sub-contractor appointed for the removal of hazardous waste, and will be in adherence to the NEM-WA, Waste Information Regulations.

41. General waste and hazardous waste should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate.
42. No solid waste may be burned or buried on site.
43. No operational waste to be processed on site.
44. Chicken manure to be removed every 6 weeks.
45. Any fatalities to be removed by a licenced contractor.
46. Sufficient waste collection bins and skips (or similar) should be provided.
47. No washing of vehicles or equipment is permitted on site.
48. Cleaning of equipment is to take place within designated areas.

### 11.2.6 Operational Waste Management Plan

49. The Service Manager should ensure that waste containers are provided for the collection of general waste at various points on the premises.
50. Waste containers should be removed weekly to a dedicated landfill site.
51. All containers shall be kept in a clean and hygienic manner.
52. Bulk storage containers shall be stored in a manner that prevents the harbouring of pests.
53. Registered waste removal companies are contracted to remove bulk storage containers to a registered municipal landfill site.
54. Training of staff in proper hygiene.
55. Skips containing condemned material or material destined for landfilling are to be sealed.
56. Proper storage of manure, condemned material and unwanted material away from surface water bodies and boreholes.
57. Dead on arrival chickens (DOAs) must be stored in locked bins prior to removal.
58. The applicant must ensure that necessary steps are taken to recycle and reuse as much of the waste generated and reduce the amounts disposed at the disposal site. The following are general measures the applicant investigates and employ, and in turn will have direct impact on the waste disposal site:
    Evaluation of waste production processes and identification of potentially recyclable materials;
    a. Identification and recycling of products that can be reintroduced into the manufacturing process or industry activity at the site;
    b. Investigation of external markets for recycling by other industrial processing operations located in the region of the waste disposal site (e.g., waste exchange); and
    c. Establishing cycling objectives and formal tracking of waste generation and recycling rates.

### 11.2.7 Transportation of Waste

The following recommendations and mitigation measures are specifically applicable to hazardous waste collection and transport operations to avoid and minimize environmental, health and safety impacts and humans and the environment:

59. Transportation of waste is a specialized activity requiring appropriate equipment/vehicles and suitably trained staff.
60. Follow applicable national regulations and internationally accepted standards for packaging, labelling, and transport of wastes; •
61. Use tanks and containers specially designed and manufactured to incorporate features appropriate for the wastes they are intended to carry;
62. If drums or other containers are used to transport waste, containers should be in good condition and compatible with the waste and are adequately secured in the transport vehicle;
63. Adequately label all transport tanks and containers to identify the contents, hazards, and actions required in various emergency situations.

### 11.2.8 Land Owner and Occupier Relations

64. The contractor shall respect the property and rights of the landowners and occupiers at all times and shall treat all such persons with courtesy.
65. The contractor shall comply with all special agreements between the contractor and Exxaro.
66. Access over land, the integrity of fences, the closure of gates, control of veld fires, littering, dust control, noise abatement, harassment of animals, sedimentation and contamination of surface and ground water, damage to landscape and vegetation, and all such environmental matters, shall be controlled as far as practical by the contractor in the best interests of Exxaro.

### 11.2.9 Complaints Register

67. The contractor shall establish and maintain a register for periodic review by the Project Management Team that logs all complaints raised by I&APs about the construction activities.
68. The register shall be regularly updated and maintain records, including the name of the complainant, his/her domicile and contact details, the nature of the complaint and if any action was taken to rectify the problem.

## 11.3 Construction Control Plan

The construction control plan to be implemented by the contractor shall include the following key measures:

### 11.3.1 Control of Access to the Construction Right–of–way

1. The utility and safety of any existing access shall not be lowered by construction activities, nor shall spillage, littering, accelerated erosion, or other environmental impacts occur. The contractor shall:
    a. Ensure compliance with these requirements;
    b. Exercise all relevant health, safety and environmental controls; and
    c. Immediately remedy non – compliances and the effects thereof.
2. In all areas where construction requires gravelling or other methods of improving vehicle access, the contractor shall completely remove these materials after construction and prior to rehabilitation of the area.

3. The contractor shall restrict the number of entry and exit points for security reasons. The contractor shall ensure that his activities do not compromise the landowners or occupiers security, nor result in the loss, injury or death of any farm animals or game.

### 11.3.2 Control of Sanitation

4. Adequate chemical latrines shall be provided for all staff.
5. Latrines will be emptied and services on a regular basis to prevent overflowing.
6. A minimum of one toilet will be provided for every 15 employees at each working area.
7. Disposal certificate shall be obtained from the sanitation removal contractor as well as their permission to dispose of sewage into a licenced sewage treatment plant.

