



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR ENVIRONMENTAL AUTHORISATION APPLICATION FOR KHUTALA COLLIERY PROPOSED 5 SEAM MINING PROJECT WITHIN PORTION 3, OF THE FARM COLOGNE 34 IS, REMAINING EXTENT OF PORTION 2, PORTION 3, 6, 16, 17 AND 18 OF THE FARM ZONDAGSVLEI 9 IS, PORTION 40 OF THE SCHOONGEZICHT 218 IR, PORTION 35 OF THE FARM LEEUWFontein 219 IR AND REMAINING EXTENT OF THE FARM KLEINZUIKERBOSCHPLAAT 5 SITUATED IN THE EMALAHLENI MAGISTERIAL DISTRICT, EMALAHLENI AND VICTOR KHANYE LOCAL MUNICIPALITIES, MPUMALANGA PROVINCE.

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File Reference Number SAMRAD:	DMRE Mining Right Reference No.: MP30/5/1/2/2/118MR. DMRE Environmental Management Reference No.: MP 30/5/1/2/3/2/1/ (118) EM
Project Reference Number:	LEM-A0433-03-2020
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1. DETAILS OF EAP

Licebo Environmental has been appointed as the independent EAP to undertake the EIA process and associated IWULA. The details of the EAP are provided in the Table below:

Practitioner company details	Licebo Environmental and Mining (Pty) Ltd
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2. Description of the Aspect of the Activity

2.1 Location of the Activity

It should be noted that the detailed information about the location of the activities is covered under Part A. Section 3 of this application.

Table 1 below provide a description of the properties to which the environmental authorisation is being applied for.

Table 1: Description of the property

Farm Name:	Cologne 34 IS, Zondagsvlei 9 IS, Leeuwfontein 219 IR, Schoongezicht 218 IR and Kleinzuikerboschplaat 5 IS.
Application Area (Ha):	Approximately 538 ha
Magisterial District:	Khutala Colliery is situated in both eMalahleni and Delmas Magisterial Districts, in the eMalahleni and Victor Khanye Local Municipality within the Nkangala District Municipality, Mpumalanga Province.

Distance and direction from nearest town	Khutala Colliery is located approximately 8 km south west of the town of Ogies and 35 km south west of Witbank and just approximately 5 km south-east of the Kendal Power Station in Mpumalanga Province, South Africa.
21-digit Surveyor General Code for each farm portion	<p>Portion 3 of the Farm Cologne 34 IS T-0IS-000-0000-00034-00003</p> <p>Portion 40 of the Farm Schoongezicht 218 IR T-0IR-000-0000-00218-00040</p> <p>Remaining Extent of Portion 2, Portion 3, Portions 6, 16, 17 and 18 of the Farm Zondagsvlei 9 T-0IS-000-0000-00009-00002 T-0IS-000-0000-00009-00003 T-0IS-000-0000-00009-00006 T-0IS-000-0000-00009-00016 T-0IS-000-0000-00009-00017 T-0IS-000-0000-00009-00018</p> <p>Portion 35 of the Farm Leeuwfontein 219 IR T-0IR-000-0000-00219-00035</p> <p>Remaining Extent of the Farm Kleinzuikerboschplaat 5 IS. T-0IS-000-0000-00005-00005</p>

2.2 Type of Activity to be undertaken

It should be noted that the detailed information regarding the activities to be undertaken is covered under Part A Section 5 of this application. **Table 2** below is reflecting list of the proposed activities to be undertaken as part of the Khutala 5 Seam Mining Project per implementation phase.

Table 2: List of the proposed activities to be undertaken as part of the Khutala 5 Seam Mining Project

Activity No.:	Proposed activities to take place
Construction Phase	
Activity 1	Recruitment, Procurement and Employment.
Activity 2	Transportation of construction material to site

Activity No.:	Proposed activities to take place
Activity 3	Use and storage of construction fuel and lubricants
Activity 4	Site clearance and topsoil removal as a result of the proposed Project.
Activity 5	Construction Surface Infrastructure (Including KPS/KHU Link Road, Ventilation Shaft, Transfer Chute and associated Water Management Infrastructure)
Activity 6	Construction of RoM Stockpile and associated Water Management Infrastructure
Activity 7	Development and operation of the 5 Seam underground mining activities.
Operational Phase	
Activity 8	Recruitment, procurement and employment
Activity 9	Operation of the 5 Seam underground mining activities
Activity 10	Storage, use and control of fuel and lubricants to be used for the underground mining activities and at the RoM Plant.
Activity 11	Operation of the RoM Stockpile and associated water management infrastructure.
Activity 12	Transportation of coal via the KPS/KHU Link Road
Activity 13	Dirty water management
Activity 14	Waste and sewage generation and disposal
Rehabilitation, Decommissioning and Closure Phases	
Activity 15	Retrenchment of mine employees and staff.
Activity 16	Demolition of infrastructure
Activity 17	Final rehabilitation
Post-Closure	
Activity 18	Aftercare and Maintenance

3. COMPOSITE MAP

Please refer to the maps supplied below. Additional maps have been included under Appendix 2.

(Show nearest town, scale not smaller than 1: 250 000 as Appendix 2)

Locality map	The nearest town to the proposed development site is Ogies, located approximately 8 km south west and just approximately 5 km south-east of the Kendal Power Station. The town of eMalahleni is located 35 km south west of the proposed development site in the Mpumalanga Province, South Africa. Refer to Part A, Section 3.2, Figure 1 and Appendix 2 for the proposed project's locality maps.
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4. DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

4.1 Determination of closure objectives

The closure vision for Khutala is “ To achieve a sustainable, fit-for-use functional grazing land use across the entire rehabilitated Khutala Mining Right Area, that can contribute towards regional food security through implementation of self-funding technologically advanced land use and water management solutions This rehabilitated landscape will also contribute towards the integrity of the local and regional catchment’s ongoing fit-for-use surface water and groundwater resources, as well as ecological functionality”.

In compliance to GN R. 1147 of 20 November 2015, a number of closure objectives have been determined as indicated below. These closure objectives, identified in the Mine Rehabilitation and Closure Plan (**Appendix 19**) will drive the closure criteria and have been developed to support the closure vision.

The closure objectives represent the key measurable closure targets for the various closure planning aspects, based on the determined closure state, that are within the operation’s control. Ultimately, closure objectives should be contextualised to represent achievement of the closure vision and related closure state. The closure objectives for Khutala Colliery including the activities associated with the 5 Seam Mining Project and associated infrastructure include:

- Land use and capability:
 - To mimic regional geomorphological features by maintaining a free-draining topography across the areas that will be disturbed as part of this project.
 - To maintain a grazing land use, as defined in the Guidelines for the Rehabilitation of Mined Land (2007).
 - All disturbed areas adjacent to the infrastructural areas to be re-vegetated with an indigenous grass mix, to re-establish a protective cover, to minimise soil erosion and dust emission.
 - During the decommissioning phase the footprint must be thoroughly cleaned, and all waste material generated should be removed to a licensed disposal facility.
 - Any compacted soils must be ripped to alleviate compaction.
 - Stored topsoil to be replaced (if any) and the footprint graded to a smooth surface.

- The landscape to be backfilled and reprofiled to mimic the natural topography for potential agricultural activities and grazing opportunities post mining. If possible, ensure a continuation of the pre-mining surface drainage pattern.
- Slopes of the backfilled surface should change gradually since abrupt changes in slope gradient increase the susceptibility for erosion initiation.
- The soil fertility status should be determined by soil chemical analysis after levelling (before seeding/re-vegetation). Soil amelioration should be completed, if necessary, according to recommendations by a soil specialist, to correct the pH and nutrition status before revegetation.
- The footprint should be re-vegetated with a grass seed mixture as soon as possible, preferably in spring and early summer to stabilise the soil and prevent soil loss during the rainy season.
- To achieve creation of habitats for local fauna expected to occur within the rehabilitated areas on which a grazing land use is taking place.
- To maintain the visual landform as aligned to the approved surface rehabilitation landform design of the rehabilitated landscape, that blend into the surrounding areas.
- To remove mine infrastructure that cannot be used by a subsequent land owner or a third party. Where buildings can be used by a third party, arrangements will be made to ensure their long-term sustainable use.
- To clean up coal stockpiles and loading areas and rehabilitate these as far as possible to a land capability to that which existed prior to mining.
- Surface and groundwater:
 - To continue to contribute to the catchment yield associated with the Catchment Management Areas.
 - To not exceed agreed-on, predefined surface water quality objectives, as stipulated in the Receiving Water Quality Objectives (RWQOs) for the Saaiwaterspruit (B11F) and the Wilge River (B20E) catchments.
 - To prevent any soil and surface/groundwater contamination by managing all water on site.
 - To limit the project study area (natural plume movement) and potential decant to the Leeuwfonteinspruit.
 - To prevent groundwater contamination by continuing with the monitoring of the groundwater boreholes water quality and if the quality deteriorates, it is

recommended to start pumping the contaminated into a containment facility for evaporation and to contain the plume.

- Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl.
- Air quality
 - To maintain local ambient air quality parameters of PM₁₀ to agreed-on, predefined human health-related against the ambient air quality standards and the dust fallout rates in terms of the National Dust Control Regulations (GNR827 of 2013).
- Social
 - To achieve a safe and healthy environment for people and animals, through achievement of the land use, water and air quality closure objectives.
 - To leave a safe and stable environment for both humans and animals.
 - To have completed implementation of the closure-related projects agreed-on in the mine's approved Social and Labour Plan, focusing on personal skills development and local economic development.
- General closure and economic benefits:
 - To follow a process of closure that is progressive and integrated into the short and long term mine plans and that will assess the closure impacts proactively at regular intervals throughout project life.
 - To develop a plan for care-and-maintenance of the related surface infrastructure that has a beneficial re-use, for hand-over to- and accountability by the next land owner.
 - To comply with local and national regulatory requirements.
 - To maintain and monitor all rehabilitated areas following re-vegetation or capping and, if monitoring shows that the objectives have been met, making an application for closure.
 - To leave behind a rehabilitated landscape that will retain long-term economic value for future land owners.

4.2 The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity

This section describes the approach taken by the EAP in preparation of Part B of this report.

Environmental Management Approach

The purpose of the EMPr (Part B of this report) is to describe the process of managing the identified potential **environmental** impacts or risks described in Part A of this report (EIR) throughout the entire life cycle (from design, to implementation, operation, and decommissioning) of the proposed 5 Seam Mining Project. The IEM (Integrated Environmental Management) tool used for managing the identified environmental impacts by the EAP in this document is in line with the requirements of the Environmental Management System (EMS) ISO 14001: 2015. This approach will assist the mine to achieve continual improvement in their environmental performance.

The EMPr in essence will be adopting the approach of the internationally recognised ISO 14001 EMS standard which is a simplified continuous improvement model consisting of four main iterative steps.

These steps are described as follows:

- Plan – Establish objectives and processes necessary to deliver results in accordance with the developed organisational environmental policy.
- Do – Implement the process.
- Check – Monitor and measure processes against environmental policy, objectives, legal and other requirements and report the results.
- Act – Take action to continually improve environmental performance.

Continual improvement is achieved by periodically monitoring and reviewing the EMPr and the subsequent implementation of corrective actions when required. Therefore, this document should be considered as a living document which should be continuously updated and possibly improved.

This approach taken in the development of the EMPr is in line with the requirements stipulated in the EIA Regulations, 2014 as amended.

In ensuring effective implementation of the EMPr, the mine has committed to comply with corporate policies, community responsibilities, our values (Care, Trust, Togetherness & Excellence) and to the continual improvement of the HSE Management System and HSE performance. To achieve these commitments, the mine will:

- Comply with applicable legal, corporate and other compliance obligations, whilst simultaneously meeting customer requirements;
- Protect the environment, prevent pollution, injury and ill health;
 - Manage Health, Safety, Environmental and Community aspects through implementing and maintaining an integrated management programme in compliance with EMS ISO 14001: 2015 and Seriti's Regional Level Documents.
- Promote continual improvement to enhance environmental performance by:
 - Conserving natural resources, including habitats and ecosystems, by proper stewardship;
 - Reducing our greenhouse gases and carbon footprint;
 - Effectively utilise energy and water resources, minimise waste generation and promote re-use and recycling of waste;
 - Minimise dust and emissions to air;
 - Setting relevant objectives and targets to enhance environmental performance;
 - Monitoring and measuring the health, safety and environmental effects of our activities on all stakeholders and affected parties and on the environment, to ensure compliance with relevant compliance obligations and prevent pollution;
 - Improving our objectives and HSE management systems;
 - Investigating the feasibility of influencing our suppliers, customers and third parties with consideration to life cycle impacts of their activities and processes;
 - Train and communicate with all employees on relevant HSE issues, hazards and associated risks to ensure that they become competent in their areas of responsibility; and
 - Promoting HSE communication with all stakeholders to ensure continual awareness of the Khutala Colliery HSE management programme.

Legislative compliance

Throughout the development, operation, decommissioning, closure and post-closure phases of this Project, relevant and applicable preventative and corrective mitigation measures and applicable legal and other requirements associated with the proposed 5 Seam Mining Project activities were considered. These measures and requirements will be implemented, controlled and maintained to ensure compliance to applicable legal and other requirements.

An Environmental Authorisation audit will be undertaken in accordance with Regulation 34 of the EIA Regulations, 2014 as amended by GN R 326 or any other applicable Regulations at any time when this report remains valid that might be issued under the NEMA for compliance evaluation, monitoring and implementation.

Specialist recommendations

A number of specialist investigations formed part of the EIA process and resulted in a number of findings and recommendations (Part A Section 19) summarises the findings of these studies. These reports provided specific proposed mitigation and management measures to be implemented and maintained as part of this EMPr. These findings and results of these specialists' reports have been considered throughout the development of the EMPr.

Environmental Preparedness and Response Plan

An Environmental Preparedness Response Plan is a process to respond rapidly and effectively to and manage emergency situations that may arise at the mine. The Environmental Response Plan for this project will have the following objectives:

- Categorisation of emergency situations through hazard identification and to define procedures for responses to the situations;
- Assigning responsibilities for responding to emergency situations;
- Implementation of an effective system to receive, record and communicate reports of environmental incidents and emergencies; and
- Ensuring that all environmental incidents or emergencies are investigated and the necessary procedures are in place to implement corrective and preventative actions to prevent a recurrence of the incident.

- The mine has an Emergency Preparedness and Response Code of Practice that has been compiled in accordance with the following requirements:
 - Occupational Health and Safety ISO 45001;
 - NEMA;
 - NWA;
 - NEM: WA; and
 - The Mine Health and Safety Act, 1996 (Act No. 29 of 1996).

In the event of an emergency, the Emergency Response Plan/Procedure will be consulted and the required actions implemented. To facilitate the effective implementation of the procedures, copies of the Emergency Response Plan will be placed in accessible and visible locations around the site.

4.3 Potential risk of Acid Mine Drainage

A detailed Geochemistry study has been undertaken to assess the potential of risk of AMD from the 5 Seam workings, Refer to Appendix 16.

The following was found as part of the geochemical assessment:

- Contamination of the aquifer: After closure water levels will recover and start filling the mined out underground workings. Contaminated water will start forming a plume in the direction of groundwater flow and this will have a negative impact on groundwater quality.
 - Monitoring of the borehole water quality is required and if the quality deteriorates, it is recommended to start pumping the contaminated into a containment facility for evaporation and to contain the plume.
 - Borehole water supply and quality: Boreholes including external users that are within the 5 Seam Mining Project area will be impacted:
 - Monitor all the boreholes of external users monthly for water level and on a quarterly basis for water quality.
 - Further investigate the potential impact on these boreholes starting before the 5 Seam mining commences and continue during mining.
 - When the water level of these boreholes starts to drop, the mine will need to investigate which alternative water source to use for supplying the users to ensure that their water supply is not interrupted or disturbed.

- Potential decant: Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl.

4.4 Steps taken to investigate, assess, and evaluate the impact of acid mine drainage

A detailed Geochemistry study was undertaken to assess the potential of AMD post-closure.

- Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area will continue as part of the existing groundwater monitoring programme. The water level should be managed to stay well below the decant level of 1594 mamsl.
- As part of the operational phase, the mine will need to further investigate the potential decant impact and the management thereof which might include the treatment and disposal of the treated decant water.

4.5 Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage

A detailed Geochemistry study was undertaken to assess the potential of AMD post-closure.

Refer to Section 4.4 in terms of the steps to be taken to further investigate, assess, and evaluate the impact of acid mine drainage.

4.6 Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage

A detailed Geochemistry study was undertaken to assess the potential of AMD post-closure.

The post-closure impact identified on the geochemical assessment are summarized as indicated below:

- **Contamination of the aquifer:** Monitoring of the borehole water quality is required and if the quality deteriorates, it is recommended to start pumping the contaminated into a containment facility for evaporation and to contain the plume.

- **Potential decant:** Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl.

4.7 Volumes and rate of water use required for the operation

Water will be required during the construction processes, operational and decommissioning phases for dust suppression, construction activities and potable water for drinking. Both industrial and potable water will be sourced from the existing Khutala Colliery mining infrastructure. The industrial water for construction activities and dust suppression will be sourced from the existing mine's Pollution Control Dams which are authorised as part of the Khutala IWUL (Water Use Licence no. 04/B11AIABCGJ/135 File no. 16/2/7/B100/C304). The potable water will be sourced from the current mine water reticulation system from the mine's office complex.

4.8 Has water use licence been applied for?

The mine has an IWUL (Water Use Licence No. 04/B11AIABCGJ/135 File no. 16/2/7/B100/C304), which was issued in terms of Chapter 4 of the NWA (Act 36 of 1998) in respect to the following water uses, that is, Section 21 (a) (b) (c), (g), (i) & (j), This IWUL was issued on the 14th of September 2011 by the Department of Water Affairs (Currently known as Department of Water and Sanitation). Some of the water use activities that are linked and will be used as part of the proposed Khutala 5 Seam Mining Project are authorised under this licence.

