

# BASIC ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

PROPOSED COAL MINING PERMIT ON PORTION OF PORTION 139 OF THE FARM  
BLESBOKLAAGTE 296 JS, SITUATED IN THE MAGISTERIAL DISTRICT OF  
EMALAHLENI IN MPUMALANGA PROVINCE.

Prepared for:



**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

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**DMRE REF: MP 30/5/1/1/3/13338 MP.**

**2023**

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# mineral resources

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Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

## **BASIC ASSESSMENT REPORT**

**AND**

## **ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL ACT 107 OF 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).

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## IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation, or damage to the environment.

In terms of section 16(3)(b) of the BASIC ASSESSMENT Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has considered any minimum requirements applicable, or instructions or guidance provided by the competent authority to the submission of applications.

**It is therefore an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

**It is furthermore an instruction that** the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un- interpreted information and that it unambiguously represents the interpretation of the applicant.

## OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process–

- a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context.
- b) identify the alternatives considered, including the activity, location, and technology alternatives;
- c) describe the need and desirability of the proposed alternatives,
- d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
  - e) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
  - f) the degree to which these impacts can be reversed; may cause irreplaceable loss of resources; and can be managed, avoided or mitigated.
- g) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to;
  - identify and motivate a preferred site, activity and technology alternative;
  - identify suitable measures to manage, avoid or mitigate identified impacts; and identify residual risks that need to be managed and monitored.

## PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT.

### INTRODUCTION AND EXECUTIVE SUMMARY

Singo Consulting (Pty) Ltd has been appointed as an independent Environmental Consultant by Siphosizwe Construction CC to conduct Environmental Impact Assessment (EIA), Compile an Environmental Management Programme report (EMPr) and undertake Public Participation Process (PPP). This is done for processes of acquiring Environmental Authorization for the proposed Mining Permit Application within portion of Portion 139 of the Farm Blesboklaagte 296 JS, situated in the Magisterial District of EMalahleni in Mpumalanga Province. (DMRE REF.: MP 30/5/1/1/3/13338 MP).

The Mining Permit is situated approximately 210 m west of Klarinet Industrials, approximately 770 m north-west of Klarinet, approximately 1.74 km south-west of Corriation coal. The land within which the proposed site is nestled is a mixture of industrial, grazing, and residential area. The area of interest was found to be covered by natural vegetation, Blackwattle (invasive plants) and Eucalyptus tree, with grasses being the dominant vegetation.

As per the Biodiversity Terrestrial Map provided on page 44 produced by the GIS specialist at Singo Consulting, the proposed project area falls largely on Heavily Modified Area: and Other Natural Areas (Areas with no direct value to biodiversity. Not Natural or degraded natural areas that are not required by ESA, such as intensive agriculture, urban, and industrial areas, as well as human infrastructure).

During site assessment wetlands and non-perennial river were found within the mining permit and around the 500 m radius from the permit boundary. Signs for land subsidence within the proposed mining area which may be because of post underground mining activities with the application of board and pillar mining method for roof support for underground mining was observed on site. There is a possibility that rehabilitation of the previous underground mining operations with the abstraction of boards and pillars that were used by previous underground mining activities were not done accordingly, which may also result in possible spontaneous combustion in the area. Number of graves were observed on the southern side of the proposed mining permit at about 30 m and in the boundary of the mining permit. Heritage Impact Assessment will be conducted before mining activities commences to identify all graves around the area.

With the current state of the proposed project area, it is clear that the area poses threats to the livelihoods of the neighbouring human beings and animals as such, it is clear that no animal species can survive with the current condition of the area and those that were discovered to exist in the area must have migrated

to other safe areas as their habitats and some might have died and no agricultural activities or industrial activities can take place in the area. Also, the plant species that are regarded to be of ecological importance that were discovered to exist in the area must have been destroyed by previous operations that took place in the area.

Mining Permit Application has been submitted for the exploitation of Coal resources on the property mentioned above. Mining activities will be undertaken over a period of two (2) years. The mineral resource of interest is at shallow depth hence surface mining method, particularly open cast mining method of excavation will be utilised in this proposed project. The mine design will be developed according to the dimension of the applied mineral deposit within the project area, but overall mining activities will be limited to an area of 5 Ha as per mining permit requirements. The topsoil will be stockpiled elsewhere on site preferably next to the farm boundary and will be used during rehabilitation period.