### 11.3.3 Control of Topsoil and Subsoil

8. The contractor shall store topsoil (defined as the above 150 mm of soil) excavated from the project activities in a stockpile which shall be discretely separated from stockpiles of any other excavated materials.
9. Topsoil shall not be disturbed more than absolutely necessary on the remaining construction footprint.
10. Topsoil shall not be contaminated with anything that might impair its plant–support capacity (e.g. aggregate, cement, concrete, fuels, litter, oils, domestic and industrial waste).
11. The contractor shall temporarily stockpile topsoil in a location that will minimize any loss due to erosion or mixing with other materials.
12. The slopes of the stockpile shall not be steeper than 1 vertical and 2.5 horizontal in order to reduce the flow of water runoff subsequently reducing the potential for soil erosion.
13. The contractor shall ensure that topsoil is stockpiled in a matter for a period of time that does not result in the deterioration in its plant – support capacity.
14. After the completion of backfilling, re –contouring and erosion control works, the contractors shall spread the topsoil evenly at uniform depth over the areas from which it was removed.
15. The stockpiling of topsoil along the route corridor for the purpose of re – instatement is regarded as a vital component of successful rehabilitation, and compliance with the stripping requirements specified will be strictly enforced. In areas where topsoil of less than 150 mm is stripped, the contractor will be required to demonstrate that substantial constraints prevailed which made the requirement unattainable.
16. The contractor may distribute waste soils (soft materials) evenly around the construction footprint as long as it does not impact negatively on natural vegetation or land capability.
17. Topsoil will be stockpiled during soil stripping. Soil will only be handled twice, one during soil stripping and once during rehabilitation.
18. No vehicle shall be allowed to access or drive above the stockpile once the stockpile has been placed.

### 11.3.4 Stormwater Management Plan

19. The contractor shall ensure that erosion control structures are installed prior to the commencement of construction. These may be permanent or temporary structures.

20. Any erosion channels that develop during the construction, operation and maintenance periods shall be backfilled and consolidated immediately. All erosion damage shall be remediated as soon as possible.
21. Stormwater drains will be kept clean at all times.
22. Clean and dirty water separation should take place in accordance to GNR 704 of the NWA.
23. Clean stormwater must be kept away from areas where it could be contaminated and must be directed to a stormwater drainage system.
24. Before any construction takes place the proposed area for the expansion will be pegged out. All construction activities will take place within these areas in order to reduce the footprint of the proposed activity and therefore the potential impact on surface water run-off.
25. Storm water management measures will be inspected on a regular basis in order to ensure that the structures are functional and do not cause soil erosion.
26. Effective storm water measures will be implemented to minimise soil erosion, such as:
    a. The storm water drainage system must be maintained (free-draining) and not contaminated by other waste sources. Storm water must be kept separate from the sewage effluent system.
    b. Storm water must be diverted away from bird holding areas, chemical storage areas and wastewater treatment areas.
    c. Placing of erosion prevention structures or vegetation to reduce water velocity at concentration points within the drainage system.

### 11.3.5 Control of Impacts of Construction Activities on Archaeological Remains

27. In terms of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA), no graves or archaeological sites, including manmade structures more than 60 years old, may be disturbed, damaged or destroyed by any person without requisite arrangements or permits from the SAHRA.
28. The contractor will make provision for accidental discovery of archaeological sites and graves along the construction footprint. In the event that any sites found are significant enough to warrant conservation, the contractor shall determine whether this is feasible and, if not, immediately notify the Project Management Team.
29. In fulfilment of the SAHRA requirements, the contractor shall prepare the necessary documentation and obtain the permits from the SAHRA to construct through those sites which are directly affected by the construction works.

## 11.4 Emergency Response Plan

The project Applicant must identify any potential emergencies and must develop any procedures to prevent and/or react to said emergencies. Emergency reaction procedures must be in place before construction and operation commence. Emergency procedures to be considered include:

- Fire;
- Chemical/Hydrocarbon Spills;
- Contamination of surface or ground water;
- Employee accidents.

Emergency telephone numbers should be kept visible on site at all times throughout construction and operation

This section aims to guide employees and contractors on their responsibilities in the event of an environmental emergency or potential environmental emergency at the proposed project.

Herewith the emergency preparedness and response procedure:

### 11.4.1 What is an environmental emergency?

An environmental emergency is an unplanned event, which has the potential to result in a significant adverse environmental impact and/or could result in legal liability to the proposed project in terms of environmental legislation. The event occurs over the short term and requires an immediate response.

The following potential environmental emergencies were identified:

a. A huge chemical or hydrocarbon (oil and diesel) spill;

b. Uncontrolled surface fires including veld fires;

c. Sewage spillage.

### 11.4.2 Emergency procedure:

Environmental emergencies are normally of such a nature that a specialized team of people have to attend to the emergency.

### Chemical, hydrocarbon (oil & diesel) spillage

The following steps must be followed in the event of chemical or hydrocarbon spill:

- Identify the nature and extent of the emergency;
- Try to reduce the impact by containing or removing the source of pollution, without placing anybody at risk;
- Evacuate people and if possible the equipment, that could be at risk;
- Barricade the area if possible and /or place guards to isolate the area;
- Call the Tshwane Environmental Department as well as a professional company focusing on hydrocarbon remediation.

### Uncontrolled surface fires including veld fires:

The following steps must be followed in the event of an uncontrolled fire:

- Identify the nature and extent of the emergency;
- Try to reduce the impact without putting yourself in danger;
- Evacuate people and if possible the equipment, that could be at risk;
- Barricade the area if possible and/or place guards to isolate the area;
- Call the municipal fire brigade;

### Sewage spillage:

The following steps must be followed in the event of a sewage spillage:

a) Identify the nature and extend of the emergency;

- Try to reduce the impact by containing or removing the source of pollution, without placing anybody at risk;
- Evacuate people and if possible the equipment, that could be at risk;
- Barricade the area if possible and /or place guards to isolate the area;
- The responsible person on shift will contact the City of Tshwane Environmental Department.