A Water Use Licence Application associated with the proposed 5 Seam Mining Project activities is being applied for as required in terms of GN R267 via the e-WULAAS. This IWULA is undertaken concurrently with the Environmental Authorisation and it will be submitted to the DWS.

The following water uses are included in the IWULA:

- Section 21 (c) – Impeding or diverting the flow of water in a watercourse
- Section 21 (g) – disposing of waste in a manner which may detrimentally impact on a water resource
- Section 21 (i) – altering the bed, banks, course or characteristics of a watercourse

- Section 21 (j) - removing, discharging, or disposing of water found underground if it is necessary for efficient continuation of an activity or for the safety of people

As part of the application for the IWUL, an Integrated Waste Water Management Plan (IWWMP) will be developed and should form part of the final construction and operational EMPr for implementation.

4.9 Impacts to be mitigated in their respective phases

Table 3: Impacts to be mitigated including the relevant management actions and outcomes

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
1	Employment of workers and procurement of materials.	Discussed in Social Management Plan. Refer to Section 9.1.							
2	Transportation of construction material to site.	Air Quality	To minimise fugitive dust generation emanating from the Khutala 5 Seam Mining Project area including the KPS/KHU Link Road.	Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; Vehicles will obey speed limits; and Bulk delivery of materials should be maximised to reduce the frequency of deliveries.	Daily; and As required.	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827). Highveld Priority Area Standards.	Dust Management Plan. Dust Monitoring Programme.	LoM	Construction Manager Specialist Environment; Environmental Control Officer
				Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; Vehicles will obey speed limits; and Bulk delivery of materials should be maximised to reduce the frequency of deliveries.	Daily; and As required.	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827). Highveld Priority Area Standards.	Dust Management Plan. Dust Monitoring Programme.	LoM	Construction Manager Specialist Environment; Environmental Control Officer
		Topography and Visual Environment.	To minimise the negative visual impact caused by vehicles activity to transport construction material.	Ensure liaison with the local authorities for the maintenance and upkeep of roads; Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; and Vehicles will obey speed limits.	As required; and Daily.	N/A	Dust Management Plan. Dust Monitoring Programme. Traffic Management Plan.	Construction Phase; Operational Phase.	Community Manager Construction Manager Specialist Environment; Environmental Control Officer
		Surface Water	To prevent and minimise negative impacts on surface	All potential hydrocarbon spillages and leaks must be cleaned up	As required.	NWA; GN R 704;	Emergency Response Plan.	LoM	Construction Manager

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			water resources as a result of hydrocarbon spills.	immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and Vehicles with leaks must have drip trays in place.		Best Practice Guidelines	Vehicle Maintenance Plan. Traffic Management Plan.		Maintenance Manager Specialist Environment; Environmental Control Officer
		Traffic	To prevent and minimise the degradation of the road structures resulting in potential health and safety risks and soil erosion.	Adhere to the Mine's Traffic Management Plan; and Gravel roads used must be graded and compacted regularly, should the roads remain unpaved.	Ongoing.	National Land Transport Act, 2009 (Act No. 5 of 2009).	Road Maintenance Plan. Traffic Management Plan.	Prior to Construction; Construction Phase; Operational Phase	Construction Manager; Mine Manager
3.	Use and storage of construction fuel and lubricants.	Soils	To prevent soil contamination and degradation.	In case whereby contractors bring on site mobile bowsers and lubricants, these are to be stored in a bunded area when parked at the construction areas; All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and Vehicles with leaks must have drip trays in place.	When required.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; CARA; and Hazardous Substances Act, 1973	Emergency Response Plan Vehicle Maintenance Plan. Hydrocarbon Management Plan. Traffic Management Plan.	Construction.	Maintenance Manager Construction Manager Specialist Environment; Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
		Surface Water	To prevent and minimise negative impacts on surface water resources as a result of hydrocarbon spills.	In case whereby contractors bring on site mobile bowzers and lubricants, these are to be stored in a bunded area when parked at the construction areas; All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and Vehicles with leaks must have drip trays in place.	Ongoing; and As required.	NWA; GN R 704; Best Practice Guidelines	Emergency Response Plan Vehicle Maintenance Plan. Hydrocarbon Management Plan. Traffic Management Plan.	Construction.	Construction Manager Maintenance Manager Specialist Environment; Environmental Control Officer
		Groundwater	To prevent and minimise groundwater contamination.	In case whereby contractors bring on site mobile bowzers and lubricants, these are to be stored in a bunded area when parked at the construction areas; All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and Vehicles with leaks must have drip trays in place.	Ongoing; and As required.	NWA; GN R 704; Best Practice Guidelines	Emergency Response Plan Vehicle Maintenance Plan. Hydrocarbon Management Plan. Traffic Management Plan. Groundwater Monitoring Programme	Construction.	Maintenance Manager Construction Manager Specialist Environment; Environmental Control Officer
4.	Site clearance and topsoil removal as a result of the proposed Project.	Air Quality	To minimise fugitive dust generation emanating from the activities associated with	The area of disturbance must be restricted to the required footprint size; Ensure that only vegetation within the designated areas is removed; The drop heights used during the loading of the cleared soils into	Ongoing; and Daily.	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486).	Dust Management Plan. Dust Monitoring Programme.	Construction Phase; Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			the Khutala 5 Seam Mining Project areas.	trucks should be minimised as far as possible; and Dirt roads to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plumes.		National Dust Control Regulations (GN R 827).			
		Topography and Visual Environment	To minimise the change in topography and the disruption of surface water flow. To minimise soil erosion and topsoil loss; and To minimise the negative visual impact caused by vegetation and topsoil removal.	Ensure vegetation and topsoil is only be cleared when necessary and within the demarcated areas; Ensure topsoil stockpiles are vegetated as soon as possible; and Ensure topsoil stockpiles are contoured and have a steepness of less than 18° to prevent slope failure and erosion and aid in vegetation establishment. Topsoil stockpiles that will be kept for more than a year are to be vegetated to sustain ecological components and further prevent dust emissions and growth of alien vegetation.	When required; and Weekly topsoil stockpile monitoring.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; and CARA.	Soil Rehabilitation Plan; Topsoil Management Plan; and Stormwater Management Plan.	Construction Phase	Construction Manager Specialist Environment; Environmental Control Officer
		Soils	To prevent soil contamination and degradation during soil stripping and management.	Excavation and long-term stockpiling of soil should be limited within the demarcated areas as far as practically possible; Ensure all stockpiles (especially topsoil) are clearly and permanently demarcated and located in defined no-go areas; Restrict the amount of mechanical handling, as each handling event increases that compaction level and the changes to the soil structure; Soil stripping should be done in line with a topsoil stripping plan; Where possible, separate stockpiling of different soil to obtain the highest post-mining land capability; Stockpiles should be revegetated to establish a vegetation cover as an erosion control measure. These stockpiles should also be kept alien vegetation free at all times to prevent loss of soil quality; and Temporary berms can be constructed, around stockpile areas whilst vegetation cover has not	Ongoing; and Weekly topsoil stockpile monitoring.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; and CARA.	Soil Rehabilitation Plan; Stormwater Management Plan; and Topsoil Management Plan.	Construction Phase; Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				established to avoid soil loss through erosion.					
			To prevent soil erosion and generation of dust.	The footprint of the proposed mining related activities areas should be clearly demarcated to restrict vegetation clearing activities to the infrastructure footprint as far as practically possible; Bare soils can be regularly dampened with water to suppress dust during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast; Once construction activities are completed, disturbed areas adjacent to the infrastructural areas must be re-vegetated with an indigenous grass mix, to re-establish a protective cover, to minimise soil erosion and dust emission; and Temporary erosion control measures must be used to protect the disturbed soils during the construction phase until adequate vegetation has established.	Ongoing; and Weekly monitoring.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control. CARA. NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827).	Soil Rehabilitation Plan; Stormwater Management Plan; Topsoil Management Plan. Dust Management Plan; And Dust Monitoring Programme.	Construction Phase; Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer
			To prevent soil compaction.	If possible, vegetation clearance and commencement of mining related activities (construction of haul road), can be scheduled to coincide with low rainfall conditions when soil moisture is anticipated to be relatively low such that the soils are less prone to compaction; The movement of heavy vehicle should be limited to existing roads and be limited to areas where construction of haul road is to take place.	Ongoing; and Weekly monitoring.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control. CARA. NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827).	Soil Rehabilitation Plan; Stormwater Management Plan; Topsoil Management Plan. Dust Management Plan; And Dust Monitoring Programme.	Construction Phase; Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer
			To prevent the loss of land capability and land use potential.	Any compacted soils must be ripped to alleviate compaction; Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface; The landscape should be backfilled and reprofiled to mimic the natural	Ongoing; and Weekly monitoring.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; and CARA.	Soil Rehabilitation Plan; Stormwater Management Plan;	Construction Phase; Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				<p>topography for potential agricultural activities and grazing opportunities post mining. If possible, ensure a continuation of the pre mining surface drainage pattern;</p> <p>Slopes of the backfilled surface should change gradually since abrupt changes in slope gradient increase the susceptibility for erosion initiation;</p> <p>The soil fertility status to be determined by soil chemical analysis after levelling (before seeding/re-vegetation).</p> <p>Soil amelioration should be completed, if necessary, according to recommendations by a soil specialist, to correct the pH and nutrition status before revegetation; and</p> <p>The footprint should be re-vegetated with a grass seed mixture as soon as possible, preferably in spring and early summer to stabilise the soil and prevent soil loss during the rainy season.</p>			<p>Topsoil Management Plan.</p> <p>Dust Management Plan;</p> <p>And Dust Monitoring Programme.</p>		
			To prevent and minimise the loss of vegetation communities.	<p>Ensure site clearing is restricted to the footprint of the designated areas to limit the degradation and destruction of natural habitats;</p> <p>Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</p> <p>Restrict access and avoid areas of identified faunal and floral SSC, that are adjacent to the mining activities;</p> <p>Floral and faunal SSC within the mining activities must be rescued and relocated;</p> <p>Restrict access and avoid sensitive landscapes, such as wetlands and ridges, that are adjacent to the mining operations; and</p> <p>Topsoil that will be used for rehabilitation within one year must be stockpiled according to the Rehabilitation Plan. Compaction of stockpiled topsoil must be avoided to ensure the seed bank is viable.</p>	Ongoing.	NEM:BA; and Environmental Conservation Act, 1989 (Act No. 73 of 1989) (ECA).	<p>Conservation Management Plan;</p> <p>Alien Invasive Management Plan.</p>	<p>Construction Phase;</p> <p>Operational Phase</p>	<p>Construction Manager</p> <p>Specialist</p> <p>Environmental</p> <p>Control Officer</p>

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			To prevent the influx and establishment of alien invasive vegetation.	Alien invasive vegetation to be identified and removed throughout the LoM.	Ongoing	NEM:BA; and ECA.	Alien Invasive Management Plan.	LoM; Post-Closure	Construction Manager Specialist Environment Environmental Control Officer
		Wetlands and Aquatic Ecology	<p>To prevent the sedimentation of wetland areas downstream of the stockpiles.</p> <p>To prevent the contamination of soils as a result of the ingress of hydrocarbons;</p> <p>To prevent the compaction of soils; and</p> <p>To prevent the loss of natural vegetation.</p>	<p>Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</p> <p>Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</p> <p>Implement and maintain alien vegetation management programme;</p> <p>Limit the footprint area of the construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils;</p> <p>All erosion noted within the construction footprint should be remedied immediately and included as part of an ongoing rehabilitation plan;</p> <p>All delineated watercourses and their associated 100 m zones of regulation in terms of GN704 should be designated as “No-Go” areas and be off limits to all unauthorised vehicles and personnel, with the exception of approved construction and operational areas unless authorised as part of the IWUL;</p> <p>No unnecessary crossing of the watercourses should take place and wherever possible, existing infrastructure should be utilised;</p> <p>Suitably designed culverts should be installed under road crossings where any watercourses are anticipated to be crossed;</p> <p>The number of culverts installed should be suitable for the gradient, width and flow profiles of the watercourses being crossed so as to avoid upstream inundation, erosion and incision, and alterations to the natural channel;</p>	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; Wetland Management Plan; Alien Invasive Management Plan; and Topsoil Management Plan.	Construction Phase	Construction Manager Specialist Environment Environmental Control Officer
					Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; Wetland Management Plan; Alien Invasive Management Plan; and Topsoil Management Plan.	Construction Phase	Construction Manager Specialist Environment Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				<p>Crossings should make use of existing roads wherever possible and should either utilise or be constructed downgradient of barriers associated with impoundments on the affected systems;</p> <p>No material may be dumped or stockpiled within delineated watercourses;</p> <p>No vehicles or heavy machinery may be allowed to drive indiscriminately within any delineated watercourses. All vehicles must remain on demarcated roads and within the construction footprint;</p> <p>All vehicles must be regularly inspected for leaks;</p> <p>Re-fueling must take place on a sealed surface area away from wetlands to prevent ingress of hydrocarbons into topsoil; and</p> <p>All spills should be immediately cleaned up and treated accordingly.</p>					
			To prevent the potential loss of catchment yields and surface water recharge, potential loss of biodiversity, impaired water quality, potential loss of instream integrity, potential impacts to freshwater resources further downstream of this point.	<p>Ensure that as far as possible all infrastructures are placed outside of delineated watercourse areas and their associated zones of regulation;</p> <p>Ensure that sound environmental management is in place during the planning phase;</p> <p>Design of infrastructure should be environmentally and structurally sound and all possible precautions taken to prevent spillage and/or seepage to the surface and groundwater resources present;</p> <p>It must be ensured that the design and construction of all infrastructures prevents failure.</p>	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; Wetland Management Plan; Alien Invasive Management Plan; and Topsoil Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environment Environmental Control Officer
		Fauna	To prevent the unnecessary destruction of natural habitat and animal life within the development area and to maintain ecological	<p>Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions.</p> <p>Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas.</p>	Ongoing	NEM: BA; Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environment Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			<p>connectivity to neighbouring sites and, where possible, to regional ecological corridors.</p> <p>Not to unnecessarily or deliberately alienate or hinder the movement of fauna in the area or to harm any animal life found on the property.</p> <p>To maintain existing fauna biodiversity and prevent the skewing of fauna communities as far as possible.</p>	<p>Ensure safe speed limits in the development area and no open fires.</p> <p>Do not feed wild life and ensure that all food and food waste, including domestic waste, is placed in sealed containers and not exposed on site.</p> <p>Ensure that the outside areas are kept clean and tidy and provide adequate waste removal services to prevent the attraction of rats and other alien scavenging species to the site.</p> <p>Regularly (daily) inspect the haul road and clear coal spills and clear coal fines to reduce coal dust contamination to the neighbouring wetland areas.</p>					
		Flora	<p>To prevent the loss of vegetation and/or declining species, alteration, and loss of microhabitats, altered vegetation cover, increased erosion and contamination of soil and groundwater due to localised destruction / removal of vegetation and vegetated topsoil.</p>	<p>Keep the clearing of vegetation / impacts to vegetation for any activity to a minimum and locate such activities in already modified areas or secondary grassland.</p> <p>No building of temporary infrastructure should be allowed in moist grasslands without a WUL.</p> <p>Prevent spillage of hazardous material and other pollutants, contain, and treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMPr</p> <p>After any above ground activities within the site, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to the activity.</p> <p>No off-road driving beyond designated areas may be permitted, especially not in natural vegetation.</p> <p>Strict speed control measures must be implemented for any vehicles driving within the mining rights area</p>	Ongoing	NEM: BA; CARA; and Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environment Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				<p>to reduce dust. Refer to existing mine control measures.</p> <p>There is zero tolerance of the destruction or collecting of any indigenous biodiversity or part thereof by anybody working for or on behalf of the mine.</p> <p>Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed</p> <p>Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after such activities cease.</p>					
			To prevent the destruction or degradation of watercourse vegetation.	<p>Ensure the flow of water through the moist grassland areas remain unchanged.</p> <p>Monitor the presence of hydrophytes and species with an affinity for moist soils within the moist grasslands. Should such species decrease or be replaced by terrestrial species, then it is likely that the hydrological regime on the site has changed.</p> <p>If moist grasslands are found to become drier, the Crinum species must be relocated to suitable habitat.</p> <p>Input of sediment due to any related mining activities should be prevented at all cost.</p> <p>Pollution of the surface and groundwater. Mitigation for this potential impact includes:</p> <p>In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water Affairs must be informed immediately;</p> <p>Store all litter carefully so it cannot be washed or blown into the water course;</p> <p>Storage of potentially hazardous materials should be above any 100-year flood line or the functional</p>	Ongoing	NEM: BA; CARA; and Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				<p>wetland boundary (and its associated buffer zone). These materials include fuel, oil, cement, bitumen etc.;</p> <p>Surface water draining off contaminated areas containing oil and petrol would need to be channeled towards a sump which will separate these chemicals and oils; and</p> <p>No uncontrolled discharges of water from the mine to any surface water resources shall be permitted. Any discharge points need to be approved by the relevant authority.</p>					
			To prevent, monitor and control the destruction of vegetation.	<p>An independent Environmental Control Officer (ECO) should be appointed to oversee construction activities and ensure the following: Keep the development footprint in Medium categories as small as possible.</p> <p>A temporary fence or demarcation must be erected around the construction area (include the actual footprint, as well as areas where material is stored) to prevent access to adjacent sensitive vegetation. Maintain site demarcations in position until the cessation of construction work.</p> <p>Only remove vegetation where necessary and retain vegetation in place for as long as possible prior to removal.</p> <p>Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area.</p> <p>Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas.</p> <p>Implement a vegetation rehabilitation plan to ensure areas that can be rehabilitated post construction are adequately vegetated with indigenous grass species.</p>	Ongoing	NEM: BA; Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environment Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.					
			To prevent exposure to erosion and subsequent sedimentation or pollution of proximate moist grassland (watercourse).	<p>Make use of existing roads and tracks where feasible, rather than creating new routes through grassland areas.</p> <p>Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).</p> <p>Runoff from access roads must be managed to avoid erosion and pollution problems.</p> <p>Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated (erosion management plan required)</p> <p>Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. The grassland can be removed as sods and re-established after construction is completed.</p> <p>Colonisation of the disturbed areas by plants species from the surrounding natural vegetation must be monitored to ensure that vegetation cover is sufficient within one growing season. If not, then the areas need to be rehabilitated with a grass seed mix containing species that naturally occur within the study area.</p> <p>Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.</p> <p>Prevent spillage of construction material, oils or other chemicals, strictly prohibit other pollution.</p> <p>Ensure there is a method statement</p>	Ongoing	NEM: BA; Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				in place to remedy any accidental spillages immediately. After construction clear any temporarily impacted areas of all foreign materials, re-apply and/or loosen topsoils and landscape to surrounding level.					
			To ensure successful control of alien invasive plant species.	Areas cleared of invasive to be monitored in the growing season (summer). If re-sprouting or reseeding is noted, follow-up control to be initialised. Cleared and denuded areas to be rehabilitated as soon as possible with indigenous grass species. Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed. Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after such activities cease.	Ongoing	NEM: BA; Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environmental Control Officer
		Surface Water	To prevent the siltation of surface water resources.	Ensure site clearing is limited to the designated areas, and Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs).	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan Rehabilitation Plan.	Construction Phase LoM	Construction Manager Specialist Environment Control Officer
		Groundwater	To prevent the contamination of groundwater resources	Ensure that a stormwater management plan is in place to separate clean and dirty water; and Groundwater monitoring of the water quality and levels must take place quarterly, especially for the water supply boreholes to ensure a sustainable resource and identify impacts on local users.	Ongoing; and Quarterly	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan Groundwater Monitoring Programme	Construction Phase Operational Phase LoM	Construction Manager Specialist Environmental Control Officer
		Noise	To prevent the noise emanating from the construction machinery and vehicles impacting on surrounding	Ensure site clearing activities are only undertaken during daylight hours; Mining related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g., installed exhaust mufflers); and	Daily; and According to Maintenance Plan.	NEM: AQA; and ECA.	Regular Vehicle Inspections.	Construction Phase	Construction Manager Maintenance Manager