Once a box cut has been made, the overburden and mineral resources where necessary will be loosened by blasting with non-conventional explosives such as Non-Ex Rock Breaking Cartridges also used by Samancor Chrome in Gauteng and Waterkloof mine in Rustenburg. Non-Ex Rock Breaking Cartridges are a pyrotechnic composition (low explosives) that break rocks by generating tensile force through rapid gas expansion in a sealed (stemmed) drill hole and have no adverse environmental effects. The loosened material will then be loaded onto trucks by excavators. A haul road will be situated at the side of the open cast, forming a ramp up which trucks can drive, carrying coal and waste rock. Waste rock will be piled up at the surface, near the edge of the open cast (waste dump). The waste dump will be tiered and stepped, to minimize degradation. All the activities will be guided by the project's EMPr such that the project does not impact the environment negatively.

This Mining Permit application requires authorization in terms of the following interlinked pieces of legislation: the Mineral and Petroleum Resources Development Act, 2002 (MPRDA, Act 28 of 2002), as amended and the National Environmental Management Act, 1998 (NEMA, Act 107 of 1998), as amended. These pieces of core legislation stipulate the required studies, reports, and legal processes to be conducted and the results thereof are to be submitted to the relevant authorities for approval prior to commencement. The project was announced through publication of newspaper and plugging site notices. Stakeholders and landowners were consulted through emails.

## 1 CONTACT PERSON AND CORRESPONDENCE ADDRESS.

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**DISCLAIMER**

The opinion expressed in this, and associated reports are based on the information provided by Siphosizwe Construction CC to Singo Consulting (Pty) Ltd (“Singo Consulting”) and is specific to the scope of work agreed with Siphosizwe Construction CC.

Singo Consulting (Pty) Ltd acts as an advisor to Siphosizwe Construction CC and exercise all reasonable skill and care in the provision of its professional services in a manner consistent with the level of care and expertise exercised by members of the environmental profession.

Where site inspections, testing of fieldwork have taken place, the report is based on the information made available by Singo Consulting (Pty) Ltd during the visit, visual observations, and any subsequent discussions with regulatory authorities. The information used in this report were obtained from relevant stakeholders from the sharing of BIDs as a way of notifying the stakeholders about the proposed project.

Singo Consulting (Pty) Ltd (“Singo Consulting”) takes reasonable care and diligence when providing services and preparing documents, but it has been assumed that the information provided to Singo Consulting (Pty) Ltd (“Singo Consulting”) is accurate.

These views do not generally refer to circumstances and features that may occur after the date of this study, which were not previously known to Singo Consulting (Pty) Ltd or had the opportunity to assess.

## **1.1 EAP expertise**

Singo Consulting was established in 2008 as an independent consulting company focused on creating opportunities in the mining and environmental industry. Over time, Singo Consulting diversified its services, providing high-value geological, hydrological, environmental, cleaning and rehabilitation services to clients across a range of industries focused primarily on natural resources.

## **1.2 EAP's experience in carrying out Environmental Impact Assessments**

Dr. Ndinannyi Kenneth Singo holds a PhD in Environmental Geology, an MSc in Environmental Management, and a BSc (Hons) Mining and Environmental Geology.

Dr Singo is a registered competent person with the South African Council of Natural Science Professions (SACNASP: Earth Science Reg. No: 400069/16), Geological Society of South Africa (GSSA), the Land Rehabilitation Society of Southern Africa (LaRSSA) and South African Affiliates of the International Association for Impact Assessment.

Dr Singo has knowledge of mine water and mine environmental management (acid mine drainage, heavy metal assessments and tailings management) in various commodities including coal, gold, magnesite, and base metals (Cu, Pb, Zn). He has extensive knowledge of defunct mining waste and wastewater impact assessments in communities in the vicinity of mines. Dr Singo has sound knowledge of risk assessment in terms of human and environmental health. He is experienced in the appraisal of potential constraints, and devising mitigation measures through remedial strategy development, feasibility, and validation.

During his PhD studies, Dr Singo learned how to operate in contaminated lands. His PhD largely focused on disused mines (gold, copper, and magnesite) ranging from Phase I and Phase II investigations to development of remedial strategies (i.e., Phase III). His PhD equipped him to understand waste classification, profiling and understanding of the implications associated with the management of waste, landfill disposal profiling and development of beneficiation strategies

## 2 Location of the overall activity

Farm name	Portion of portion 139 of the farm Blesboklaagte 296 JS
Application area (ha)	5 ha
Magisterial district	Witbank
Distance and direction from nearest town	approximately 210 m west of Klarinet Industrial approximately 770 m north-west of Klarinet approximately 1.74 km south-west of Corrinatation coal
21-digit Surveyor General code for each farm portion	T0JS00000000029600139

### 2.1 Locality map (show nearest town, scale not smaller than 1:150,000)

The Mpumalanga province consists of, amongst others, the eMalahleni, popularly known as Witbank. eMalahleni is situated in the Highveld part of Mpumalanga within the eMalahleni Local Municipality, with coal mining being a major activity in this city. The Mining Permit is situated approximately 210 m west of Klarinet Industrials, approximately 770 m north-west of Klarinet, approximately 1.74 km south-west of Corrinatation coal.