### 11.4.3 Incident / emergency reporting

Environmental pollution, if left unreported and unattended, has the potential to be a criminal offence for which management of the proposed project will be held accountable. Therefore, it is essential to report all incidents to assess what action may be necessary.

A report will be compiled illustrating the incident and sent to the respective government department. Appropriate actions must be captured and implemented.

### 11.4.4 Training

The applicant is responsible to ensure that the emergency response group is trained in the handling of environmental emergencies. Employees must be trained during the induction process to identify these emergencies in their areas

## 11.5 Closure and Rehabilitation Plan

The rehabilitation actions that the mine intends undertaking at the end of the life of the DCM East are described below. These actions are designed to comply with the requirements of this rehabilitation plan's objectives in particular the risk mitigation closure strategies identified during the risks assessment.

### 11.5.1 Infrastructure

All infrastructures will be decommissioned and the footprints rehabilitated for the establishment of vegetation. Infrastructure where there is a third party use and where the residual health and safety risks are acceptable to Exxaro will be legally transferred to the relevant parties.

Material inventories will be managed near the end of operations to minimize any surplus materials at closure. Fuel, lubricants and other materials needed to support the closure activities will be utilized during the closure period. The majority of the fuel storage facility will be closed during the first year of closure activities, but some fuel storage capacity will be required until all equipment has been demobilized from the site at the end of the closure period.

All equipment will be rinsed with raw water and reinstate will be captured in the internal water management infrastructure for evaporation.

Where practicable, equipment and materials with value not needed for post-closure operations will be sold and removed from the site. All other equipment will be demolished and disposed of on-site. Equipment with scrap or salvage value will be removed from the plant and stored either in the existing salvage yard or in a facility designated for this purpose during the closure period.

A soil contamination investigation will be conducted on completion of demolition activities, particularly in excavations remaining open following decommissioning. The purpose of this is to identify areas of possible contamination and design and implement appropriate remedial measures to ensure that the soil closure criteria are obtained.

Excavations remaining following demolition and foundation and slab removal and those where contamination remediation has been undertaken will be filled with waste rock and covered with 300 mm of growth medium.

Closure actions will include:

- All power and water services to be disconnected and certified as safe prior to commencement of any demolition works;
- All remaining inert equipment and demolition debris will be placed in the base of the box cut or failing this into the nearest general waste disposal facility;
- Salvageable equipment will be removed and transported offsite prior to the commencement of demolition;
- All fittings, fixtures and equipment within buildings will be dismantled and removed to designated temporary disposal yards;
- All tanks, pipes and sumps containing hydrocarbons to be flushed or emptied prior to removal to ensure no hydrocarbon/chemical residue remains;
- All above ground electrical, water and other service infrastructure and equipment to be removed and placed in box cut or the designated temporary salvage yards;
- All pond liners to be removed for disposal in designated landfills;
- Electrical, water and other services that are more than 400 mm below ground surface will remain;
- All pipes and structures deeper than 400 mm need to be sealed to prevent possible ingress and ponding of water;
- Non-hazardous concrete slabs and footings will be broken. This concrete (and metal) will be broken up and disposed of in the box cut;
- All concrete below 500 mm depth will remain underground with the invert of all structures broken/sealed to prevent possible ingress and ponding of water;
- Soils beneath the plant, storage tanks and chemical storage areas will be sampled. Any contaminated soils found will be removed for disposal;
- All excavations resulting from demolition of plant, buildings, roads, conveyor platforms, etc. and earth structures will be left in a safe manner;
- All telecommunication towers and dishes will be dismantled and removed.

The yard areas (e.g. platforms created for buildings, laydown areas, salvage yards, and other disturbed areas) will be closed and re-graded to control storm water runoff and erosion. Once the structures and foundations are demolished, removed, or buried, the yard areas will be inspected for any areas of hydrocarbon contamination.

Growth medium covers will be placed with the thickness of the covers dependent on the Post Closure Land Use as well as on the volume of material available for closure.

### 11.5.2 Open pit

During early planning of the mine, the previous owners thought that a final void would be required in the landscape, as the material balance would not allow for full backfill of the pit in a manner where

the final surface could be profiled to be free draining. However, recent material balance information has indicated that with the bulking that has occurred during blasting and excavation, there will be approximately 3,3 million $m^3$ of excess material available for backfill (Table 11-1).

**Table 11-1: Current material balance**

| Component | Volume ($m^3$) |
|---|---|
| VOID | 19 334 640 |
| Cut volume including in pit stockpiles | 5 639 115 |
| O/B Softs and Topsoil | 16 990 686 |
| Surplus | -3 295 161 |

Given that the material balance now indicates that complete backfill is an option, this will be the preferred closure action for the open pits. Closure will therefore entail the backfilling of the box cut with overburden stripped ahead of mining, followed by the placement of growth medium and the establishment of vegetation. The final surface developed during backfilling and rehabilitation will simulate surrounding topography while ensuring that the surface is free draining. There may be a requirement to include sacrificial erosion protection measures on the surface while vegetation is being established.