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			sensitive receptors.	Ensure equipment and machinery is switched off when not in use.					
5.	Construction Surface Infrastructure (Including KPS/KHU Link Road, Ventilation Shaft, Transfer Chute and associated Water Management Infrastructure)	Air Quality	To minimise fugitive dust generation emanating.	Ensure that the areas of disturbance are minimised and restricted to the required footprint areas; and Ensure that dust suppressants are applied to exposed surfaces.	Ongoing; and Daily.	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827).	Dust Management Plan. Dust Monitoring Programme.	Construction Phase; Operational Phase; Decommissioning Phase	Construction Manager Specialist Environment; Environmental Control Officer
Topography and Visual Environment		To minimise the change in topography and disruption of surface water flow. To minimise soil erosion; To minimise the negative visual impact caused by the construction of surface infrastructure; and To minimise the negative visual impact caused by construction area lighting at night.	Limit the footprint areas of the of the surface infrastructure, where possible, especially the width of the link road to be within the servitude; Ensure that access and haul roads are contoured to limit erosion from surface runoff, preventing further alteration to the topography; Establish vegetation, where possible, to aid in screening infrastructure; Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape; and Limit construction activities at night and down lighting must be used to minimise light pollution.	Ongoing.	N/A	Servitude Agreements; and Infrastructure (Link Road, Ventilation Fan and RoM Stockpile) Construction Design Plans and Specifications.	Construction Phase; Operational Phase	Construction Manager Specialist Environment Environmental Control Officer	
Soils		To prevent soil contamination and degradation.	Ensure soils are stripped and stockpiled prior to the excavation of infrastructure areas; and Implement Stormwater Management designs to prevent erosion.	Ongoing; and Weekly	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; and CARA.	Soil Rehabilitation Plan; and Stormwater Management Plan	Construction Phase; Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer	
Fauna and Flora		To prevent and minimise the loss of vegetation communities. To prevent the influx and establishment of alien invasive vegetation.	Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation; Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified and removed throughout the LoM.	Ongoing.	NEM:BA; and ECA.	Conservation Management Plan; and Alien Invasive Management Plan.	Construction Phase; Operational Phase; LoM.	Construction Manager Specialist Environment Environmental Control Officer	

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		Fauna	<p>To prevent the unnecessary destruction of natural habitat and animal life within the development area and to maintain ecological connectivity to neighbouring sites and, where possible, to regional ecological corridors.</p> <p>Not to unnecessarily or deliberately alienate or hinder the movement of fauna in the area or to harm any animal life found on the property.</p> <p>To maintain existing fauna biodiversity and prevent the skewing of fauna communities as far as possible.</p>	<p>Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions.</p> <p>Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas.</p> <p>Ensure safe speed limits in the development area and no open fires.</p> <p>Do not feed wild life and ensure that all food and food waste, including domestic waste, is placed in sealed containers and not exposed on site.</p> <p>Ensure that the outside areas are kept clean and tidy and provide adequate waste removal services to prevent the attraction of rats and other alien scavenging species to the site.</p> <p>Regularly (daily) inspect the haul road and clear coal spills and clear coal fines to reduce coal dust contamination to the neighbouring wetland areas.</p>	Ongoing	NEM: BA; Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environment Environmental Control Officer
		Flora	To ensure successful control of alien invasive plant species.	<p>Areas cleared of invasive to be monitored in the growing season (summer).</p> <p>If re-sprouting or reseedling is noted, follow-up control to be initialised.</p> <p>Cleared and denuded areas to be rehabilitated as soon as possible with indigenous grass species.</p> <p>Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed.</p>	Ongoing	NEM: BA; Mpumalanga Biodiversity Sector Plan.	Biodiversity Action Plan; Wetland Management Plan; and Alien Invasive Management Plan.	Pre-Construction Phase	Construction Manager Specialist Environment Environmental Control Officer

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				Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after such activities cease.					
		Wetlands and Aquatic Ecology	To prevent the contamination and sedimentation of the wetland systems and aquatic ecosystems.	Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation; Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction; Implement and maintain alien vegetation management programme; Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must be removed to an appropriate waste facility.	Ongoing; and Biannually (Biomonitoring)	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; and Aquatic (Biomonitoring) Monitoring Programme.	LoM	Construction Manager Specialist Environment Control Officer
			Increased vehicular movement in the vicinity of watercourses resulting in: Potential contamination of soils as a result of the ingress of hydrocarbons; Compaction of soils; Loss of natural vegetation; Increased sedimentation; and Increased potential for onset of erosion. Disturbance of soils resulting in the spread and proliferation of	Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation; Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction; Implement and maintain alien vegetation management programme; Limit the footprint area of the construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils; All erosion noted within the construction footprint to be remedied immediately and included as part of an ongoing rehabilitation plan; All delineated watercourses and their associated 100 m zones of regulation in terms of GN704 must be designated as “No-Go” areas and be off limits to all unauthorised vehicles and personnel, with the exception of approved construction and operational areas;	Ongoing; and Biannually (Biomonitoring)	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; and Aquatic (Biomonitoring) Monitoring Programme.	LoM	Construction Manager Specialist Environment Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			alien and invasive plant species.	No unnecessary crossing of the watercourses to take place and wherever possible, existing infrastructure should be utilised; Suitably designed culverts to be installed under road crossings where any watercourses are anticipated to be crossed; The number of culverts installed must be suitable for the gradient, width and flow profiles of the watercourses being crossed so as to avoid upstream inundation, erosion and incision, and alterations to the natural channel; Crossings to make use of existing roads wherever possible and should either utilise or be constructed downgradient of barriers associated with impoundments on the affected systems; No material may be dumped or stockpiled within delineated watercourses;					
		Surface Water	To prevent the siltation of surface water resources.	Ensure that the topsoil stockpiles are vegetated to prevent soil erosion; Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs); and The design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements. The existing PCDs to be used must have a freeboard of 0.8 m and must be able to contain a 1: 50-year, 24-hour extreme rainfall event.	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan	Construction Phase	Construction Manager Specialist Environment Control Officer
		Noise	To prevent the noise emanating from the construction machinery and vehicles impacting on surrounding sensitive receptors.	Ensuring that all construction equipment operators receive proper training in the use of the equipment and that the equipment is serviced regularly. All blasting and piling driving, if required, should only occur during the day. An environmental noise monitoring survey should be conducted during	Daily; and According to Maintenance Plan.	NEM: AQA; and ECA.	Regular Vehicle Inspections.	Construction Phase	Construction Manager Maintenance Manager

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				<p>the construction phase to assess the impact and recommend further actions if required.</p> <p>A public complaints and actions registry should be established to capture public perceptions and complaints regarding noise impacts, track investigation actions, and introduce corrective measures for continuous improvement.</p> <p>Noise complaints should be reported through the community liaison officer and include an effective follow-up process.</p> <p>Noise reduction techniques should be considered as additional mitigation measures to the project design</p> <p>Selecting equipment with lower sound power levels.</p> <p>Installing silencers on fans.</p> <p>Ensure construction activities are only undertaken during daylight hours;</p> <p>All the diesel-powered equipment should be of high quality and well maintained.</p> <p>Equipment should be switched off when not in use.</p> <p>It is recommended that noise measurement monitoring continues during construction and operation phases. This will assist in formulating mitigation measures should noise complaints be received from surrounding residents or communities. Additional monitoring points should be included in the vicinity if required/requested.</p> <p>Regular maintenance schedules should include a check for noise emissions, e.g., the functional state of all intake and exhaust noise attenuators and effectiveness of enclosures in accordance with standard operating procedures; and Construction related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are</p>					

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				effective (e.g., installed exhaust mufflers).					
6.	Construction of RoM Stockpile and associated Water Management Infrastructure.	Air Quality	To minimise fugitive dust generation emanating the RoM Stockpile construction activities.	Ensure that the areas of disturbance are minimised and restricted to the required footprint areas; Public complaints and actions registry should be established to capture public perceptions and complaints regarding increased air quality impacts; Dust fallout monitoring must be conducted throughout the life of operation of Khutala Colliery to confirm model predictions. Reduce, control and manage the height of material drops (e.g., Transfer chute to RoM Stockpile); and Increase moisture content of material by using water sprays prior to or during conveying, crushing, and screening material.	Ongoing; and Daily.	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827).	Dust Management Plan. Dust Monitoring Programme. Operation and Maintenance Manual for the RoM Stockpile and Transfer Chute.	Construction Phase; Operational Phase; Decommissioning Phase	Construction Manager Specialist Environment; Environmental Control Officer
		Topography and Visual Environment	To minimise the change in topography and disruption of surface water flow. To minimise soil erosion and topsoil loss; and To minimise the negative visual impact caused by stockpiling of coal.	Ensure that the stockpile is constructed with the planned disturbed areas; Operate, manage and maintain the stockpile in line with the design plans, as-built plans and operating and maintenance manual.	Ongoing.	N/A	Mine Plan; RoM Stockpile design plans.	Construction Phase; Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer
		Soils	To prevent soil degradation.	Minimise topsoil stockpile heights as far as possible; Ensure soils are stripped and stockpiled prior to the excavation of infrastructure foundations; Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis; Traffic and access to the stockpiles will be restricted; Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the	Ongoing; and Annually.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; and CARA.	Storm Water Management Plan	Construction Phase; Operational Phase	Construction Manager Specialist Environment Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				ecological processes within the soil; and Implement Stormwater Management designs to prevent erosion.					
		Fauna and Flora	To prevent and minimise the loss of vegetation communities. To prevent the influx and establishment of alien invasive vegetation.	Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation; Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified and removed throughout the LoM.	Ongoing.	NEM:BA; and ECA.	Conservation Management Plan; Alien Invasive Management Plan.	Construction Phase; Operational Phase; and LoM.	Construction Manager Specialist Environment Environmental Control Officer
		Wetlands and Aquatic Ecology	To prevent the contamination and sedimentation of the wetland systems and aquatic ecosystems.	Ensure the statutory buffers are implemented from the wetlands systems and watercourses, unless otherwise stated in the IWUL; Ensure a Storm Water Management Plan is implemented; and Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.	Ongoing; and Biannually	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan Aquatic Monitoring Programme	LoM	Construction Manager Specialist Environment Environmental Control Officer
		Surface Water	To prevent the siltation of surface water resources.	Ensure that the topsoil stockpiles are vegetated to prevent soil erosion; Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs); and The design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan	Construction Phase	Construction Manager Specialist Environment Environmental Control Officer
		Groundwater	To prevent the contamination of groundwater resources	A groundwater monitoring system must be implemented and test the water on a quarterly basis for changes in water quality and water levels. Should impacts be identified, management measures must be implemented based on the contaminant or water level change; Implement a Surface Water Management Plan to minimise the volume of dirty water produced, as well as the effectiveness of the	Quarterly Ongoing; and Annually	NWA; GN R. 704; Best Practice Guidelines.	Groundwater Monitoring Programme Surface Water Management Plan; and Numerical and Conceptual Model.	Construction Phase Operational Phase LoM	Construction Manager Specialist Environment Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				containment of dirty water, thereby reducing the probability of contamination of groundwater from infiltration of dirty surface water; Refine and update the conceptual and numerical models annually for the first four years and thereafter every five years based on groundwater monitoring results. This will help to better quantify impacts to water quantity and quality; and All contaminant, waste and hazardous waste storage facilities and other contaminated water storage areas (PCD) must be lined to pro-actively prevent infiltration of contaminated seepage water.					
7.	Development of the 5 Seam underground mining activities.	Air Quality	To minimise dust generation emanating from the development of the 5 Seam workings.	Development activities will be undertaken from the existing 4 Seam workings. That is within the existing underground workings and no surface disturbance and dust generation will take place.	Ongoing; and Daily.	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827).	Mine Plan. Dust Management Plan; and Dust Monitoring Programme.	Construction Phase; Operational Phase; and Decommissioning Phase.	Mine Manager Specialist Environment; Environmental Control Officer
		Topography and Visual Environment	To minimise the change in topography and disruption of surface water flow.	Developmental activities will be undertaken from the existing 4 Seam workings. That is within the existing underground workings and no surface disturbance and dust generation will take place.	When required.	NWA; and GN R 704,	Mine Plan. Stormwater Management Plan	Construction Phase; and Operational Phase.	Mine Manager Specialist Environment; Mine Manager Environmental Control Officer
		Surface Water	To prevent the siltation of surface water resources from the drilling of the ventilation shaft.	Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs); and The design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan	Construction Phase	Construction Manager Specialist Environment Environmental Control Officer
		Groundwater	To prevent the contamination of groundwater resources	Ensure that all potential hydrocarbon spillages and leaks are cleaned up immediately and the soils remediated;	Ongoing; and Quarterly	NWA; GN R. 704; Best Practice Guidelines.	Emergency Response Plan Vehicle Maintenance Plan	LoM	Mine Manager Maintenance Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All contractors' construction vehicles and machinery to be serviced in a hard park area or at an off-site location; and Groundwater monitoring of the water quality and levels must take place quarterly; and.			Groundwater Monitoring Programme		Environmental Control Officer
			To prevent the impacts of dewatering on local users including the Prinsloo Farmstead boreholes.	Implement a groundwater monitoring programme to assess changes in water levels to monitor the development of the dewatering cone; Monitor all the boreholes of external users monthly for water level and on a quarterly basis for water quality. Further investigate the potential impact on these boreholes starting before the 5 Seam mining commences and continue during mining. When the water level of these boreholes starts to drop, the mine will need to investigate which alternative water source to use for supplying the users to ensure that their water supply is not interrupted or disturbed.; and Refine and update the conceptual and numerical models annually for the first four years and thereafter every five years based on groundwater monitoring results. This will help to better quantify impacts to water quantity and quality. The water level decrease (reduction in volume of available water) and water quality impacts will be modelled as a scenario and management measures can be put in place to mitigate these impacts and arrange for alternative water supply to potential impacted water users.	Quarterly; As required; and Annually	NWA; GN R. 704; Best Practice Guidelines.	Groundwater Monitoring Programme Conceptual and Numerical Model	Construction Phase Operational Phase	Mine Manager Specialist Environment Environmental Control Officer
		Noise	To prevent the noise emanating from the	Ensure construction activities are only undertaken during daylight hours;	Daily; and According to Maintenance Plan.	NEM: and ECA.	Regular Vehicle Inspections.	Construction Phase	Construction Manager Maintenance Manager