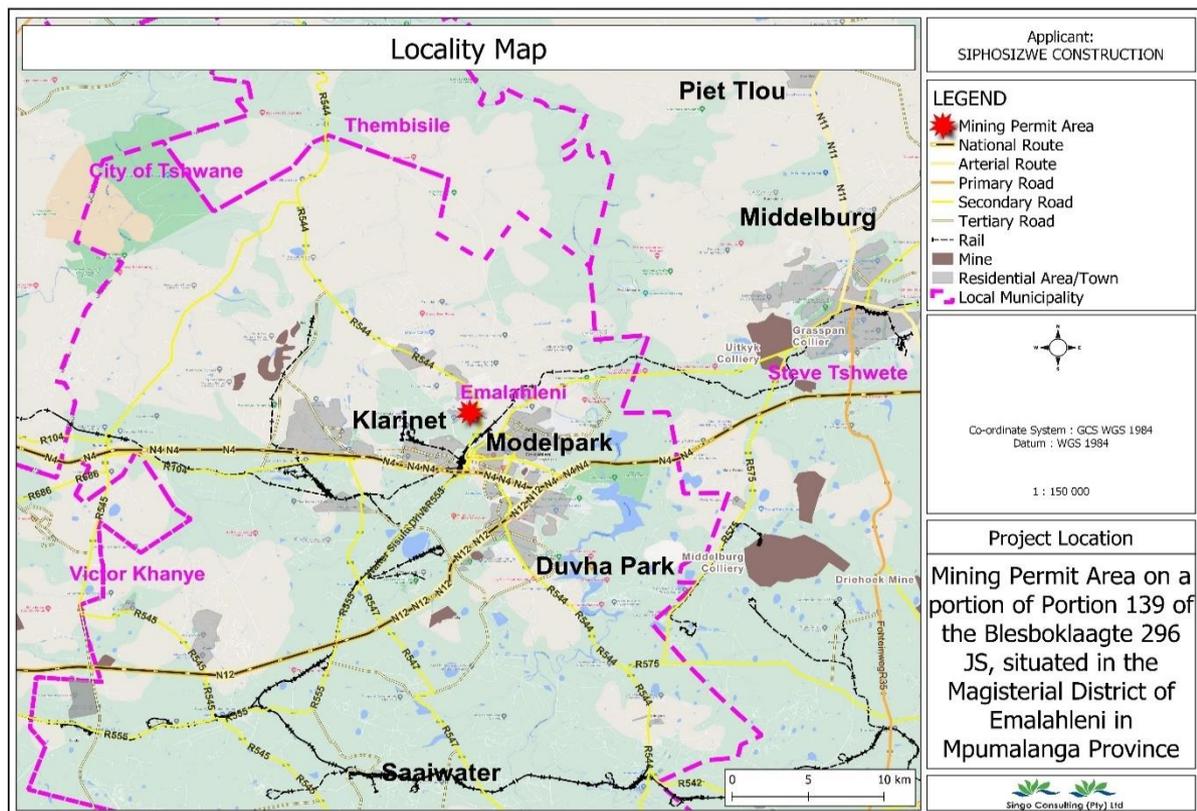


Figure 1: Locality map showing nearest towns (project area represented by a Red star)