### 11.5.3 Underground workings

The underground workings will be decommissioned through the implementation of the following actions:

- All salvageable equipment and plant is to be removed as the miners retreat on closure of mining operations;
- All tanks, pipes and sumps containing hydrocarbons or any other fluids to be flushed or emptied prior to removal or abandonment once underground mine is sealed off;
- All power and water services to be disconnected and certified as safe. Where practicable cabling containing copper is to be brought to surface;
- Surface openings (air vents, shafts, portals, etc.) will be sealed with a steel or concrete cover that attaches to the existing concrete collar. The entrance area immediately behind access portals to be backfilled with rock as a further deterrent. The seal to the box cut will be engineered to with stand potential pressure exerted on the seal from water as the working fill during groundwater rebound;
- All surface openings (air vents, shafts, portals, etc.) to be sealed with a steel or concrete cover that attaches to the existing concrete collar.

### 11.5.4 Roads and parking areas

Mine roads that are not needed for closure and post-closure uses at the site (e.g. security and monitoring) will be closed. Closure actions will include:

- Removal of all signage, fencing, shade structures, traffic barriers, etc.;

- All ‘hard top’ surfaces to be ripped and bitumen/concrete removed along with any culverts and concrete structures;
- All concrete lined drainage channels and sumps will be broken up and removed;
- All potentially contaminated soils are to be identified and demarcated for later remediation; and
- All haul routes that have been treated with saline dust suppression water need to be treated as “sealed” roads with the upper surface ripped and removed to designated contaminant disposal areas.

### 11.5.5 Conveyor route and rail loop

The coal produced from both DCM East and West is conveyed to rail loop onto the RBTC railway line from where it the coal is transported to Richards Bay. The closure actions for this infrastructure include:

- All power and water services to be disconnected and certified as safe prior to commencement of any demolition works.; Electrical, water and other services that are more than 400 mm below ground surface will remain;
- Conveyor belting to be removed, cut up and disposed of in the open pits
- Salvageable equipment will be removed and transported offsite prior to the commencement of demolition;
- Concrete slabs and footings will be broken and buried in situ. This concrete (and metal) will be broken up and disposed of in the pits;
- All concrete below 500 mm depth will remain underground with the invert of all structures broken/sealed to prevent possible ingress and ponding of water;
- Rails tracks will be removed and sold as scrap
- Ballast will be collected and disposed of in the pit prior to backfill. It is assumed that the removal of ballast and associated rehabilitation of the surface will mitigate any historical spillages along railway lines and that no additional clean-up is necessary.
- Embankments will be reshaped where necessary.

All excavations resulting from demolition of the conveyor plinths will be left in a safe manner.

### 11.5.6 Pollution Control Dam

All dams will be reclaimed and the area shaped to form a stable landform congruent with the surrounding landscape.

The Pollution Control Dam (PCD) will however be retained during the majority of the closure period to provide water for closure activities as well as to capture any residual seepage and contact water which may be generated on the site. The expectation is that as rehabilitation of the mines footprint is implemented, the size of the contact water catchment reduces until there is no further need for the PCD. During the reduction in catchment size, the contained contact water will be evaporated as runoff and seepage to the PCD diminishes, with the result that there will not be a need to manage excess inventory in the PCD at closure. Closure actions for the dams will include:

- Demolish all concrete structures;

- Remove any silt that accumulated in the dam in line with the Hazardous waste management strategy for the operation;
- Remove liners and following waste classification testing dispose appropriately;
- Backfill excavations with material removed during construction which will be located adjacent to the PCD; and
- Profile footprint to be free draining with no low points to accumulated water.

### 11.5.7 Groundwater management

The contaminant plume emanating from the western opencast and the co-disposal facility will move in a northerly direction towards the Olifants River (maximum distance from the mining area is approximately 500 m). The contaminant concentration is likely to increase over time as the plume develops. Shallow contaminated seepage may affect the non-perennial tributaries to the Olifants River. Furthermore, there is the potential that mildly acidic, saline water may be generated from the mining area at a rate of 500 to 1 200 $m^3$/d between 25 and 150 years after closure.

As numerical models have an inherent associated uncertainty, the closure action will be to utilise operational ground and surface water monitoring data to determine whether there will be a post closure requirement to install a mechanism to intercept the plume as there is the expectation that further plume generation will be limited by the placement of covers on the co-disposal facility and the backfilling of the pit with both mechanisms expected to retard pyrite oxidation and the generation of poor quality seepage.

As the potential to decant is only expected between 25 and 150 years after closure, data collected during the post closure period will be utilised to refine the decant predictions and determine whether technology is required to intercept and treat the decant. Exxaro will investigate the best treatment option for water treatment and management at closure.

Definite actions that will be implemented to obtain the data required to determine post closure water management measures would include:

- Monitor groundwater quality and level in backfilled working (both underground and opencast);
- Optimize storage of mine water make in mined out underground sections;
- Construct covers on discard facility;
- Backfill opencast pits.

### 11.5.8 Stormwater management

Prior to closure a water management plan will be prepared to identify which structures are required at closure and which can be decommissioned. Ditches decommissioned will be closed by backfilling the excavations with the material removed, and placed adjacent to the structures, during construction. Bunds not required will be flattened by redistributing the material across the footprint used to borrow the material for construction.