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person	
			construction and mining machinery and vehicles impacting on surrounding sensitive receptors.	Mining related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g., installed exhaust mufflers); and Ensure equipment and machinery is switched off when not in use.						
		Surface infrastructure including heritage resources, farmstead, offices and etc.	To prevent ground vibrations from impacting on sensitive receptors and from damaging the integrity of structures due to underground blasting activities.	Reduce the charge mass per delay over decreasing distances towards the points of interest of concern; Specific blast designs to be undertaken to ensure the levels of ground vibration are within limits; Ground vibration levels must be monitored.	During blasting activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as amended (2003).	Ground vibration monitoring plan; and Implementation of blasting buffer zones.	Construction Phase; Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.	
			To prevent air blast from impacting on the structural integrity of surface infrastructure such as houses, power generation, roads and buildings.	Reduce the charge mass per delay over decreasing distances towards the points of interest of concern; Air blast levels must be monitored during blasting activities; Adequate stemming controls should be implemented; Ground vibration levels must be monitored; and Conduct annual crack surveys of the affected areas (within the mining areas).	During blasting activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as amended (2003).	Air blast monitoring plan.	Construction Phase; Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.	
				To prevent the damaging of surface structures, including roads and heritage resources (graves).	Controls must be implemented for the management of stemming lengths; and Specific blast designs to be compiled and implemented for the blasting to be undertaken.	During blasting activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as amended (2003).	Implementation of effective blasting controls; and Heritage Management Plan.	Construction Phase; Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.
				To prevent noxious fumes from impacting on employees and contribution to climate change.	The correct explosive products must be utilised; Quality control systems must be implemented to ensure the correct quantities of additives to the explosives; Ground vibration levels must be monitored; Monitor the underground emissions;	During blasting activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as amended (2003).	Implementation of effective blasting controls; and Climate Change Management Plan.	Construction Phase; Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				A competent person to undertake and declare safe the blasting activities; and The charge and blast must be undertaken on the same day.					
Operational Phase									
8.	Recruitment, Procurement and Employment	Discussed in the Social Management Plan. Refer to Section 9.1.							
9.	Operation of the 5 Seam underground mining activities.	Surface and groundwater	To prevent the draining of the surface watercourses as a result of undermining activities.	Continue with water quality monitoring at the existing sample at the current monitoring locations and frequency; Increase monitoring frequency for those monitoring points that show constant non-compliances Care to be taken when mining the areas that are shallower than 40m. Ensure that the size of the pillars that will be left behind are adequate to prevent subsidence. Monitoring should continue, and safety measures should be put in place where subsidence is observed; The water levels in the Surface Main PCD and the Main Underground dams must be constantly monitoring and recorded for evaluation of additional future capacity and/or treatment requirements.	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; and Rock Engineering Pillar Stability Monitoring Plan.	Operational Phase	Construction Manager Specialist Environment Environmental Control Officer
		Groundwater	To prevent the contamination of groundwater resources	Ensure that all potential hydrocarbon spillages and leaks are cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All contractors' construction vehicles and machinery to be serviced in a hard park area or at an off-site location; and Groundwater monitoring of the water quality and levels must take place quarterly; and.	Ongoing; and Quarterly	NWA; GN R. 704; Best Practice Guidelines.	Emergency Response Plan Vehicle Maintenance Plan; and Groundwater Monitoring Programme.	LoM	Mine Manager Maintenance Manager Specialist Environment Environmental Control Officer
			To prevent the impacts of	Implement a groundwater monitoring programme to assess changes in	Quarterly; As required; and	NWA; GN R. 704;	Groundwater Monitoring Programme	Operational Phase	Mine Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			dewatering on local users including the Prinsloo Farmstead boreholes.	water levels to monitor the development of the dewatering cone. Monitor all the boreholes of external users monthly for water level and on a quarterly basis for water quality. Further investigate the potential impact on these boreholes starting before the 5 Seam mining commences and continue during mining. When the water level of these boreholes starts to drop, the mine will need to investigate which alternative water source to use for supplying the users to ensure that their water supply is not interrupted or disturbed.); and Refine and update the conceptual and numerical models annually for the first four years and thereafter every five years based on groundwater monitoring results. This will help to better quantify impacts to water quantity and quality. The water level decrease (reduction in volume of available water) and water quality impacts will be modelled as a scenario and management measures can be put in place to mitigate these impacts and arrange for alternative water supply to potential impacted water users.	Annually	Best Practice Guidelines.	Conceptual and Numerical Model		Environmental Control Officer
		Surface infrastructure including heritage resources, farmstead, offices and etc.	To prevent ground vibrations from impacting on sensitive receptors and from damaging the integrity of structures due to underground blasting activities.	Reduce the charge mass per delay over decreasing distances towards the points of interest of concern; Specific blast designs to be undertaken to ensure the levels of ground vibration are within limits; Ground vibration levels must be monitored.	During blasting and mining activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as amended (2003).	Ground vibration monitoring plan; and Implementation of blasting buffer zones.	Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.
			To prevent air blast from impacting on the structural integrity of surface infrastructure such as houses, power	Reduce the charge mass per delay over decreasing distances towards the points of interest of concern; Air blast levels must be monitored during blasting activities; Ground vibration levels must be monitored; and	During blasting and mining activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as	Air blast monitoring plan.	Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			generation, roads and buildings.	Conduct annual crack surveys of the affected areas (within the mining areas).		amended (2003).			
			To prevent the damaging of surface structures, including roads and heritage resources (graves).	Controls must be implemented for the management of stemming lengths; and Specific blast designs to be compiled and implemented for the blasting to be undertaken.	During blasting activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as amended (2003).	Implementation of effective blasting controls; and Heritage Management Plan.	Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.
			To prevent noxious fumes from impacting on employees and contribution to climate change.	The correct explosive products must be utilised; Quality control systems must be implemented to ensure the correct quantities of additives to the explosives; Ground vibration levels must be monitored; Monitor the underground emissions; A competent person to undertake and declare safe the blasting activities; and The charge and blast must be undertaken on the same day.	During blasting and mining activities.	Mine Health and Safety Act, 1996 (Act No. 29 of 1996); MPRDA; and Explosives Act, 1956 (Act No. 26 of 1956) as amended (2003).	Implementation of effective blasting controls; and Climate Change Management Plan.	Operational Phase.	Mine Manager Mine Contractor; Environmental Control Officer.
10.	Storage, use and control of fuel and lubricants to be used for the underground mining activities.	Soils	To prevent soil contamination and degradation.	All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); Hydrocarbons and explosives storage facilities must be in a hard park banded facility; and Vehicles with leaks must have drip trays in place.	When required.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; CARA; and Hazardous Substances Act, 1973	Emergency Response Plan Vehicle Maintenance Plan; and Hydrocarbon Management Plan.	Operational Phase.	Mine Manager Maintenance Manager Specialist Environment
		Groundwater	To prevent and minimise	All potential hydrocarbon leaks must be repaired immediately and	Ongoing; and Quarterly groundwater	NWA; GN R 704;	Emergency Response Plan;	Operational Phase.	Mine Manager Maintenance Manager

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			groundwater contamination.	<p>spillages be cleaned up immediately and the soils remediated;</p> <p>Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</p> <p>All vehicles and machinery to be serviced in a hard park area or at an off-site location;</p> <p>Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);</p> <p>Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and</p> <p>Vehicles with leaks must have drip trays in place; and</p> <p>Groundwater monitoring of the water quality and levels must take place quarterly especially for the water supply boreholes to ensure a sustainable resource and identify impacts on local users.</p>	quality monitoring.	Best Practice Guidelines	Vehicle Maintenance Plan; Groundwater Monitoring Programme; and Hydrocarbon Management.		Specialist Environment
11.	Operation of the RoM Stockpile and associated Water Management Infrastructure.	Air Quality	To minimise fugitive dust generation emanating the RoM Stockpile operational activities.	<p>Ensure that the areas of disturbance are minimised and restricted to the required footprint areas;</p> <p>Public complaints and actions registry should be established to capture public perceptions and complaints regarding increased air quality impacts;</p> <p>Dust fallout monitoring must be conducted throughout the life of operation of Khutala Colliery to confirm model predictions;</p> <p>control and manage the height of material drops (e.g., Transfer chute to RoM Stockpile); and</p> <p>Increase moisture content of material by using water sprays prior to or during conveying, crushing, and screening material.</p>	Ongoing; and Daily.	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827).	Dust Management Plan; and Dust Monitoring Programme.	Operational Phase; Decommissioning Phase	Construction Manager Specialist Environment; Environmental Control Officer
		Topography and Visual Environment	To minimise the change in topography and disruption of surface water flow.	<p>Ensure that the stockpile is constructed within the proposed planned disturbed areas;</p> <p>Operate, manage and maintain the stockpile in line with the design plans, as-built plans and operating and maintenance manual.</p>	Ongoing.	N/A	RoM Stockpile design plans; RoM Stockpile Operation and Maintenance Plan; and	Operational Phase	Construction Manager Specialist Environment; Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			To minimise soil erosion and topsoil loss; and To minimise the negative visual impact caused by stockpiling of coal.				Storm Water Management Plan.		
		Soils	To prevent soil degradation.	Minimise topsoil stockpile heights as far as possible; Ensure soils are stripped and stockpiled prior to the excavation of infrastructure foundations; Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis; Traffic and access to the stockpiles will be restricted; Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the ecological processes within the soil; and Implement Stormwater Management designs to prevent erosion.	Ongoing; and Annually.	NWA; GN R704; MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; and CARA.	RoM Stockpile design plans; RoM Stockpile Operation and Maintenance Plan; and Storm Water Management Plan.	Operational Phase	Construction Manager Specialist Environmental Control Officer
		Fauna and Flora	To prevent and minimise the loss of vegetation communities. To prevent the influx and establishment of alien invasive vegetation.	Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation; Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified and removed throughout the LoM.	Ongoing.	NEM:BA; and ECA.	Conservation Management Plan; and Alien Invasive Management Plan.	Operational Phase; LoM.	Construction Manager Specialist Environment Control Officer
		Wetlands and Aquatic Ecology	To prevent the contamination and sedimentation of the downstream wetland systems and aquatic ecosystems.	Ensure the statutory buffers are implemented from the wetlands systems and watercourses, unless otherwise stated in the IWUL; Ensure a Storm Water Management Plan is implemented; and Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.	Ongoing; and Biannually	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; and Aquatic Monitoring Programme.	LoM	Construction Manager Specialist Environment Control Officer
		Surface Water	To prevent the siltation of downstream	Ensure that the topsoil stockpiles are vegetated to prevent soil erosion; Implement Stormwater Management designs to prevent erosion and divert	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan.	Operational Phase	Construction Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			surface water resources.	dirty water to the appropriate storage dams (PCDs); and The design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.					Environmental Control Officer
		Groundwater	To prevent the contamination of groundwater resources	A groundwater monitoring system must be implemented and test the water on a quarterly basis for changes in water quality and water levels. Should impacts be identified, management measures must be implemented based on the contaminant or water level change; Implement a Surface Water Management Plan to minimise the volume of dirty water produced, as well as the effectiveness of the containment of dirty water, thereby reducing the probability of contamination of groundwater from infiltration of dirty surface water; Refine and update the conceptual and numerical models annually for the first four years and thereafter every five years based on groundwater monitoring results. This will help to better quantify impacts to water quantity and quality; and All contaminant, waste and hazardous waste storage facilities and other contaminated water storage areas (PCD) must be lined to pro-actively prevent infiltration of contaminated seepage water.	Quarterly groundwater Monitoring; Ongoing; and Annually	NWA; GN R. 704; Best Practice Guidelines.	Groundwater Monitoring Programme; Surface Water Management Plan; and Numerical and Conceptual Model.	Operational Phase LoM	Construction Manager Specialist Environment Environmental Control Officer
12.	Transportation of coal via the KPS/KHU Link Road	Soil	To prevent soil contamination and degradation due to potential hydrocarbon spillages.	All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and	When required.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; CARA; and Hazardous Substances Act, 1973	Emergency Response Plan; Vehicle Maintenance Plan; Hydrocarbon Management Plan; and Traffic Management Plan.	Operational Phase.	Maintenance Manager Construction Manager Specialist Environment; Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				Vehicles with leaks must have drip trays in place.					
		Wetland and aquatic environment	<p>Increased movement of heavy vehicles:</p> <p>To prevent the potential contamination of soils as a result of the ingress of hydrocarbons.</p> <p>To prevent the compaction of soils;</p> <p>Loss of natural vegetation;</p> <p>Increased sedimentation; and</p> <p>Increased potential for onset of erosion.</p>	<p>Clean and dirty water separation systems to be implemented prior to the commencement of activities and to be maintained throughout the life of the proposed project;</p> <p>Ensure that as far as possible all operational infrastructures are placed outside of wetland/riparian areas and their associated 32 or 100m zones of regulation respectively;</p> <p>Limit the footprint area of the operational activities to what is absolutely essential in order to minimise impacts as a result of subsidence;</p> <p>Ensure that no incision and canalisation of the wetland features present takes place as a result of the proposed operational activities;</p> <p>All erosion noted within the operational footprint as a result of either subsidence or any potential surface activities should be remedied immediately and included as part of the ongoing rehabilitation plan;</p> <p>Erosion berms should be installed on roadways and downstream of stockpiles to prevent gully formation and siltation of the freshwater resources.</p> <p>A suitable AIP control programme must be put in place so as to prevent further encroachment as a result of disturbance to the surrounding terrestrial zones;</p> <p>All delineated watercourses should be designated as "No-Go" areas and be off limits to all unauthorised vehicles and personnel, with the exception of approved operational areas;</p> <p>No material may be dumped or stockpiled within any watercourses in the vicinity of the proposed operational footprint;</p> <p>No vehicles or heavy machinery may be allowed to drive indiscriminately within any delineated watercourses. All vehicles must remain on</p>	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; Wetland Management Plan; Alien Invasive Management Plan; and Topsoil Management Plan.	Operational Phase	Construction Manager Specialist Environment Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person	
				demarcated roads and within the operational area footprint; All vehicles must be regularly inspected for leaks; Re-fueling must take place on a sealed surface area away from wetlands to prevent ingress of hydrocarbons into topsoil; All spills should be immediately cleaned up and treated accordingly; Appropriate sanitary facilities must be provided for the duration of the operational activities and all waste must be removed to an appropriate waste facility; Monitor all systems for erosion and incision; Areas across watercourses where cross-sectional subsidence is observed should be rehabilitated in such a way as to maintain stream connectivity in a downstream direction.						
		Surface water and groundwater	To prevent the contamination of surface water due to potential hydrocarbon spillages.	All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and Vehicles with leaks must have drip trays in place.	Ongoing	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan	Operational Phase	Construction Manager Specialist Environment Environmental Control Officer	
13.	Dirty water management.	Wetlands and Aquatic Ecology	To prevent the contamination of the wetland systems and aquatic ecosystems.	Ensure a Stormwater Management Plan is implemented; Ensure that no incision and canalisation of the watercourses; Dirty water from the infrastructure areas must be diverted by channels and berms and separated from clean water. The dirty water must be stored in the existing PCDs;	Ongoing; Daily; Biannually.	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan Dust Management Plan; Dust Monitoring Programme; Aquatic Monitoring	LoM	Mine Manager Specialist Environment	

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				No waste and/or contaminated material may be dumped or stockpiled within any watercourses; The operation and maintenance of the PCD must be in accordance with the NWA Regulations set out in GN R704 and must have a minimum freeboard of 0.8 m and be able to contain a 1:50 year, 24-hour storm event; and Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.			Programme; and Rehabilitation and Closure Plan.		
		Surface Water	To prevent the contamination of clean water resources.	Continue with water quality monitoring at the existing sample at the current monitoring locations and frequency. Increase monitoring frequency for those monitoring points that show constant non-compliances; The water levels in the Surface Main PCD and the Main Underground dams must be constantly monitoring and recorded for evaluation of additional future capacity and/or treatment requirements; Pipelines used for dewatering activities need to be sized based on the dewatering rates and volumes; The operation and maintenance of the existing PCD must be in accordance with the NWA Regulations set out in GN R704 and must have a minimum freeboard of 0.8 m and be able to contain a 1:50 year, 24-hour storm event; Monitor the dirty water management facilities on a monthly basis to identify potential leaks and implement management measures to rectify potential issues; and Monitor surface water resources up and downstream of the Project area to identify potential contamination.	Ongoing; and Monthly surface water monitoring	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; and Surface Water Monitoring Programme.	Operational Phase	Mine Manager Specialist Environment
		Groundwater	To prevent and minimise groundwater contamination.	Ensure that pipelines and diversion channels and berms are monitored for potential leaks and structure failures; Potential leaks and spills must be contained and cleaned up	Monthly Quarterly	NWA; GN R 704; Best Practice Guidelines	Stormwater Management Plan; and Groundwater Monitoring Programme.	Operational Phase	Mine Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				<p>immediately, as well as the leakage location repaired;</p> <p>Monitor all the boreholes of external users monthly for water level and on a quarterly basis for water quality.</p> <p>Further investigate the potential impact on these boreholes starting before the 5 Seam mining commences and continue during mining.</p> <p>When the water level of these boreholes starts to drop, the mine will need to investigate which alternative water source to use for supplying the users to ensure that their water supply is not interrupted or disturbed or dewatered; Specifically, the Prinsloo Farmstead (Located on Portion 6 of the farm Zondagsvlei 9 IS);</p> <p>Monitor and control the potential decant of dirty water from the workings;</p> <p>Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl;</p> <p>Monitor the borehole water quality and if the quality deteriorates, it is recommended to start pumping the contaminated into a containment facility for evaporation and to contain the plume;</p> <p>Ensure that a stormwater management plan is in place to separate clean and dirty water; and</p> <p>Groundwater monitoring of the water quality and levels must take place quarterly especially for the water supply boreholes to ensure a sustainable resource and identify impacts on local users.</p>					
14.	Waste and sewage generation and disposal.	Topography and Visual Environment	To minimise the negative visual impact caused by waste stored on site.	Waste must be stored away from surface water and drainage lines; and General and hazardous waste must be removed and disposed of frequently at a registered disposal site.	Ongoing; and Monthly reporting of waste generated on site.	NWA; GN R. 704; Best Practice Guidelines; ECA.	IWWMP	LoM	Mine Manager Maintenance Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
		Soil	To prevent the degradation and contamination of soil.	Burying of any waste including rubble, domestic waste, empty containers on the site must be strictly prohibited; Proper waste storage facilities should be available and used for the correct separation and storage of waste prior to collection and disposal; and Generated waste must be removed to an approved disposal facility.	Ongoing; and Monthly surface water monitoring. Monthly reporting of waste generated on site.	NWA; GN R. 704; Best Practice Guidelines; CARA; and NEM: WA	Stormwater Management Plan; IWWMP; and Waste Management Plan.	Operational Phase	Mine Manager Specialist Environment
		Surface Water	To prevent the contamination of clean water resources.	The sewer waster collected from the workings must be disposed of at a licensed sewage treatment facility; Monitor surface water resources up and downstream of the Project area to identify potential contamination; Ensure that a stormwater management plan is in place to separate clean and dirty water; and Waste must be separated at source and stored in appropriately designated areas for disposal at a licensed facility or by a reputable contractor.	Ongoing; and Monthly surface water monitoring.	NWA; GN R. 704; Best Practice Guidelines. NEM: WA	Stormwater Management Plan; IWWMP; and Waste Management Plan.	Operational Phase	Mine Manager Specialist Environment
		Groundwater	To prevent and minimise groundwater contamination.	The operation and maintenance of the underground sewer waste collection facilities must be conducted in a manner that can accommodate the number of people it is designed; Monitor and maintain the underground sewage collection facilities to ensure there are no leaks or discharges; Sewer waste facilities to be brought to surface on sealed containers and disposed of a licensed sewage treatment facility by an approved sewer waste contractor; Separated waste at its source and store it in appropriately designated areas for disposal at a licensed facility or by a reputable contractor; Groundwater monitoring of the water quality and levels must take place quarterly to identify potential impacts and leaks or seepage.	Daily and ongoing sewer management; Monthly reporting of sewer waste generated; and Quarterly groundwater monitoring.	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; Groundwater Monitoring Programme; Waste Management Plan; and Sewer Waste Management Plan.	Operational Phase LoM	Mine Manager Specialist Environment
Decommissioning Phase									
15.	Retrenchment	Discussed in the Social Management Plan. Refer to Section 9.1.							