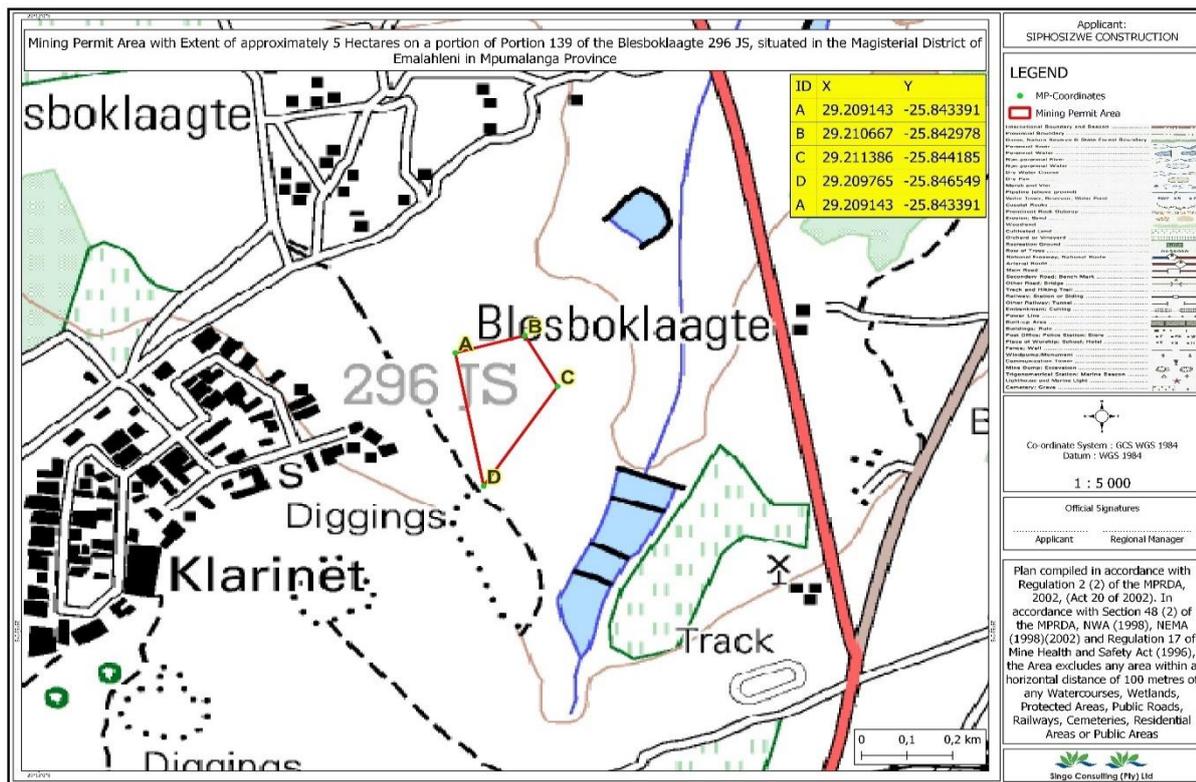


Figure 2: Locality map showing the boundaries and extent of the mining permit (red polygon)

## 2.2 Description of the scope of the proposed overall activity

Provide a plan drawn to a scale acceptable to the competent authority, but not less than 1:10 000 that shows the location, and area (hectares (ha)) of all aforesaid main and listed activities, and infrastructure to be placed on site.

The mining method proposed involves open cast extraction of coal from a proposed mine is to be established on the land adjacent to the Klarinet Industrials area that is located 210 m away from the proposed Mining Permit area and Corriation coal mine located 1.74 km away from the proposed area. The method that will be employed is a very basic form of open cast mining, and a 5-ha area will be demarcated for mining activities. Blasting (with non-conventional explosives) and subsequent mining of the coal utilizing a truck and shovel operation will be conducted. The mined coal will be crushed and screened on site utilizing a mobile crushing and screening plant that will be established within the boundaries of the mining area (see Figure 3). A front-end loader will be utilized to load the material into haulage trucks. The mine will operate for a two (2) year permit period with an option to renew for three (3) periods of which each may not exceed one year in terms of Section 27(8)a of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002) as amended. The product (coal) will be stockpiled and transported to clients such as Eskom via trucks and trailers. All activities will

be contained within the boundaries of the mining site.

The project infrastructure and activities will include the following:

- Site clearance.
- Removal of topsoil and overburden and stockpiling.
- Site establishment, mobilization of equipment and preparation of the area for mining.
- Excavation of an opencast.
- Blasting.
- Loading zone.
- Hauling and transporting of coal.
- Crushing and screening.
- Ablution facilities and waste storage area.
- Rehabilitation of site and Monitoring.