### 11.5.9 Fuel storage and dispensing

Closure of these facilities will focus on physical closure and investigation of potential subsurface contamination from petroleum products. Closure of these facilities will include:

- Removing remaining fuel inventory;

- Decontaminating equipment including tanks, piping, and dispensing equipment, as needed;
- Removing equipment;
- Demolishing all storage tanks and buildings;
- Removing any appurtenances including piping and electrical;
- Breaking walls and foundations to grade;
- Hauling non-hazardous demolition debris to box cut;
- Sampling soils beneath and surrounding the facility;
- Classifying and removing any contaminated soils identified and treating them on site to acceptable standards or disposing of them to a licensed facility if hazardous; and
- Re-grading the footprints in line with adjacent yard footprints.

A portion of the fuel inventory will be used during closure. Near the end of the closure period, after the primary earthwork is complete, the fuel storage and dispensing facilities will be decommissioned.

### 11.5.10 Fencing and walling

Various areas at the site are enclosed by a perimeter fencing and walls. Due to the maintenance costs associated with retaining a fence, it will be removed as the areas are reclaimed. Service roads providing access to the fences will be rehabilitated.

### 11.5.11 Remediation of contaminated areas

#### Hydrocarbon contamination

- All soil, contaminated with hydrocarbons, will be identified, excavated, if possible to at least 200 mm below the contaminated zone and then treated by land farming;
- All tanks, pipes and sumps containing hydrocarbons will be flushed or emptied;
- Removed soils will be managed as determined by the nature and extent of the contamination.

#### Chemical contamination

- DCM East will flush or empty all tanks, sumps and pipes containing non-biodegradable chemicals (liquid solid or gas) to ensure that chemical residues are removed from the site;
- Liquid storage tanks (including septic tanks) will be emptied, the structure demolished and sub-surface holes filled;
- All equipment and plant in which chemicals have been stored or transported will be cleaned and disposed of in a suitable disposal facility.

### 11.5.12 Vegetation and wildlife

Successful revegetation will help control erosion of soil resources, maintain soil productivity and reduce sediment loading in streams utilizing non-invasive plants that fit the criteria of the habitat (e.g. soils, water availability, slope and other appropriate environmental factors). Invasive species will be avoided and the area will be managed to control the spread of these species in accordance with the Biodiversity Action Plan (BAP)

The slopes at the mine residue facilities are likely to be susceptible to erosion, even after vegetation establishment. To counter the effects of erosion, naturally occurring grassland species

will be planted on the slopes and tops of the facilities. At this time, these species will provide soil holding capacity and reduce runoff velocity. The composition of the natural species and their planting strategy will be detailed in the BAP.

The flatter areas will be re-vegetated with the objective of creating a sustainable ecosystem similar to an analogues reference plot.

### 11.5.13 Waste management

Waste management activities will include:

- Hazardous waste will be managed as per the operational Waste Management Plan and will be disposed of off-site;
- Non-hazardous demolition rubble will be disposed of in the base of the pits;
- The waste and scrap yard will be retained for the disposal of mobile equipment, structural steel and mechanical equipment. Only once this material has been taken out of the yard will the yard be demolished;
- It may be necessary to fence temporary salvage yards for security reasons, particularly where these are located close to public roads.

### 11.5.14 Threats, Opportunities and Uncertainties

As the closure plan is currently being developed early in the mine life cycle and the plan is based on predicted risks rather than actual risks measured during operations, there are a number of assumptions that have been made around the biophysical and socio economic environment that will exist at the end of the life of operations. These assumptions represent uncertainties and threats that cannot at this stage be adequately defined. The guideline in the regulations requires that a list of these uncertainties and threats and opportunities be identified and maintained during subsequent revisions of the closure plan. SRK understands that the purpose of this list is to inform future revisions of the plan relating to the focus of resource. During these revisions, it is expected that resources can be focused to determine whether either the threats or opportunities are realised and whether uncertainties are addressed. The uncertainties, threats and opportunities are reflected in the Table 11-2.

**Table 11-2: Threats, Opportunities and Uncertainties**

| **Uncertainty** | **Threat** |
|---|---|
| • Technology to be adopted for groundwater decant<br>• Stakeholder requirements at closure | • Overgrazing<br>• Climate change<br>• Changing political environment<br>• Varied land owners<br>• High dependency on mining |
| **Opportunity** | |
| • Well defined rehabilitation practices<br>• Time to develop water management alternative<br>• Existing stakeholder engagement forums<br>• SLP to manage social impacts | |

## 11.6 Operational Management Plan

1. Regular monitoring must be conducted during the operation to ensure that rehabilitation measures have been successful, and to determine whether any unstable cut and fill area need to be stabilized, especially after heavy rains.
2. A clean-up procedure will be conducted on a regular basis in order to ensure that litter, oil spills etc., are cleaned timeously and pollution of the watercourse is minimized.
3. Noise pollution emanating from the operation of the road, affecting sensitive receptors will be mitigated if deemed necessary, through the construction of an earth berm or planting absorbent vegetation along the route.
4. Stormwater management structures must be cleaned and maintained on a regular basis in order to minimize erosion that can cause siltation of aquatic systems. This will require regular inspections of the stormwater infrastructure to confirm its functionality.