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
16.	Demolition of infrastructure	Air Quality	To minimise fugitive dust generation emanating from the Project activities.	The area of disturbance must be restricted to the required footprint size; Demolition activities should be undertaken with care during windy periods; and The area of disturbance must be minimised to limit the area exposed to wind conditions.	Ongoing	NEM: AQA.	Dust Management Plan; Dust Monitoring Programme; and Rehabilitation and Closure Plan.	Decommissioning Phase	Closure Manager Specialist Environment
		Topography and Visual Environment	To rehabilitate the topography; and To reduce the visual impact caused by the construction of infrastructure.	Demolish all unnecessary infrastructure; Ensure that all demolished infrastructure is removed from site's surface; and Ensure that rehabilitated areas are rehabilitated and vegetated.	As required.	ECA; Chamber of Mines Guidelines for the Rehabilitation of Mined Land.	Rehabilitation and Closure Plan.	Decommissioning Phase Post-Closure Phase	Closure Manager Specialist Environment
		Soil	To prevent soil contamination and degradation.	Ensure that demolished infrastructure is removed off-site and disposed of by a reputable contractor; All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; and Vehicles with leaks must have drip trays in place.	As required.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; CARA; and Hazardous Substances Act, 1973	Emergency Response Plan; and Vehicle Maintenance Plan.	LoM	Closure Manager Specialist Environment
		Fauna and Flora	<ul style="list-style-type: none"> To prevent and minimise the loss of vegetation communities. To prevent the influx and establishment of alien invasive vegetation. 	Restrict vehicles and machinery to existing roads and designated areas to prevent vegetation destruction; and Alien invasive vegetation to be identified and removed throughout the LoM; and Establish and implement an Alien Invasive Management Programme.	Ongoing.	NEM:BA; and ECA.	Conservation Management Plan; and Alien Invasive Management Plan.	Decommissioning Phase LoM	Closure Manager Specialist Environment Environmental Control Officer
		Wetlands and Aquatic Ecology	To prevent the contamination and sedimentation of the wetland	Restrict vehicles and machinery to existing roads and designated areas to prevent vegetation destruction;	Ongoing Biannual	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; and	LoM	Specialist Environment Environmental Control Officer

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			systems and aquatic ecosystems.	All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; and Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.			Aquatic Monitoring Programme.		
		Surface Water	To prevent and minimise negative impacts on surface water resources as a result of hydrocarbon spills.	Reputable and accredited contractors will be used for the transport and disposal of wastes and demolished material off-site; All potential hydrocarbon spillages and leaks to be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; and Vehicles with leaks must have drip trays in place.	As required.	NWA; GN R 704; Best Practice Guidelines	IWWMP; Emergency Response Plan; and Vehicle Maintenance Plan.	LoM	Closure Manager Specialist Environment
		Noise	To prevent the noise emanating from machinery and vehicular activities impacting on surrounding sensitive receptors.	Ensure demolition activities only take place during daylight hours; Demolition related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g., installed exhaust mufflers); and Ensure equipment and machinery is switched off when not in use.	Daily; and According to Maintenance Plan.	NEM: AQA; and ECA.	Regular Vehicle Inspections.	Decommissioning Phase	Closure Manager Maintenance Manager
17.	Final rehabilitation.	Air Quality	To minimise fugitive dust generation.	Replacement of topsoil should be undertaken judiciously during windy days; Ensure the rehabilitated areas are vegetated to prevent erosion and surface exposure to winds; and Monitor the establishment of vegetation.	Ongoing; and Monthly dust monitoring.	NEM: AQA.	Dust Monitoring Programme; and Dust Management Plan.	Operational Phase; Decommissioning Phase; Post-Closure Phase	Closure Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
		Topography and Visual Environment	<p>To rehabilitate the topography;</p> <p>To recreate the natural drainage lines and surface water flow;</p> <p>To create a free-draining topography;</p> <p>To minimise soil erosion and topsoil loss; and</p> <p>To restore the visual landscape emulating the pre-mining activities.</p>	<p>The ventilation shaft must be dismantled, concrete works removed and shaft areas sealed and capped as much as possible;</p> <p>The surface rehabilitated areas must be contoured and profiled to create a free-draining topography emulating the pre-mining topography; and</p> <p>Topsoil must be backfilled over the rehabilitated area and vegetated.</p>	As required.	NEMA	Rehabilitation Plan Closure Plan	Decommissioning Phase; Post-Closure Phase	Closure Manager Specialist Environment
		Soil	To prevent soil contamination and degradation.	<p>During the decommissioning phase the footprint must be thoroughly cleaned, and all waste material generated should be removed to a suitable disposal facility;</p> <p>Any compacted soils must be ripped to alleviate compaction;</p> <p>Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface;</p> <p>The landscape should be backfilled and reprofiled to mimic the natural topography for potential agricultural activities and grazing opportunities post mining. If possible, ensure a continuation of the pre mining surface drainage pattern;</p> <p>Slopes of the backfilled surface should change gradually since abrupt changes in slope gradient increase the susceptibility for erosion initiation;</p> <p>The soil fertility status should be determined by soil chemical analysis after levelling (before seeding/re-vegetation). Soil amelioration should be completed, if necessary, according to recommendations by a soil specialist, to correct the pH and nutrition status before revegetation; and</p> <p>The footprint should be re-vegetated with a grass seed mixture as soon as possible, preferably in spring and</p>	As required.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; CARA; and Hazardous Substances Act, 1973	Emergency Response Plan; and Vehicle Maintenance Plan.	LoM	Closure Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				early summer to stabilise the soil and prevent soil loss during the rainy season.					
			To prevent soil degradation and the decrease in land capability.	<p>Ensure that the topography of rehabilitated areas takes the pre-mining landscape into consideration and that the topography is free draining;</p> <p>Ensure that the soil layers are backfilled in reverse order of the stripping and the subsoil must underlie the topsoil;</p> <p>Ensure that the yellow and red soils are placed in upland landscape positions and wetland soils placed in the lower landscape positions;</p> <p>It is recommended that the soil cover should be at least 0.8 m in depth, consisting of 0.5 m of subsoil and 0.3 m of topsoil on top of the reconstructed profile to mimic the pre-mining land capability. However, the soil cover must be at least 0.3 m depth in order to sustain the identified end land use of grazing;</p> <p>Investigate soil quality prior to establishment of vegetation on rehabilitated areas through representative sampling and laboratory analysis. Soil fertility and acidity must be corrected prior to vegetation establishment, if required; and</p> <p>Monitor vegetation establishment.</p>	Ongoing; and Prior to vegetation establishment Annual soil monitoring	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; CARA.	Soil Rehabilitation Plan; and Soil monitoring.	Operational Phase; Decommissioning Phase; and Post-Closure Phase	Closure Manager Specialist Environment
		Fauna and Flora	To restore vegetation establishment; and To prevent the influx and establishment of alien invasive vegetation.	<p>Vegetate disturbed and rehabilitated area with indigenous vegetation;</p> <p>Monitor vegetation establishment and implement erosion control measures, if required;</p> <p>Alien invasive vegetation to be identified and removed throughout the LoM; and</p> <p>Establish and implement an Alien Invasive Management Programme.</p>	As required; and Ongoing.	NEM:BA; and ECA.	Rehabilitation and Closure Plan; and Alien Invasive Management Plan.	Operation Phase Decommissioning Phase Post-Closure	Closure Manager Mine Manager Specialist Environment
		Surface Water	To rehabilitate the area to an adequate state, thereby preventing sustained potential	<p>Rehabilitation activities must be monitored to ensure that the pre-mining drainage pattern is emulated and that vegetation establishment is successful;</p> <p>The disturbed areas should be vegetated as soon as possible to</p>	Monthly	NEMA	Rehabilitation and Closure Plan.	Operational Phase; Decommissioning Phase; and Post-Closure	Closure Manager Mine Manager Specialist Environment Rehabilitation Contractor

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			impacts from occurring.	prevent dust and siltation of the water bodies; Monitor surface water resources up and downstream of the Project area to identify potential contamination and residual impacts; and Where rehabilitation (grass seeding of topsoil cover) is not effective, the associated soil erosion must be mitigated by installing silt traps in affected areas.					
		Groundwater	To prevent and minimise groundwater contamination.	Monitoring of the borehole water quality is required and if the quality deteriorates, it is recommended to start pumping to contain the plume. Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl; Ensure that the ventilation shaft is sealed and capped material.	Quarterly groundwater monitoring; and As required	NWA; GN R. 704; Best Practice Guidelines.	Rehabilitation and Closure Plan; and Groundwater Monitoring Programme.	Operational Phase Decommissioning Phase	Closure Manager Specialist Environment
		Noise	To prevent the noise emanating from machinery and vehicular activities impacting on surrounding sensitive receptors.	Rehabilitation related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g., installed exhaust mufflers); and Ensure equipment and machinery is switched off when not in use.	Daily; and According to Maintenance Plan.	NEM: AQA; and ECA.	Regular Vehicle Inspections; and Vehicle Maintenance Plan.	Decommissioning Phase	
		Topography and Visual Environment	To minimise the negative visual impact caused by waste stored on site.	Limit the footprint area of the waste management facilities; Waste must be stored away from surface water and drainage lines; and General and hazardous waste must be removed and disposed of frequently at a registered disposal site.	Weekly monitoring.	NWA; GN R. 704; Best Practice Guidelines; ECA.	IWWMP; and Waste Management Plan.	LoM	Closure Manager Specialist Environment
		Soil	To prevent soil contamination and degradation.	Ensure wastes are separated at source and disposed of by a reputable contractor.	As required.	NWA; GN R. 704; Best Practice Guidelines.	IWWMP; and Waste Management Plan.	LoM	Closure Manager Specialist Environment
		Surface Water	To prevent and minimise negative impacts on surface water resources as a result of hydrocarbon spills.	Waste must be separated at source and stored in demarcated areas; and Reputable and accredited contractors will be used for the transport and disposal of wastes and demolished material off-site.	Ongoing; and Weekly monitoring.	NWA; GN R 704; Best Practice Guidelines	IWWMP. Rehabilitation and Closure Plan.	LoM	Closure Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
Post-Closure									
18.	Aftercare and maintenance	Air Quality	To minimise fugitive dust generation emanating from the Khutala 5 Seam Mining Project activities including the KPS/KHU Link Road.	Ensure vegetation is established across all disturbed and rehabilitated areas; and Monitor vegetation establishment.	Monthly Monitoring	NEM: AQA. National Ambient Air Quality Standards (GN 1210 and GN 486). National Dust Control Regulations (GN R 827).	Dust Management Plan; Dust Monitoring Programme; and Post Closure Monitoring and Maintenance Plan.	Post-Closure	Specialists Environment
		Topography and Visual Environment	To rehabilitate the topography; To recreate the natural drainage lines and surface water flow; To create a free-draining topography To minimise soil erosion; and To restore the visual landscape emulating the pre-mining activities.	Should water pool on the surface, the drainage lines must be rehabilitated further and shaped to ensure a free-draining topography; and Monitor vegetation establishment and potential soil erosion. Should it be required, vegetation establishment and erosion control measures must be implemented.	Monthly surface water monitoring	NEMA	Rehabilitation and Closure Plan; and Post-rehabilitation monitoring plan.	Post-closure	Specialist Environment
		Soils	To restore the post-mining land capability	Ensure that the topography of rehabilitated areas is free draining; Model post-mining landforms to establish post-mining landscape stability; Implement erosion prevention techniques, if required; Establish clear medium- and long-term targets for the post-mining land capability and land use and Monitor vegetation establishment to ensure that the final land use and land capability is achieved.	Annually.	MPRDA Regulation 56 (1) to (8); soil pollution and erosion control; CARA.	Rehabilitation and Closure Plan; and Post-rehabilitation monitoring plan.	Post-closure	Specialist Environment
		Fauna	To prevent the unnecessary destruction of natural habitat and animal life within the development area and to maintain	Underground mining must be conducted in line with the geological mine plan designed to reduce the risk of surface subsidence in line with standard safety requirements; Any cracks and holes on surface must be filled and rehabilitated according to best practices;	As required; and Ongoing.	NEM:BA; and ECA.	Rehabilitation and Closure Plan; and Alien Invasive Management Plan.	Post-closure	Closure Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			<p>ecological connectivity to neighbouring sites and, where possible, to regional ecological corridors.</p> <p>Not to unnecessarily or deliberately alienate or hinder the movement of fauna in the area or to harm any animal life found on the property.</p> <p>To maintain existing fauna biodiversity and prevent the skewing of fauna communities as far as possible.</p>	<p>Rehabilitation of cracks and sink holes in the wetland and ESA areas must take into account the surface features and replicate these as far as possible to ensure unimpaired water flow through the system;</p> <p>Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions;</p> <p>Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas;</p> <p>Ensure safe speed limits in the development area and no open fires;</p> <p>Do not feed wild life and ensure that all food and food waste, including domestic waste, is placed in sealed containers and not exposed on site;</p> <p>Ensure that the outside areas are kept clean and tidy and provide adequate waste removal services to prevent the attraction of rats and other alien scavenging species to the site; and</p> <p>Regularly (daily) inspect the haul road and clear coal spills and clear coal fines to reduce coal dust contamination to the neighbouring wetland areas.</p>					
		Fauna and Flora	To restore vegetation establishment; and To prevent the influx and establishment of alien invasive vegetation.	<p>Monitor vegetation establishment and implement erosion control measures, if required;</p> <p>Alien invasive vegetation to be identified and removed throughout the LoM; and</p> <p>Establish and implement an Alien Invasive Management Programme. Conduct annual vegetation survey / audits to assess the effectiveness of the rehabilitation activities.</p>	As required; Ongoing; and Annual vegetation surveys/audits	NEM:BA; and ECA.	Rehabilitation and Closure Plan; Alien Invasive Management Plan; and Vegetation Survey/Audit Programme.	Post-closure	Closure Manager Specialist Environment
		Wetlands and Aquatic Ecology	To prevent the contamination of the wetland systems and aquatic ecosystems as a result of decant	<p>An alien vegetation management plan to be implemented and managed for the life of the Project;</p> <p>Monitor all systems for erosion and incision;</p> <p>All areas where active erosion is observed should be ripped, re-profiled and seeded with indigenous grasses endemic to the region;</p>	Ongoing Biannual Biomonitoring activities	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Management Plan; Aquatic (Biomonitoring) Monitoring Programme; Alien Vegetation	Post-Closure	Closure Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
			from underground mined areas.	All vehicles must be regularly inspected for leaks; All spills should be immediately cleaned up and treated accordingly; To mitigate the potential impacts of decant, appropriate wetland rehabilitation design and implementation must ensure that wetland functionality is restored and must make financial provision for the required water treatment facilities; Appropriate sanitary facilities must be provided for the duration of the rehabilitation activities and all waste must be removed to an appropriate waste facility; Ensure a Storm Water Management Plan is implemented and direct all decant to a PCD; and Implement an Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.			Management; and Rehabilitation and Closure Plan.		
		Surface Water	To prevent the contamination of the water resources from the mine affected water.	Continue with water quality monitoring at the existing sample locations as indicated in under surface water monitoring at the current monitoring frequency. Increase monitoring frequency for those monitoring points that show constant non-compliances. The water levels in the Surface Main PCD and the Main Underground dams must be constantly monitored and recorded for evaluation of additional future capacity and/or treatment requirements. Investigate treatment options to be implemented to manage the decant water in case where the water is an unacceptable quality for release into the environment.	Monthly surface water quality monitoring. Monthly water level monitoring of the Surface Main PCD and the Main Underground dams.	NWA; GN R. 704; Best Practice Guidelines.	Stormwater Monitoring Plan; and Rehabilitation and Closure Plan.	Post-Closure	Closure Manager Specialist Environment
		Groundwater	To restore the drainage of the Project area and prevent sedimentation of surface water resources.	Rehabilitation activities must be monitored to ensure that the surface profile is free draining; and Where rehabilitation (grass seeding of topsoil cover) is not effective, the associated soil erosion must be mitigated by installing silt traps in affected areas to prevent the	Quarterly groundwater levels and quality monitoring.	NWA; GN R. 704; Best Practice Guidelines.	Rehabilitation and Closure Plan; and Stormwater Management Plan. Groundwater Monitoring Programme.	Post-Closure	Closure Manager Specialist Environment

Item No.	Project Activities	Receiving Environment	Objectives	Management and Mitigation Measures	Frequency	Legal Requirements	Recommended Action Plans	Duration	Responsible Person
				sedimentation of the water resources.					
		Groundwater	<p>To prevent and minimise groundwater contamination due to groundwater decant.</p> <p>To ensure supply of water to affected external users.</p>	<p>Monitoring of the borehole water quality is required and if the quality deteriorates, it is recommended to start pumping the contaminated into a containment facility for evaporation and to contain the plume.</p> <p>Groundwater monitoring of the water levels and quality must be implemented, as well as the decant point once decanting commences.</p> <p>Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl.</p> <p>Investigate the treatment options to be implemented to manage and control the decant, in case where the water is an unacceptable quality for release into the environment.</p>	Quarterly groundwater levels and quality monitoring.	NWA; GN R 704; Best Practice Guidelines	Rehabilitation and Closure Plan; Decant Management Plan; and Post Closure Monitoring and Maintenance Plan.	Post-Closure	Specialist Environment

5. IMPACT MANAGEMENT OUTCOMES

Refer to **Table 3** on Section 4.9 for the impact management outcomes to be implemented for this Project.