# 12 Monitoring Requirements

This section provides a description of the monitoring requirements during the construction, operation and decommissioning phases of the proposed development:

## 12.1 Groundwater

- The groundwater monitoring network should be expanded for the existing and future mining activities at Dorstfontein East;
- The monitoring results must be interpreted annually by a qualified hydrogeologist and network audited annually as well to ensure compliance with regulations;
- Multiple-level monitoring boreholes must be constructed to monitor base-flow quality within sensitive zones and to monitor groundwater level behaviour in the backfilled pits. Use the results of the monitoring programme to confirm/validate the predicted impacts on groundwater availability and quality after closure;
- The groundwater monitoring network design should comply with the risk based source pathway - receptor principle;
- All monitoring boreholes are sampled and analysed for groundwater depths and water quality to determine adherence to the South African Water Quality Guidelines for Domestic Use;
- Rainfall is monitored daily at the Dorstfontein East Mine.

## 12.2 Biodiversity

As part of rehabilitation activities, it is recommended that monitoring of the linear development occur for a period of 2 years during the operation of the pipeline, to ensure that no new alien vegetation growth occurs.

## 12.3 Air Quality

- When the proposed project is operational an annual monitoring program should be maintained to determine whether the proposed project is having an impact on the surrounding environment with respect to dust fallout;
- A continuous PM10 and PM2.5 monitor should be installed at the mine or if possible at sensitive receptors in close proximity to the mine.
- Conduct periodic independent audits of monitoring systems and the implementation of management plans to ensure that the system is maintained and that suitable data is obtained for decision making;
- If possible, additional dust monitoring equipment needs to be installed in order to effectively monitor dust related impacts from the project area and thereafter dust emissions can be managed better.

## 12.4 Blast and Vibration

A monitoring programme for recording blasting operations is recommended. This process will be mainly for the development of the different decline shafts. The following elements should be part of such a monitoring program:

- Ground vibration and air blast results;

- Blast Information summary;
- Meteorological information at time of the blast;
- Video Recording of the blast;
- Fly rock observations.

Most of the above aspects do not require specific locations of monitoring. Ground vibration and air blast monitoring requires identified locations for monitoring. Monitoring of ground vibration and air blast is done to ensure that the generated levels of ground vibration and air blast comply with recommendations. Proposed positions were selected to indicate the nearest points of interest at which levels of ground vibration and air blast should be within the accepted norms and standards as proposed in this report. The monitoring of ground vibration will also qualify the expected ground vibration and air blast levels and assist in mitigating these aspects properly. This will also contribute to improved relationships with the neighbours. Nine monitoring positions were identified for the mine. Table 12-1 lists the positions with coordinates. These points will need to be re-defined with the initial first blast and consider the final blast design that will be applicable.

**Table 12-1: Blast and Vibration Monitoring Points**

| Description | Y | X |
|---|---|---|
| Impilo Primary School | -32712.93 | 2896841.82 |
| Informal Housing | -32497.05 | 2897079.17 |
| Farm Buildings/Structures | -32213.19 | 2897452.24 |
| Cement Dam | -32402.71 | 2897990.66 |
| Building/Structure | -31964.94 | 2897780.13 |
| Power Lines/Pylons | -32512.41 | 2898659.42 |
| Informal Housing | -31786.25 | 2898507.93 |
| Monitoring Borehole (DFTNM7) | -33884.24 | 2898313.26 |
| Informal Housing | -32236.60 | 2898332.07 |

## 12.5 Rehabilitation and Closure

Following the implementation of the closure actions described in Section 6, it is necessary to have measurable criteria against which to assess the effectiveness of the plan and its implementation. These criteria will assist Exxaro in identifying when the standard of closure achieved is sufficient to relinquish responsibility for a specific area. The site-specific relinquishment criteria for the proposed DCM East are documented in Table 12-2: Also included in the table are the indicators required to demonstrate achievement with the relinquishment criteria and the reporting requirements. The reporting requirements are those that are expected to fulfil the monitoring requirements set out by legislation.

**Table 12-2: Relinquishment Criteria during Rehabilitation and Closure**

| Category | Closure criteria | Indicators | Reporting requirements |
|---|---|---|---|
| Ground and Surface water | Compliance with the WUL. | Downstream/gradient water quality monitoring | Monitoring report |
| | The monitoring points can only be installed after mining activities have seized. One monitoring point for each opencast and each underground mining block, for coal both seams are proposed for Dorstfontein East. | As the aim is to measure recovering groundwater levels these points should be installed at the deepest points for each seam per opencast or underground block. | |

| Category | Closure criteria | Indicators | Reporting requirements |
|---|---|---|---|
| Air | Compliance with the standards as per the National Environmental Management: Air Quality (Act 39 of 2004) | Records of air quality measurements for PM10 and PM2.5 | Monitoring report |
| Soil quality | Soil quality as assessed against the Norms and Standards to support Chapter 8 of NEM:WA | Soil quality in areas where contamination is identified | Results of soil quality and risk assessment |
| Land productivity | Land capability and productivity similar to that which existed prior to mining | Land capability and productivity | Comparison to analogue areas and pre-mining aerial photographs |
| Erosion | Implementation or construction of erosion control measures | Establishment of vegetation | See Vegetation row in this table |
| Safety / stability | The site is safe for use by humans and animals, including in the foreseeable future | Geotechnical and hydrological studies of existing structures | Evidence in rehabilitation report that appropriate risk assessment has been undertaken and control measures are in place |
| Aquatic ecosystem | Wetland and aquatic macro invertebrate populations at crossing using appropriate biomonitoring techniques | Species and composition | Monitoring report |
| Vegetation | Establishment of self-sustaining vegetation population which stabilizes soils and is not invasive to the region. | Species cover and composition | Monitoring report |

# 13 External Auditing

The key to a successful EMPr is appropriate monitoring and review to ensure effective functioning of the EMPr and to identify and implement corrective measures in a timely manner. In the event where discrepancies are identified, the problem must be investigated and attended to. All the results obtained during environmental monitoring must be documented for audit purposes.