6. IMPACT MANAGEMENT ACTIONS

A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated will be achieved in the table below:

Refer to **Table 3** on Section 4.9 for the impact management actions to be undertaken and implemented for this Project.

7. DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION

Financial provision has been attached as Appendix 20 of this report.

7.1 Determine the closure objective and the extent to which they have been aligned to the baseline environment described under the regulation.

The main closure objectives associated with this project is to:

- Protect and enhance the reputation of Seriti as a responsible corporate citizen.
- Ensure that the shareholder value is preserved.
- Ensure that stakeholders' needs, concerns and aspirations are taken into account when considering closure.
- Comply with relevant or applicable legislative requirements;
- Ensure the health, safety and welfare of all humans and animals are safeguarded from hazards resulting from mining related activities such as this development.
- Limit or mitigate adverse environmental effects to an extent that it is acceptable by all parties.
- Mitigate socio-economic impacts in relation to a particular area in which an operation is located following decommissioning and subsequent closure as far as reasonably possible.
- Provide a reasonable basis on which the financial consequences of closure can be estimated, recognised and managed including any tax consequences so that project is decommissioned and closed efficiently and cost effectively;
- Avoid or minimise costs and long-term liabilities to the company and to the government and public;
- Ensure land is rehabilitated to, as far as is practicable to its natural state, or to a predetermined and agreed standard or land use which conforms with the concept of sustainable development.

Furthermore, with the decommissioning and closure of the affected areas the following rehabilitation strategy will be applied:

- Access and service roads: Dependent upon future landholder desires. The proposed plan is to rip, disc and vegetate the affected areas to indigenous Highveld grasslands.

- Potentially contaminated areas: Each area to be identified and be rehabilitated on a case-by-case basis. The proposed plan is to rip, disc and vegetate the affected areas to indigenous Highveld grasslands.
- Site drainage: The entire disturbed area shall be left in a configuration and state which assures that off-site impacts in the long term are non-existent or negligible.
- Rehabilitation and closure costs will be reviewed and updated on an annual basis as per the requirements of the NEMA and applicable regulations with specific to GN R1147 and draft GN R 667.

The Environmental Management Plan report (EMPr) is the key source of reference information for monitoring, maintenance, review and reporting of rehabilitation progress and success. The EMPr proposes varied monitoring programs with the dual aims of;

- Assessing the effectiveness of rehabilitation strategies and designs and,
- Demonstrating that rehabilitation programs are meeting performance criteria.

The monitoring programs will assess the following environmental aspects:

- Soil profile attributes
- Flora and fauna recolonization and diversity composition
- Erosion control and monitoring
- Receiving environment monitoring which will include surface water, wetlands, sensitive areas, groundwater, etc.

Importantly, the EMPr sets the rehabilitation performance criteria that must be achieved to support completion of successful rehabilitation. This information will need to be adhered to by the mine in order to obtain a mine licence relinquishment or closure certificate.

7.2 Confirm specifically that the environmental objective in relation to the closure have been consulted with landowners and interested and affected parties

The Rehabilitation and Closure Plan will be made available for public review with this draft EIR and EMPr and comments will be captured in the final EIR and EMPr. Landowners and Interested and Affected Parties will be given the opportunity to raise their concerns and comments in respect of the closure environmental objectives.

7.3 Provide a rehabilitation plan that describes and show the scale and aerial extent of the main mining activity, include anticipated mining area at the time of closure.

Refer to **Appendix 19** for Rehabilitation and Closure Plan.

7.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives

The rehabilitation activities will return the area to a land capability that will be used for grazing purposes as per the approved EMP commitment. This is consistent with meeting legal obligations, will mitigate impacts resulting in residual risks being insignificant particularly as there will be the physical stabilisation of the footprints, vegetation that is established will promote biodiversity and is anticipated to be self-sustaining. These closure strategies and how they meet the objectives will be discussed through stakeholder engagement.

The overall closure objectives as associated with the proposed Khutala 5 Seam Mining Project is in line with the approved EMPr for Khutala Colliery's specific mining areas and are as follows:

- Land management:
 - The final land use to be achieved for the ventilation shaft will be grazing potential and arable land within the office complex including the RoM Stockpile area and the KPS/KHU Link Road. The landscape will be backfilled and reprofiled to mimic the

natural topography for potential agricultural activities and grazing opportunities post mining.

- Return the disturbed area to a land capability similar to that which existed prior to mining and that the management level required to utilise the rehabilitated land is within the means of the farmer who uses it.
 - Remove all mine infrastructure that cannot be used by a subsequent land owner or a third party. Where buildings can be used by a third party, arrangements will be made to ensure their long-term sustainable use;
 - Clean up all coal stockpiles and loading areas and rehabilitate these to at least a grazing capability;
 - To maintain and monitor the rehabilitated areas following re-vegetation or capping and, if monitoring shows that the objectives have been met, making an application for closure; and
 - For the purposes of this plan, the final land use post-closure for within the proposed mining areas is to return the land back to at least a land use capability of grazing or arable using the SA Chamber of Mines Guidelines.
- Surface and groundwater management:
 - Manage and control the groundwater level to stay well below the decant level.
 - Monitor the groundwater quality to prevent the deterioration of the water qualities and the migration of the pollution plume.
 - To prevent any soil and surface/groundwater contamination by managing all water on site.
 - All rehabilitated areas to be shaped to ensure free draining land form.
 - Water erosion structures (such as berms) to be constructed to prevent erosion. Run-off from these areas is to be considered clean.
 - Social management
 - Leave a safe and stable environment for both humans and animals and make their condition sustainable;
 - Meeting applicable /egal requirements
 - Follow a process of closure that is progressive and integrated into the short and long term mine plans and that will assess the closure impacts proactively at regular intervals throughout project life; and
 - Comply with local, provincial and national regulatory requirements.

7.5 Calculate the state and quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guidelines.

Refer to **Appendix 20** for the closure cost assessment and financial provision done by the mine.

The financial provision was calculated according to Regulation 6 of the Financial Provision Regulations (2015) which prescribe the minimum content requirements.

The financial provision estimate was calculated based on the Financial Provision Regulations (GNR. 1147 and proposed GN R 667). The estimated financial provision required for the rehabilitation and closure of the activities associated with the Khutala 5 Seam Mining Project is **R 2 789 390,49** as at March 2021 including Preliminary and General, Professional Fees and Contingencies but excluding the 15% VAT. This consists of the proposed infrastructure which includes the surface rehabilitation associated with the KPS/KHU Link Road and the RoM Stockpile, plus the demolishing, plugging and surface rehabilitation of the proposed shaft. It should be indicated that the 5 Seam Mining Project will be using most of the existing infrastructure from the Khutala Main Office Complex. Refer to **Table 4** and **Table 5**.

Table 4: Khutala 5 Seam Mining Project Unscheduled Closure Costs Review - Closure Summary Spreadsheet as at March 2021

Khutala Colliery Closure Costs Review - Closure Summary Spreadsheet - March 2021					
INFRASTRUCTURE AND RELATED ASPECTS		Unit	Quantity	Rate	TOTAL
1	General surface rehabilitation (KPS/KHU Link Road)	Sum	1,00	R 1 351 463,22	R 1 351 464,22
2	General surface rehabilitation (5 Seam RoM Stockpile)	Sum	1,00	R 125 567,33	R 125 568,33
3	Proposed 5 Seam Ventilation Shaft	Sum	1,00	R 620 252,54	R 620 253,54
SUB-TOTAL 1					R 2 097 286,08
4	ADDITIONAL ALLOWANCES				
4.1	Preliminary and General (12% of sub-total 1)				R 251 674,33
4.2	Contingencies (10% of sub-total 1)				R 209 728,61
4.3	Engineering and Project Management (5% of sub-total 1)				R 104 864,30
4.4	Management/staff cost (6% of sub-total 1)				R 125 837,17
SUB-TOTAL 2 (Additional allowances)					R 692 104,41
5	TOTAL (SUB-TOTAL 1+2) EXCLUDING VAT				R 2 789 390,49

7.6 Confirm that the financial provision will be provided as determined

Seriti confirmed that the financial provision detailed on **Appendix 19** will be provided by a combination of a bank guarantee and trust account as part of its overall mine provision for the rehabilitation of mining disturbed areas.

Table 5: Detailed inventory of the closure cost assessment for the proposed Khutala 5 Seam Mining Project as end March 2021

Mining Liability Area	Inventory Item	Work Subsection	Work Item	Notes	Unit	Quantity	Rate (2019 J&W)	Total Amount (2019)	Total (LEM 2021)	Amount Total (LEM 2021)
Khutala 5 Seam Mining RoM Stockpile (4165 m²)										
Khutala 5 Seam Mining RoM Stockpile	General Surface Rehabilitation	Establish vegetation	Supply, deliver and spread topsoil (large quantities)	Assume 500 mm thick topsoil	m ³	2082,5	R38,40	79 968,00	R41,15	R85 700,52
	General Surface Rehabilitation	All earthworks	Rip previously compacted areas		m ²	4165	R3,92	16 326,80	R4,20	R17 497,19
	General Surface Rehabilitation	Establish vegetation	Fertilize areas		m ²	4165	R1,95	8 121,75	R2,09	R8 703,96
	General Surface Rehabilitation	Establish vegetation	Vegetate areas - seed mix with slopes less than 1:5		m ²	4165	R1,95	8 121,75	R2,09	R8 703,96
	General Surface Rehabilitation	Post closure maintenance	Maintenance cost fully inclusive per hectare per year	5 years	ha.yr	2,0825	R2 223,20	4 629,81	R2 382,57	R4 961,70
Total KPS/KHU Link Road										R125 567,33
KPS/KHU Link Road (2242m x 20m)										
KPS/KHU Link Road	General Surface Rehabilitation	Establish vegetation	Supply, deliver and spread topsoil (large quantities)	Assume 500 mm thick topsoil	m ³	22420	R38,40	860 928,00	R41,15	R922 643,75
	General Surface Rehabilitation	All earthworks	Rip previously		m ²	44800	R3,92	175 616,00	R4,20	R188 205,06

Mining Liability Area	Inventory Item	Work Subsection	Work Item	Notes	Unit	Quantity	Rate (2019 J&W)	Total Amount (2019)	Total (LEM 2021)	Amount Total (LEM 2021)
			compacted areas							
	General Surface Rehabilitation	Establish vegetation	Fertilize areas		m ²	44800	R1,95	87 360,00	R2,09	R93 622,41
	General Surface Rehabilitation	Establish vegetation	Vegetate areas - seed mix with slopes less than 1:5		m ²	44800	R1,95	87 360,00	R2,09	R93 622,41
	General Surface Rehabilitation	Post closure maintenance	Maintenance cost fully inclusive per hectare per year	5 years	ha.yr	22,4	R2 223,20	49 799,68	R2 382,57	R53 369,58
Total KPS/KHU Link Road										R1 351 463,22
Proposed Ventilation Shaft										
Shafts and Fans Area	Proposed 5 Seam Ventilation Shaft	Rehabilitate shafts	Concrete plug HT33	Assume 1m thick plug	m ³	36,9	R11 671,83	430 690,53	R12 508,53	R461 564,64
	Proposed 5 Seam Ventilation Shaft	Demolish buildings and structures	Reinforced concrete foundations	Plinths from Vent fan (A085)	m ³	88,4	R805,91	71 242,44	R863,68	R76 349,47
	Proposed 5 Seam Ventilation Shaft	Rehabilitate shafts	Remove and preserve main vent fan		No.	1	R52 569,13	52 569,13	R56 337,56	R56 337,56
	Proposed 5 Seam Ventilation Shaft	Rehabilitate shafts	Design of concrete plug & other		Sum	1	R17 895,88	17 895,88	R19 178,75	R19 178,75
	Proposed 5 Seam	Demolish fencing,	2,4 m High security		m	162,6	R39,15	6 365,79	R41,96	R6 822,12

Mining Liability Area	Inventory Item	Work Subsection	Work Item	Notes	Unit	Quantity	Rate (2019 J&W)	Total Amount (2019)	Total (LEM 2021)	Amount Total (LEM 2021)
	Ventilation Shaft	walls and gates	fence complete							
Total Proposed Ventilation Shaft										R620 252,54
Total Rehab Costs										R2 097 283,08
CPI % Used										
2020	4,33%									
2021 (9-month equivalent)	2,72%									

8. MONITORING OF IMPACT MANAGEMENT ACTIONS

Seriti will be responsible for the implementation of all of the monitoring, mitigation and management measures, as well as compliance with the EMPr. The recommended monitoring for the identified impacts is detailed below. Seriti will keep a record of all environmental monitoring taken on site. The Emergency Response Plan for the Khutala 5 Seam Mining Project is detailed in Section 10. The monitoring and management measures to be implemented by Seriti is summarised in **Table 12**.

The current monitoring programmes for noise, dust, surface water, groundwater, fauna, flora and aquatic environment (biomonitoring) will be expanded and/or revised to include the Khutala 5 Seam Mining Project. The specialists have provided Seriti with the recommended points for monitoring.

Additional measures that have been suggested by the specialists. Key inclusions are discussed below:

8.1 Fauna and Flora

A monitoring program needs to evaluate the management actions on each of these components. The method of monitoring is the Braun Blanquet method, which is a specialised method designed specifically for vegetation survey and monitoring purposes. The requirements for the monitoring programme include:

- Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed.
- Monitor all sites disturbed by localized activities for colonization by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after such activities cease.
- Monitor all sites cleared of invasive species, as well as sites disturbed by mining related activities for colonization by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after decommissioning is complete.

An Environmental Officer (EO) must be appointed to ensure construction activities are in line with environmental management plan and authorisation requirements, including the mitigation and management measures stipulated within this report. Inspection, records of issues and corrective measures and sign-off will form part of the EO's responsibilities, refer to **Table 6**.

Table 6: Monitoring plan to be undertaken by Environmental Officer

Monitoring Action	Frequency
Ensure all proposed mitigation measures detailing proposed modifications have been incorporated into the final plans and operational procedures and sign off on these.	Once-off
A surface monitoring and rehabilitation plan must be in place to monitor for potential cracks and holes on surface.	Monthly
Generally, monitor any TOP species that may enter the area and ensure species are not under threat from mine-related activities.	Weekly if species are observed on site.
Monitor the haul road adjacent to the Medium SEI areas to record road kills and adapt activities as needed if high road kills are observed.	Every 2 weeks
Inspect Medium SEI areas and ensure these are in a natural state with no dumping, excavations, excessive coal dust or obstructions to fauna mobility.	Immediately after drilling is completed at said site
Apply monitoring and auditing requirements stipulated in NWA & NEMA authorisations as relevant.	As stipulated in the authorisations

8.2 Wetlands and Aquatic Ecology

The aquatic ecology monitoring (Biomonitoring) must be undertaken biannually, once during the wet season or high flow and once during the dry season or low flow. The following parameters must be tested:

- *In situ* water quality constituents;
- Sediment and water column metal analysis;
- Toxicity testing;
- Habitat integrity; and
- Aquatic macroinvertebrates.

Table 7: Description of sampling sites considered during the present study (Ecology International, 2018)

Site	Coordinates	Elevation	Description
Eastern Catchment Area – Saaiwaterspruit & Klippoortjiespruit			
PCD	S26°07'23.8" E30°00'30.3"	1618m	Site located on the southern shore of the Khutala Colliery Pollution Control Dam (PCD), which is situated within the upper Saaiwaterspruit on farm Cologne 34 IS.
Farm Dam	S26°06'56.4" E29°00'46.2"	1604m	Site located on the northern shore of a farm dam immediately downstream of the Khutala Colliery PCD, which is situated within the upper Saaiwaterspruit on farm Zondagsvlei 9 IS.
Site 4	S26°05'25.8" E29°05'46.9"	1550m	Site located downstream of the Goedgevonden Mine along the Saaiwaterspruit on the farm Zwaiwater 11 IS, directly upstream of the R545 regional road bridge.
Western Catchment Area – Wilge River Tributaries			
Site 5	S26°07'03.3" E28°59'25.3"	1611m	Site located upstream of the Khutala Colliery Waste Water Treatment Works (WWTW) along a canalized section of an unnamed wetland system on the farm Schoongezicht 218 IR.
Site 6	S26°07'21.1" E28°59'09.5"	1592m	Site located downstream of the Khutala Colliery WWTW along a channelized section of an unnamed wetland system on the farm Leeuwfontein 219 IR.

Site	Coordinates	Elevation	Description
Site 7	S26°07'40.4" E28°57'31.0"	1561m	Upstream site along an unnamed tributary of the Wilge River originating on the property of Khutala Colliery (Cologne 34 IS), directly upstream of the Leeuwfontein Coal Mine.

8.3 Blasting

The ground vibration and air blast levels must be monitored during blasting activities to ensure that recommended levels are not exceeded. The monitoring of ground vibration and air blast will ensure that additional mitigation measures can be implemented should the levels exceed the recommended limits. The monitoring locations should not be fixed but should be located in consideration to the blast locations.

8.4 Air Quality

Based on the evaluation of the proposed project, a summary of the air quality management objectives is provided in the **Table 8** below. The management and monitoring of all operations at the mine should be evaluated on a daily basis and appropriate actions taken to minimise dust generation and impacts.

Table 8: Air Quality Management Plan for the proposed project operations

Aspect	Impact	Management Actions/Objectives	Target Date
Particulate Matter monitoring.	PM ₁₀ and PM _{2.5} concentrations and dust fall rates.	Continuous monitoring of PM ₁₀ and PM _{2.5} concentrations on the existing stations. Various management measures may be implemented including: <ul style="list-style-type: none"> Dirt roads need to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plumes. 	Continuous monitoring Duration of operations
	Air quality	<ul style="list-style-type: none"> Ongoing site inspections by environmental personnel must be conducted to provide an 	Ongoing site inspections.

Aspect	Impact	Management Actions/Objectives	Target Date
Effectiveness of dust control measures		indication of the effectiveness of the dust control measures.	
		<ul style="list-style-type: none"> Visual monitoring must be conducted for activities expected to generate the most dust if not managed effectively. 	Ongoing site inspections.
		<ul style="list-style-type: none"> As per the National Emission Reporting Regulations (GN283 of 2015) requirements, the applicant must register as a data provider with and submit emission reports, in the format required, to the online National Atmospheric Emissions Inventory System (NAEIS). Reports must be submitted for the preceding calendar year to the NAEIS by March 31st for each calendar year. 	Yearly – March 31 st
		<ul style="list-style-type: none"> As per the National Dust Control Regulations (GNR827 of 2013), any person who has exceeded the dust fallout limit must, within three months of submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval. The dust management plan must be implemented within a month of the air quality officer's date of approval. 	Within a month of the air quality officer's date of approval.
		<ul style="list-style-type: none"> It is further recommended that wet suppression and wind speed reduction mitigation strategies be employed during the operational project phase. 	Ongoing site inspections.
Ambient Monitoring.	PM ₁₀ concentrations.	A PM ₁₀ sampling campaign is recommended at the closest sensitive receptors (east and west of operations) once proposed mitigated operations commence in order to ensure the NAAQS are being met.	Duration of operations

Aspect	Impact	Management Actions/Objectives	Target Date
Dust fallout monitoring.	Dust fallout rates	Expand the existing dust fallout sampling network (with an additional two single dust buckets at the mine). Dust fallout rates to be below 1200 mg/m ² /day in non-residential areas and 600 mg/m ² /day in residential areas, averaged over 30 days. Refer to below.	Before start of construction activities.

The sites selected for the dust fallout monitoring programme are the most appropriate localities to provide a reliable and representative indication of air quality impacts associated with the proposed project, as per the atmospheric dispersion modelling outcomes as well as the existing dust fall out monitoring programmes.

Table 9: Proposed additional monitoring stations

Receptor ID	Latitude	Longitude
Dust Station 1	-26.090393°	29.007448°
Dust Station 2	-26.083943°	29.014735°

8.5 Noise

The noise impact study was carried out as detailed under Appendix 14, the results indicated that the only significant noise impact on pre-development ambient noise levels will be on persons residing close to the main plant (project area) and farmstead identified within the 500 m & 1000m buffer zone. Noise measurements to be performed by an independent third party, in accordance with procedures stipulated in the South African National Standard (SANS) Code of Practice: SANS 10103:2004. Noise monitoring will have to be carried out to determine the potential shift in the prevailing ambient noise levels once during construction and annually thereafter. Noise readings must be carried out at the measuring points stipulated in **Table 10**, below.

Table 10: Proposed Noise Monitoring Points

Proposed Sampling Points	Latitude	Longitude
P S 1	26° 7'33.89"S	28°59'34.62"E
P S 2	26° 6'29.46"S	28°58'31.83"E
P S 3	26° 7'44.70"S	29° 0'58.35"E
P S 4	26° 6'55.11"S	29° 1'16.59"E

Proposed Sampling Points	Latitude	Longitude
P S 5	26° 5'58.06"S	28°59'54.49"E
P S 6	26° 6'48.63"S	29° 0'17.88"E
P S 7	26° 7'3.77"S	29° 1'1.70"E

8.6 Groundwater

The groundwater monitoring program is designed to detect changes in groundwater levels and quality associated with the mine operations and to provide early detection of undesirable impacts arising from the construction operation and closure activities of the project. Khutala Colliery has developed a groundwater monitoring programme, the existing water monitoring programme covers the proposed 5 Seam Project area and does not need to be updated. The groundwater monitoring includes the following components water quality, water level and groundwater abstraction monitoring in the abstracting boreholes.

The details of the groundwater monitoring parameters are presented in **Table 11** below. The monitoring network is comprised of 8 existing boreholes in and around the proposed 5 Seam Mining Project. The boreholes will be utilized to undertaken groundwater monitoring programme; no additional boreholes will be drilled.

Table 11: Groundwater Quality Parameters to be monitored

Parameters	Limit
pH	6.5-9.0
EC (mS/m)	50
Turbidity	35
Magnesium (mg/l)	50
Sodium (mg/l)	50
Sulphate (mg/l)	150
Total dissolved solids (mg/l)	250
Iron Dissolved (mg/l)	1.0
Aluminium – Dissolved (mg/l)	0.01
Manganese – Dissolved (mg/l)	0.02

Table 12: Monitoring Plan for the proposed Khutala 5 Seam Mining Project activities

Aspect	Impact	Management Actions/Objectives	Target Date
Borehole water supply and quality	Loss of groundwater supply for external users.	<ul style="list-style-type: none"> Monitoring of the external users' groundwater boreholes as part of the mine's groundwater monitoring programme. 	Quarterly monitoring.
		<p>The following recommendations are made with reference to the boreholes of external users (such as the Prinsloo Farmstead (Located on Portion 6 of the farm Zondagsvlei 9 IS))</p> <ul style="list-style-type: none"> Monitor all the boreholes of external users monthly for water level and on a quarterly basis for water quality. Investigate the potential impact on these boreholes starting before the 5 Seam mining commences and continue during mining. 	Construction and operational phases Start of mining development.
		<ul style="list-style-type: none"> When the water level of these boreholes starts to drop, the mine will need to investigate which alternative water source to use for supplying the users to ensure that their water supply is not interrupted or disturbed. 	Operational phase
Dewatering of groundwater.	Dewatering of underground workings.	<ul style="list-style-type: none"> Install water flow meters and record of water pumped. Calibration of flow meters every two (2) years or as requested by the DWS. Annual updating of the groundwater model and water balance for the 5 Seam workings. 	Construction and operational phases
Contamination from stockpile	Potential seepage of dirty water impacting the groundwater.	<ul style="list-style-type: none"> The 5 Seam Coal Stockpile should be constructed to prevent seepages and runoff water from contaminating the groundwater and surface water. Dirty water canals should be constructed around it to route the dirty water runoff to a pollution control dam. 	Design phase and start of construction.

Aspect	Impact	Management Actions/Objectives	Target Date
Long-term stockpiling	Contaminated leachate impacting the groundwater quality.	<ul style="list-style-type: none"> Stockpiling for prolonged periods of time should not be allowed. Kinetic testing can be done to see how the quality of the leachate changes over time. 	Annual geochemical model (Kinetic Testing)
Surface subsidence:	Loss of agricultural land, damage to infrastructure (buildings, plant, conveyors, office complex areas) and heritage resources.	<ul style="list-style-type: none"> The mitigation is to make sure that the size of the pillars that will be left behind is adequate to prevent subsidence. In addition, it is recommended that monitoring should continue, and safety measures should be put in place where subsidence is observed. 	Annual inspection
Contamination of the aquifer from the 5 Seam workings.	Groundwater quality.	<ul style="list-style-type: none"> Monitoring of the borehole water quality is required and if the quality deteriorates, it is recommended to start pumping the contaminated into a containment facility for evaporation and to contain the plume. 	Quarterly groundwater quality monitoring.
Potential decants of contaminated.	Groundwater quantity.	<ul style="list-style-type: none"> Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl. 	Monthly groundwater levels monitoring.

8.7 Monitoring and reporting frequency

Khutala Colliery is currently undertaking monthly surface water monitoring and quarterly groundwater monitoring. the monitoring program covers the 5 Seam Project Mining Areas. The existing monitoring programme will be continued to ensure that the parameters listed on **Table 13** above are monitored.

Surface water Monitoring

A surface water monitoring programme has been developed by Khutala Colliery, the monitoring programme covers the proposed 5 Seam Mining Project area. The surface water assessment undertaken for the 5 Seam Mining Project proposed the following:

- Continue with water quality monitoring at the existing sample locations.
- Increase monitoring frequency for those monitoring points that show constant non-compliances.
- The water levels in the Surface Main PCD and the Main Underground dams must be constantly monitoring and recorded for evaluation of additional future capacity and/or treatment requirements.

Khutala Colliery has appointed a contractor to undertake monitoring of the boreholes, however Khutala Colliery remains responsible for all monitoring. **Table 13** show monitoring program of all activities including responsible person.

8.8 Mechanism for monitoring compliance

Table 13 below sets out the method of monitoring the implementation of the impact management actions, the frequency of monitoring the implementation of the impact management actions, an indication of the persons who will be responsible for the implementation of the impact management actions, the time periods within which the impact management actions must be implemented and the mechanism for monitoring compliance with the identified impact management actions.

Table 13: Monitoring and Management

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
Dust generation	<ul style="list-style-type: none"> • The existing dust buckets to be monitored and the additional 2 directional monitoring stations as recommended above be added for each direction; • Dust fallout levels must be monitored; • The existing PM₁₀ and PM_{2.5} monitoring station located closer to the Main Office Complex to be monitored and also the dust fallout monitoring to proceed. The proposed 2 additional monitoring sites to be added as part of the fallout monitoring programme, refer to Table 9. 	<ul style="list-style-type: none"> • Environmental Manager; • Air Quality Specialist 	<p>Dust buckets must be monitored every month, with a report compiled every month. Should the reports indicate that the NEM: AQA NDCR are exceeded, additional mitigation measures must be implemented.</p> <p>A yearly consolidated dust fallout report to be compiled.</p> <p>Continuous PM₁₀ and PM_{2.5} monitoring and to be undertaken on the currently installed station. A monthly report to be produced.</p>

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
<p>Loss of soil and land capability</p>	<p><u>Stockpile and Stripping Management:</u></p> <ul style="list-style-type: none"> • Inspection of stripping depths and separation of topsoil and subsoil during stockpiling. • Soil stripping should be done with oversight and consultation of the pre-mining soil survey is essential. • Inspection of stockpiles to manage and prevent erosion • Separate stockpiling of different soil (terrestrial and wetland associated soil) to obtain the highest post-mining land capability. • The A horizon and B1 horizon (seedbank) to be stripped separately and replaced in the same sequence on top of the spoil material. The relatively higher organic carbon content of the A-horizons normally provides a buffer against compaction and hard-setting and serves as a seed source which will enhance the re-establishing of natural species. <p><u>Rehabilitation activities:</u></p> <ul style="list-style-type: none"> • Random inspections of soil thickness on rehabilitated areas. • Inspection of rehabilitated areas to ensure that the surface is free-draining. • The testing and analysis for macro nutrients and pH must be sampled on an annual basis and/or when required. The results of such monitoring are to be kept to plan for rehabilitation. • An annual rehabilitation audit/survey is to be undertaken. 	<ul style="list-style-type: none"> • Environmental Manager; • Environmental Control Officer • Soil Specialist. 	<ul style="list-style-type: none"> • Ongoing during site clearance activities and stockpiling • Ongoing and monthly reporting <ul style="list-style-type: none"> • Ongoing and monthly reporting <p>Annual testing and analysis for macro nutrients and pH</p> <ul style="list-style-type: none"> • Annual rehabilitation survey

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
Loss of biodiversity	<ul style="list-style-type: none"> • <i>Floral and faunal SSC must be rescued and relocated, should they occur within the disturbed areas;</i> • Faunal and Floral SSC in the Project area, but not within the directly disturbed mine areas, should be monitored, particularly the Grass Owl, Serval, Hedgehog and Giant Bullfrog populations; • Alien invasive vegetation must be controlled and managed. • Monitoring of alien invasive vegetation must take place and managed according to the NEM: BA requirements. • Update of the Biodiversity Action Plan to take place at least on an annual basis. • 	<ul style="list-style-type: none"> • Specialist Environment 	<ul style="list-style-type: none"> • Ongoing prior to start of construction activities. • Annual • Seasonal • Annual review of the BAP
Loss to aquatic ecology.	<p>The following parameters must be undertaken as part of the biomonitoring activities:</p> <ul style="list-style-type: none"> • In situ water quality constituents; • Sediment and water column metal analysis; • Toxicity testing; • Habitat integrity; and • Aquatic macroinvertebrates. 	<ul style="list-style-type: none"> • Specialist Environment 	<ul style="list-style-type: none"> • The aquatic ecology monitoring (Biomonitoring) must be undertaken biannually, once during the wet season or high flow and once during the dry season or low flow.

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
<p>Potential contamination and sedimentation of wetlands and aquatic ecosystems.</p>	<p>The following must be tested for:</p> <ul style="list-style-type: none"> • <i>In situ</i> water quality must be analysed; • Sediment and water column metal analysis; • Toxicity testing; • Habitat integrity; and • Aquatic macroinvertebrates. 	<ul style="list-style-type: none"> • Specialist Environment 	<p>The Aquatic Ecology Monitoring Programme must continue as undertaken, throughout the LoM.</p> <p>The monitoring to be done as per the mine’s monitoring programme, biannually, that is, once during high flow and once during low flow. A report must be compiled annually and take cognisance of previous years’ monitoring results to track and identify potential impacts.</p>

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
Contamination to surface water resources	<p>The following to be monitored as part of this Project:</p> <ul style="list-style-type: none"> • Construction phase <ul style="list-style-type: none"> ○ Erosion around the construction areas. ○ Inspection of all storm water channels. • Operational and post-closure phases <ul style="list-style-type: none"> ○ Continue with water quality monitoring at the existing sample locations as indicated in Table 10 at the current monitoring frequency. ○ Increase monitoring frequency for those monitoring points that show constant non-compliances. ○ The water levels in the Surface Main PCD and the Main Underground dams must be constantly monitored and recorded for evaluation of additional future capacity and/or treatment requirements. ○ Updating of the water and salt balance. • Parameters and frequency of monitoring to be in line with the approved IWUL covering the Khutala underground mine workings. 	<ul style="list-style-type: none"> • Specialist Environment 	<p>Continue with the existing surface water monitoring programme, throughout the LoM and for a period of 3 years following closure.</p> <p>Sampling must be undertaken monthly.</p> <p>Increase monitoring frequency for those monitoring points that show constant non-compliances.</p> <p>All sampling results must be recorded to track potential quality changes or deterioration.</p>

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
<p>Reduction in groundwater quality and quantity.</p>	<ul style="list-style-type: none"> • The current groundwater monitoring for the mining to be continued as part of the existing monitoring programme. • Incorporate the Prinsloo external users' boreholes as part of the quarterly groundwater programme for the mine. • Groundwater monitoring programme showing eight (8) boreholes in and around the proposed 5 Seam Mining Project: <ul style="list-style-type: none"> ○ BH_next_to_soccer_field; ○ BHUG 01; ○ KTL 04; ○ KTL 13; ○ KTL 15; ○ KTL 18; ○ Next to Sewage Gate; and ○ Opp_sewage_gate. 	<ul style="list-style-type: none"> • Specialist Environment 	<p>Groundwater levels and quality to continue to be taken and analysed, as well as throughout the LoM and during Post-Closure.</p> <p>Ongoing quarterly monitoring of groundwater qualities and to measure the water level on a monthly period in the proposed 5 Seam Mining Project area including the affected external users' boreholes (Prinsloo Farmstead). The water level should be managed to stay well below the decant level of 1594 mamsl.</p> <p>An annual review and update of the groundwater and geochemical model should be compiled once a year to detail potential groundwater impacts and contamination plumes and sources.</p>

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
<p>Noise impacts to nearby farmsteads and other receptors.</p>	<ul style="list-style-type: none"> • Noise measurements to be performed by an independent third party, in accordance with procedures stipulated in the South African National Standard (SANS) Code of Practice: SANS 10103:2004. • Ambient noise levels will be undertaken on receptors residing close to the Khutala Crusher Plant area and farmstead identified within the 500 m and 1000m buffer zones. • Noise monitoring will have to be carried out to determine the potential shift in the prevailing ambient noise levels once during construction and annually thereafter. • Noise readings must be carried out at the measuring points stipulated in Table 13 and • Public complaints and actions registry to be established to capture public perceptions and complaints regarding noise impacts, track investigation actions, and introduce corrective measures for continuous improvement. 	<ul style="list-style-type: none"> • Specialist Environment 	<p>Day and night noise monitoring to be performed biannually along the site's boundaries to ensure conformity with the regulations and indicate relevant corrective measures to be implemented.</p>
<p>Ground vibration and air blast during blasting activities.</p>	<ul style="list-style-type: none"> • Vibration and air blast monitoring locations including the Prinsloo Farmstead. • Ground vibrations and air blast must be monitored. 	<ul style="list-style-type: none"> • Mine Manager 	<p>Monitoring must take place at all times during blasting activities. Blast times and monitored data be recorded and a log kept.</p>

Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the Execution of the Monitoring Programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
Surface subsidence	<ul style="list-style-type: none"> The mitigation is to make sure that the size of the pillars that will be left behind is adequate to prevent subsidence. In addition, it is recommended that monitoring should continue, and safety measures should be put in place where subsidence is observed. 	<ul style="list-style-type: none"> Mine Manager 	<p>Underground pillar size to sustain and support the underground workings to be inspected daily by a competent person as part of the daily mining activities during the operational phase.</p> <p>Conduct annual subsidence inspection to cover the extent of the 5 Seam mining areas.</p>

8.9 Indicating the frequency of the submission of the performance assessment/ environmental authorisation audit report

Environmental Authorisation audits will be conducted in accordance with Regulation 34 of GN R 326 throughout the life of mine, to monitor the implementation and performance against the granted EMPr and the rehabilitation process and advice on any mitigation measures which need to be added to the existing programmes.