An audit of the environmental management actions undertaken is essential to ensure that it is effective in operation, is meeting specified goals, and performs in accordance with relevant regulations and standards. Audits should be conducted during the construction phase of the facility to ensure adherence to the management measures contained in the EMPr.

The construction audit schedule will be determined by the conditions of the EA. The frequency of the construction and operational audits may vary and will be synchronised with the construction schedule.

# 14 Commissioning of Tenders

All contractors and sub-contractors tendering for any aspect of the proposed project will be made aware of the contents of this EMPr and the consequences and penalties resulting from non-conformances will be communicated to them.

All appointed contractors and sub–contractors will be made aware of the EMPr and attend an induction focusing on the main aspects of the EMPr requirements.

# 15 Conclusions

The project involves the construction of the proposed Pit 1 expansion and construction of a water pipeline. With reference to the available information of the project cycle, the confidence in the environment assessment undertaken is regarded as acceptable for decision making purposes.

Following the screening phases and the subsequent EIA, it has become known that from a financial, biophysical and social–economical perspective, that the proposed alternative is the most preferable.

SRK has undertaken a detailed assessment of this based on impacts identified through the public involvement programme, professional judgement of the SRK project team and the proposed specialists. It can therefore be concluded there are no fatal flaws of the proposed project that have been identified. Impacts that have been identified will require careful mitigation and management. These impacts include the following:

- Impacts on surface and groundwater quality as a result from the proposed activities;
- Social – economic impacts due to employment issued;
- Soil, land capability and land use impacts; and
- Noise, vibration and blast levels during the construction and operation phase of the project.

An EMPr has been developed as part of this EIA to ensure that mitigation and management measured are enforced. The EMPr will guide all phases of the project to minimize possible negative impacts and assign responsibility for environmental controls. The detailed project specifications would also take cognisance of any conditions of approval as specified by the DMR.

The EMPr provides a tool to take cognisance of the needs of the environment and is intended to be utilised in conjunction with the DMR licensing requirements. Compliance with the EMPr serves to ensure that the management of activities associated with the proposed development take cognisance of the requirements of existing environmental legislation.

This EIA has identified potential impacts associated with the current and proposed activities of the associated project. The significance of each of these impacts has been assessed under both the pre- and post-mitigation scenarios.

Based on the assumption that these programmes and plans will be effectively implemented on the design and construction in accordance with national and international industry standards, it is the opinion of the Environmental Assessment Practitioner that the impacts from the proposed development can be effectively managed and will be acceptable when considering the advantages that the development will bring.

# 16 Declaration of Contractor's Acceptance

I, _____, (full name) representing _____, (company name) have read, understood and accept the above environmental management plan as a framework for my company's environmental performance during the above mentioned project.

Signed: _____ Date: _____

## Prepared by


Mr. Andrew Caddick
Senior Environmental Scientist

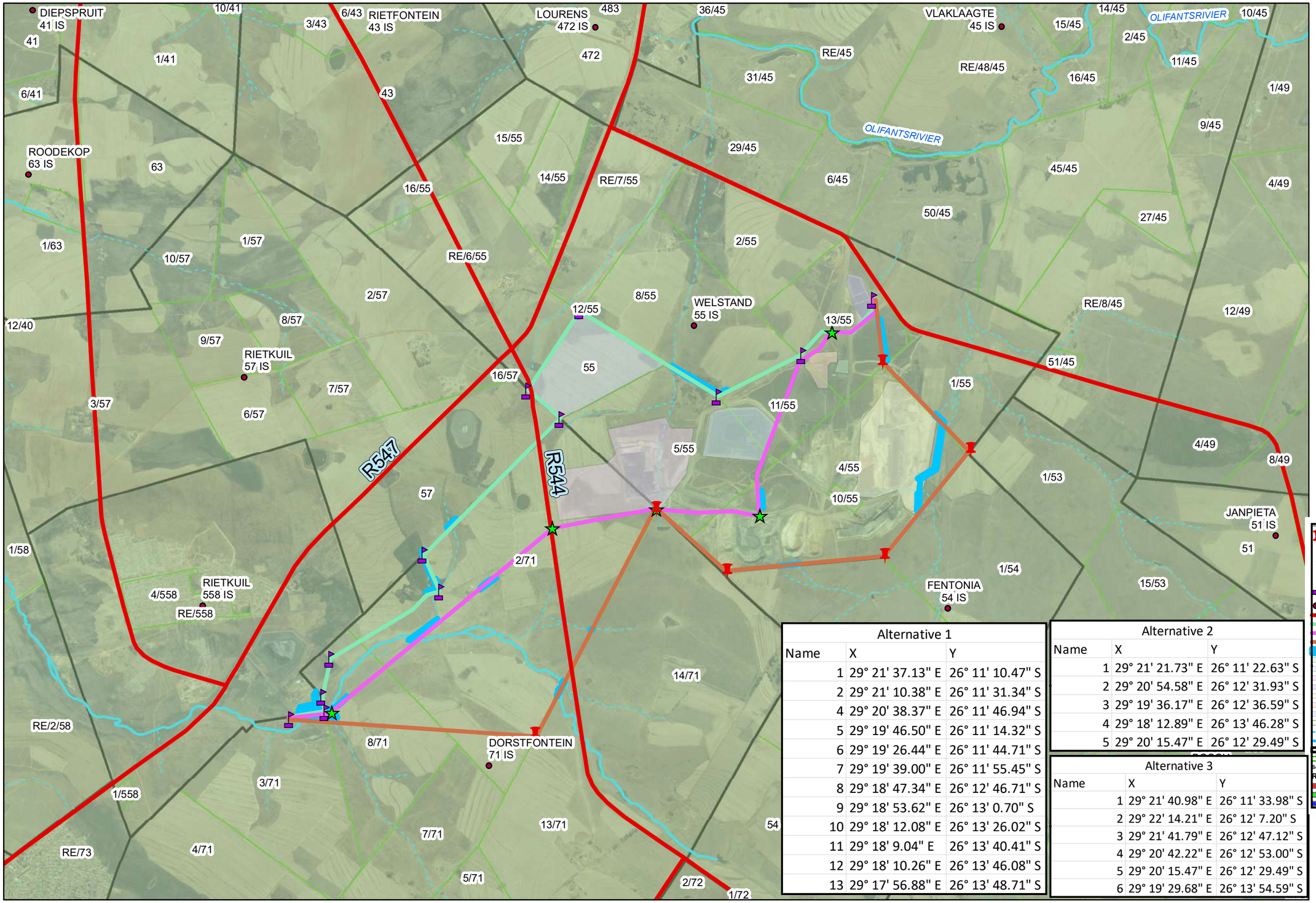
## Reviewed by


Ms Manda Hinsch
Partner

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

# Appendices

# Appendix A: Site Layout Map




| Alternative 1 | | |
|---|---|---|
| Name | X | Y |
| 1 | 29° 21' 37.13" E | 26° 11' 10.47" S |
| 2 | 29° 21' 10.38" E | 26° 11' 31.34" S |
| 4 | 29° 20' 38.37" E | 26° 11' 46.94" S |
| 5 | 29° 19' 46.50" E | 26° 11' 14.32" S |
| 6 | 29° 19' 26.44" E | 26° 11' 44.71" S |
| 7 | 29° 19' 39.00" E | 26° 11' 55.45" S |
| 8 | 29° 18' 47.34" E | 26° 12' 46.71" S |
| 9 | 29° 18' 53.62" E | 26° 13' 0.70" S |
| 10 | 29° 18' 12.08" E | 26° 13' 26.02" S |
| 11 | 29° 18' 9.04" E | 26° 13' 40.41" S |
| 12 | 29° 18' 10.26" E | 26° 13' 46.08" S |
| 13 | 29° 17' 56.88" E | 26° 13' 48.71" S |

| Alternative 2 | | |
|---|---|---|
| Name | X | Y |
| 1 | 29° 21' 21.73" E | 26° 11' 22.63" S |
| 2 | 29° 20' 54.58" E | 26° 12' 31.93" S |
| 3 | 29° 19' 36.17" E | 26° 12' 36.59" S |
| 4 | 29° 18' 12.89" E | 26° 13' 46.28" S |
| 5 | 29° 20' 15.47" E | 26° 12' 29.49" S |

| Alternative 3 | | |
|---|---|---|
| Name | X | Y |
| 1 | 29° 21' 40.98" E | 26° 11' 33.98" S |
| 2 | 29° 22' 14.21" E | 26° 12' 7.20" S |
| 3 | 29° 21' 41.79" E | 26° 12' 47.12" S |
| 4 | 29° 20' 42.22" E | 26° 12' 53.00" S |
| 5 | 29° 20' 15.47" E | 26° 12' 29.49" S |
| 6 | 29° 19' 29.68" E | 26° 13' 54.59" S |

N

Alternative_3
Alternative_2
Alternative_1
Surveyed Parent Farm Text
SA_Roads
Pipeline Route 1
Pipeline Route 2
Pipeline Route 3
All wetland crossings
Coal_Stockpile
Discard_Dump
Pit_1
Pollution_Control_Dams
Pit_2
Plant_Area
Pit_Expansion_Area
Vegmap_with_threatened_ecosystems selection
NON-PERENNIAL RIVER
PERENNIAL RIVER
Parent Farm
Farm Portion
South Africa 50cm Colour Imagery
RGB
Red: Band_1
Green: Band_2
Blue: Band_3

Data Source:

Scale: 1:43 951

Datum: GCS_HBH

Date: xx/xx/xxxx

Compiled by: XXXX

Project No: 499507

Fig No: XX.X

srk consulting

# DORSTFONTEIN
## LAYOUT MAP

Path: L:\E_GIS_Library\GIS_Tools\Templates\ArcGIS\2012\499507_Layout_Plan_A3L EIA.mxd

Revision: A Date: 00 00 2011