A report will be submitted to the mine and DMRE covering all aspects investigated during the audit, and providing suggestions and recommendations on compliance to the approved EIR and EMPr and any improvements which could be made.

Furthermore, as part of the IWUL, the mine will be undertaking the relevant IWUL compliance audits as indicated below.

Each condition of the granted IWUL has an audit and performance review component associated with it. Regular review and auditing is important to ensure systems are up to date and still relevant for current situations. Evaluation is required to verify its appropriateness and suitability by comparing performance to objectives set. Changes or adjustments to systems are required where review/ auditing highlights shortcomings, or gaps occur. Performance should be measured against objectives. Auditing will therefore, be done according to the following timeframes:

- Internally IWUL Audits (annually);
- Externally Independent IWUL Audits (annually); and
- Reporting to DWS will be annually.

9. SOCIO-ECONOMIC AND HERITAGE MANAGEMENT PLANS

Recommended socio-economic and heritage management measures are described against the Project phases in the management plan. This is done to gain an understanding of the Project objectives and minimise any potential impacts that may arise there from.

9.1 Social Management Plan

The management measures for the social environment are summarised in **Table 14**.

Table 14: Social Management Plan

Potential Impact Description	Mitigation/Enhancement and Management Measures	Project Phase
Negative Impacts		
Population Influx – Pressure on Resources	<ul style="list-style-type: none"> • Emphasis to employ local individuals must be maximised, reducing the need for migrant labour; • Construction contractors should prioritise employment of the local community members and contracts must include employment targets as part of their contractual agreements; • Employment requirements should be broadly publicised to ensure that job-seekers do not have unrealistic job expectations; • Liaison structures with the local police and community policing forums must be established and development of informal settlements within the proposed mining areas to be communicated to the forums for potential monitoring and addressing; and • Seriti should liaise with the ELM to ensure that population influx is taken into account in infrastructure development planning of the ELM. 	Construction; Operational, Decommissioning and Closure Phases.
Population Influx – Social Pathologies	<ul style="list-style-type: none"> • COVID-19, HIV/AIDS and substance abuse awareness campaign should be implemented; • COVID-19, HIV/AIDS and STD awareness campaigns to be part of the contractors and their workers induction and awareness programmes; • Establish a COVID-19 and HIV/AIDS voluntary counselling and testing programme; • Clear rules and regulations for access to the mine site must be established; and 	Construction Phase; Operational Phase.

Potential Impact Description	Mitigation/Enhancement and Management Measures	Project Phase
	<ul style="list-style-type: none"> • Liaison structures with the local police and community policing forums must be established. 	
Population Influx – Community Conflict	<ul style="list-style-type: none"> • Ensure the recruitment policy is transparent and well communicated to discourage an influx of job-seekers; • Maintain regular and open communication with the community, ensuring that any expectations are voiced, to manage expectations appropriately; • Ensure collaboration with local law enforcement structures to help control instances of violence; • Enforce a code of conduct for contractors and employees in terms of interaction with local communities; • Non-essential services should be outsourced to local providers and entrepreneurs; • The relevant local community structures must be utilised to identify the local labour pool; • ELM Ward councillors to be made aware and involved in the communication of information on employment policies and realities; • The local government must be informed of employment needs and procedures; and • A Grievance Mechanism must be implemented. 	Construction Phase; Operational Phase.
Health and Safety	<ul style="list-style-type: none"> • The use and/or crossing of the link road to be communicated with adjacent mine's (Goedgevonden and Zibulo Collieries) and adjacent landowners; • Road safety warning signs and traffic management to be implemented including the required speed limit along the roads and implemented to prevent speeding on the access roads; • Ensure utilised roads are adequately maintained to prevent potential accidents due to deteriorated road surfaces; • Ensure that unauthorised access to the Project area is restricted and the Project site is fenced off; • Open fires within the Project area must be prohibited with the exception of planned fire-breaks and land 	Construction; Operational; Decommissioning and Closure Phases.

Potential Impact Description	Mitigation/Enhancement and Management Measures	Project Phase
	<p>management fires done under the control and supervision of the firefighting team; and</p> <ul style="list-style-type: none"> • A Grievance Mechanism must be implemented for reporting and attending to health and safety related matters. 	
Land Acquisition / Servitude Agreements	<ul style="list-style-type: none"> • Agreements with the landowners in place regarding the servitude where the infrastructure is planned to be constructed on properties not owned and managed by Seriti; and • A Grievance Mechanism must be implemented in place dealing with issues of land management, control and access. 	Pre-Construction and Construction Phase.
Retrenchment	<ul style="list-style-type: none"> • Effect retrenchments according to the procedures stipulated in the mine's applicable Human Resources and Relation Procedures and DMRE approved Social and Labour Plan; • Support economic diversification through the development of alternative markets; and • Implement a Closure Plan for the Khutala 5 Seam Mining Project incorporating social closure. The Closure Plan should be reviewed every year starting 10 years before the expected closure. 	Decommissioning Phase
Positive Impacts		
Job Creation	<ul style="list-style-type: none"> • Recruitment of a workforce for the Construction and Operational Phase should be coordinated through following the appropriate mine and contractors' relevant recruitment procedures and care must be taken that recruitment practices are fair and transparent; • Those responsible for recruiting should engage the local office of the Department of Labour, as well as the ELM to source suitably qualified workers from within the ELM, should the required skills and qualifications not be available in the immediate Project area; • Ensure that a percentage of employment opportunities are be reserved for woman and youth; • Ensure training and skills development is undertaken to improve the abilities of the local community members; 	Construction Phase; Operational Phase.

Potential Impact Description	Mitigation/Enhancement and Management Measures	Project Phase
	<ul style="list-style-type: none"> • Conditions of local employment must be written into the contracts of contractors and a monitoring system must be established to ensure that all contractors honour the employment policy; • Recruitment policies must be clearly defined and publicised to avoid nepotism and unfair practices; and • Provide local employees with reference letters and certificates of completion for in-house training to aid in further employment opportunities. 	
Job Creation (Multiplier Effect) and Population Influx	<ul style="list-style-type: none"> • As part of the approved mine's SLP, the mine also assisted by the appointed contractors to ensure that: • Development plans and programmes must be implemented, such as entrepreneurship development and the development of skills supporting employment and economic development; • Selected poverty eradication, infrastructure development and welfare creation Projects should be implemented, including financial support to higher education institutions, such as bursaries; • Empowering local black businesses and undertaking and supporting development initiatives in the mine's labour sending areas and affected communities, where feasible; • Develop a register of local SMMEs and work with the ELM, as well as other institutions, to develop the SMMEs through the relevant forums and working communities; • Address the priority needs of employees' households through infrastructure development and increasing the access to development credit and assets; and • Implement portable skills programmes that will contribute to the empowerment of employee households and community members, particularly the unemployed, woman and youth. 	Construction Phase; Operational Phase.
Increased Local Economic Development and Resources	<ul style="list-style-type: none"> • Ensure collaboration with the ELM and local businesses to better identify potential local economic development initiatives; and 	Construction Phase; Operational Phase.

Potential Impact Description	Mitigation/Enhancement and Management Measures	Project Phase
	<ul style="list-style-type: none"> Ensure collaboration with the ELM for the potential identification and upgrading of infrastructure. 	

9.2 Heritage Management Plan

The management measures for heritage and archaeology are summarised in **Table 15**.

Table 15: Heritage Management Plan

Impact Description	Management Measure	Recommended Action Plan
Construction, Operational and Decommissioning Phase		
Damage and destruction to the burial ground with specific to MHC45 (Site 2 Graveyard located on Portion 6 of the farm Zondagsvlei 9 IS) and MHC41 (Site 1 Graveyard).	<ul style="list-style-type: none"> Grave site to be left as it was noted and graves on it intact; Mine to arrange with families to secure the grave sites; Demarcate it with a proper boundary fence and provide an entrance gate for potential visitors (descendants/family members of the deceased); Put a sign-post indicating that it is a Grave Site and will have to be cleaned and each grave marked, numbered and included in a Graves Register; A Graves Management Plan will have to be drafted and implemented as part of the Development; and A 30m buffer zone (from the outside boundary fence of the site) will also have to be adhered to, with no development allowed in this exclusion zone. 	Graves Management Plan.
Health and safety risks (Graves located outside mining areas on surface).	<ul style="list-style-type: none"> Access to Grave site will be via the private properties, family members to arrange with landowners. No responsibility for the mine on access to the grave sites. 	Graves Management Plan.

10. ENVIRONMENTAL RESPONSE PLAN

An Environmental Response Plan is a process to respond rapidly and effectively to and manage emergency situations that may arise at Khutala 5 Seam Mining Project. The Environmental Response Plan has the following objectives:

- To categorise emergency situations through hazard identification and to define procedures for responses to the situations;
- To assign responsibilities for responding to emergency situations;
- To implement an effective system to receive, record and communicate reports of environmental incidents and emergencies; and
- To ensure that all environmental incidents or emergencies are investigated and the necessary procedures are in place to implement corrective and preventative actions to prevent a recurrence of the incident.

Khutala 5 Seam Mining Project will utilise the existing Khutala Emergency Preparedness and Response Code of Practice including related procedures and plans. The Khutala Emergency Preparedness and Response Code of Practice was compiled in accordance with the following:

- ISO 9001:2015;
- ISO 14001: 2015;
- ISO 45001: 2018;
- The Mine Health and Safety Act, 1996 (Act No. 29 of 1996); and
- The Mineral Resources Development Act, Act 28 of 2002 as amended
- NEMA;
- NWA; and
- NEM: WA.

10.1 Implementation

In the event of an emergency, the Emergency Response Plan/Procedure will be consulted and the required actions implemented. To facilitate the effective implementation of the procedures, copies of the Emergency Response Plan will be placed in accessible and visible locations around the mine and Project areas. **Figure 1** provides a general overview of the emergency response procedures.

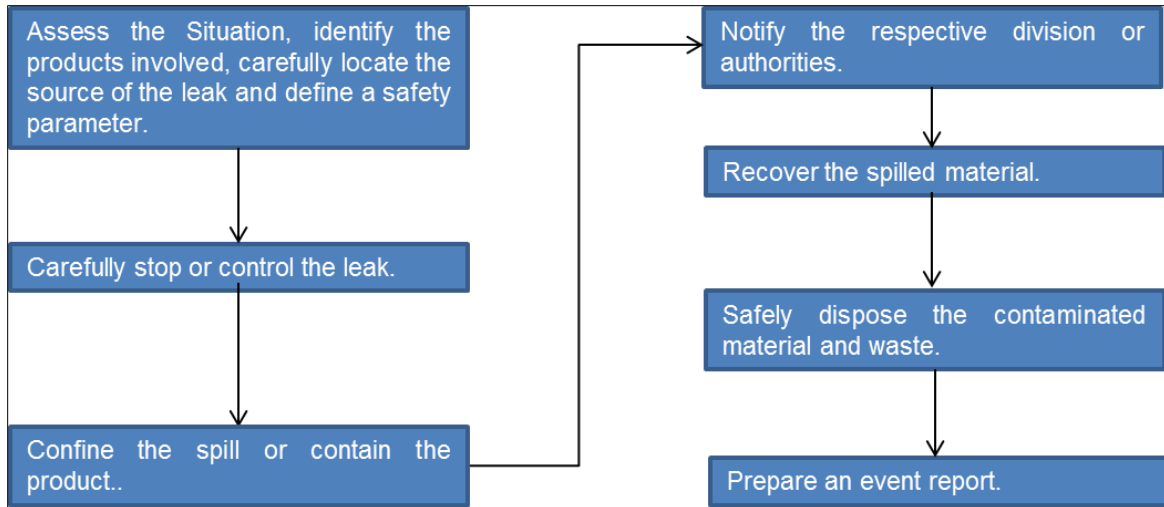


Figure 1:Emergency Response Procedure Overview

10.2 Communication

A list of emergency contact numbers will be displayed at various locations around the mine and Project areas. If the emergency has the potential to affect surrounding communities, the communities will be alerted via alarm signals or contacted in person.

10.3 Hydrocarbon Spillage Response Procedure

Hydrocarbons such as diesel, petrol and oil will be kept on site as fuel for the mine's use. In the event of a spillage, the following procedures will be followed to ensure that there are minimal impacts to the surrounding environment.

10.3.1 Hydrocarbon Spillages in Bunded Areas

The following procedures will be followed for spills within bunded areas:

- The bulk of the spill will be pumped from the bunded area into used oil/fuel containers;
- These products will be transported to a designated area and will be removed by a registered contractor for appropriate disposal or treatment;
- The remaining spill that cannot be pumped or drained will be absorbed using an oil absorbent material, cleaned up and disposed of into a hazardous waste container;
- Bunded areas will be kept clean of spills;
- Rain water that accumulates within the bunded area will be drained on a regular basis; and
- Drainage valves will be kept closed at all times.

10.3.2 Hydrocarbon Spillages on Soil

The following procedures will be followed for spills on soil:

- The hydrocarbon spills will be contained immediately using spill booms and/or spill absorbance;
- The contained spill or contaminated soil will be disposed of in a hazardous waste bin or container; and
- The hazardous waste bin or container will be removed and disposed of by a registered contractor.

11. ENVIRONMENTAL AWARENESS PLAN

11.1 Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

- **Environmental Induction Training**

The purpose of the induction training is to promote a general awareness of the sensitivity of the environment, the legal commitments and the aspirations of Seriti in terms of environmental management and the environmental consequences of individual actions.

Induction is applicable to all employees, contractors and service providers that will be working within the mine.

- **Environmental Induction for Employees and Service Providers/Visitors**

The induction training for employees, contractors and service providers and on-site visitors is to take the form of a site information conditions which will include:

- A description of environmental sensitivities in the study area environment.
- A description of environmental legal requirements and Seriti's commitment to comply with these requirements.
- A description of broad-based objectives of environmental management for this project.
- A discussion of how individual actions can impact on the environment.
- A discussion of how individual actions can assist in the successful implementation of the environmental authorisation and the EMPr.
- Other relevant generic environmental and corporate requirements.

All employees are to sign that they have understood and will comply with Seriti's training and other applicable requirements.

Requirements

- Environmental induction material (posters, power point presentations etc.);
- Code of Conduct;
- Register of inducted employees, service providers and contractors.

- **Environmental Awareness Programme**

The purpose of the general environmental awareness programme is to promote ongoing environmental awareness amongst the workforce. All members of the project workforce and contractors are to be incorporated into the general environmental awareness programme.

Monthly Environmental Topics

A monthly environmental awareness topic is to be chosen based on the outcomes of internal audits as well as topics of general environmental interest. The topic is to be communicated to the workforce through:

- Discussions at HSE meetings.
- Posters on notice boards.

Monthly environmental topics could include:

- General and environmental topics
- Reporting environmental incidents
- Environmental impacts associated with water, waste, soil, groundwater, fauna, flora, etc
- Environmental emergency training
- Preventing and cleaning up spills
- Reduce, reuse and recycle
- General versus hazardous waste
- Alien vegetation control
- Saving water
- Saving energy
- Heritage sites

Requirements

- Environmental topics to be included on the agenda of relevant environmental related meetings.
- Environmental awareness material to be produced and posted.

11.2 Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

- **Specific Environmental Awareness Training**

The purpose of the job specific environmental awareness training is to ensure that employees within the specific management units are equipped to implement the actions committed to in the environmental authorisation and the EMPr. All members of the workforce are to be subject to job specific environmental training. This training is to undertaken by the managers of each of the management units. Supervisors will be trained to assist with the implementation and training of the work force.

- **Environmental Risk Identification**

The environmental risks associated with each management area are to be identified by the by the site personnel. The risks are to be documented and actions to reduce these risks should be developed. The actions are to ensure overall compliance with the commitments of the environmental authorisation and the EMPr. The findings of the performance assessment audits and EMPr compliance monitoring will also assist in identifying risks.

- **Training**

All members of the workforce (mining, plant workers, administration etc.) are to be subject to job specific training. This may include but not be limited to:

- Preventing pollution
- Spill prevention and clean-up procedures
- The location and purpose of material safety data sheets (MSDSs)
- Managing waste
- No-go areas
- Incident reporting

The aspects to be covered however are dependent on the findings of the individual risk assessments. This is to be undertaken for each management area initially. Thereafter all new members of the workforce are to undergo environmental training as part of the training required to do their particular job.

- **Corrective Action**

- Any actions undertaken by a worker that pose a risk to the environment are to be stopped immediately.
- The worker is to be instructed in how to correct the action.

Non-compliance is to be incorporated into the standard disciplinary procedure applicable to the project.

Requirements

- Risk assessment and action plan for each of the project areas.
- Training of the workforce within each management area.
- Training of new members of the workforce.
- Records of appropriate training conducted.

11.3 Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

Refer on the items above with specific to each of the requirements to be met.

11.4 Specific information required by the competent authority

Currently there are no additional specific information required by the competent authority.

12. UNDERTAKING

The EAP herein confirms

- a) The correctness of information provided in this report
- b) The inclusion of comments and inputs from stakeholders and I&APs
- c) The inputs and recommendation from specialist reports where relevant
- d) That the information provided by the EAP to the I&APs and any response by the EAP to the comments and input made by the I&APs are correctly reflected herein



Signature of the Environmental Assessment practitioner

Mandla Ralph Repinga

Company Name

Licebo Environmental and Mining (Pty) Ltd

Date:

04 June 2021

-END-