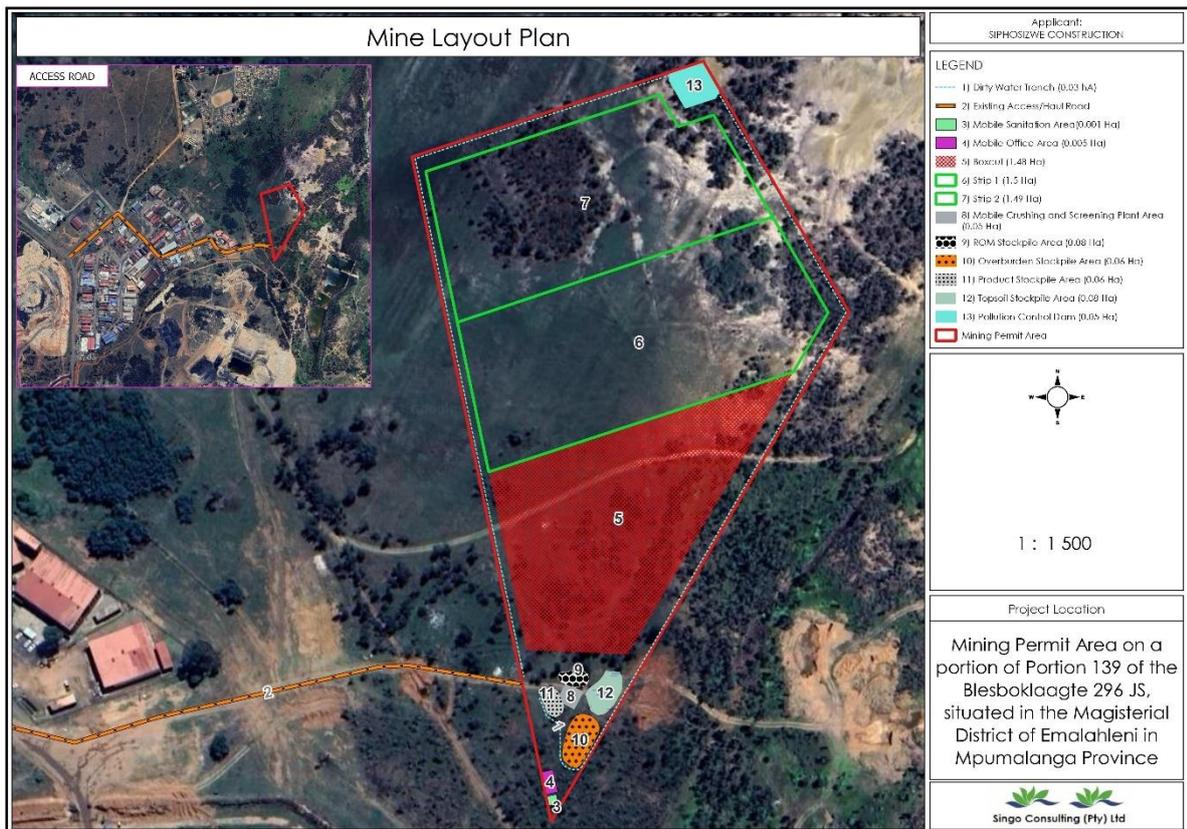


Figure 3: Mine layout Plan

### 2.3 Listed and specified activities

NAME OF ACTIVITY E.g. for prospecting: drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office and access route; and for mining: excavations, blasting, stockpiles, discard dumps/ dams, loading, hauling, transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines and conveyors.	Aerial extent of the activity Ha or m <sup>2</sup>	Listed activity Mark with X where applicable	Applicable listing notice (GN 517/2021)
Open cast mining and crushing to produce coal specs required by clients	5 Ha	X	GN 517/2021, Listing notices 1 activity 21: Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.
A closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)	5 Ha		Not listed
Vegetation Clearance	5 Ha	X	GN 517/2021, Listing Notice 1 activity 27: The clearance of an area of 1 hectare or

			more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for - (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Overburden stockpile	0.08Ha		Not listed
Topsoil stockpile	0.09Ha		Not listed
Product stockpile area	0.06Ha		Not listed
ROM stockpile area	0.08Ha		Not listed
Mobile offices	0.05Ha		Not listed
Toilets and sanitation	0.01Ha		Not listed
Box cut construction	1.48Ha		Not listed
Strip 1	1.50Ha		Not listed
Strip 2	1.49Ha		
Mobile Crushing and Screening Plant Area	0.05Ha		Not listed
Rehabilitation	5 Ha		Not listed

## 2.4 Description of the activities to be undertaken

Describe methodology/technology to be employed, including type of commodity to be prospected/mined, a linear activity and a description of the route of the activity.

Mining is basically a process of actively extracting an in-situ mineral resource; mineral resources can be mined using underground or surface mining methods. Surface mining is used in situations where the minerals are relatively shallow while underground mining is used for deposits at greater depth, higher grade deposits, or vein ores. Mineral resource within the central basin is at shallow depth hence surface mining method, particularly open cast mining method, will be utilised in this proposed project.

The mining method proposed involves open cast extraction of coal from a proposed mine. The mining methods will include blasting with non-conventional explosives to loosen the hard rock (overburden). The material will be loaded with excavators and hauled to the mobile crushing and screening plants that will be established within the project area. The coal will be stockpiled and transported to clients such as Eskom

via trucks and trailers. All activities will be contained within the boundaries of the mining site.

The trucks transporting coal from the Siphosizwe Construction cc proposed Mining Permit area to dedicated clients, will travel through an existing gravel road that joins an unnamed tar road connecting to the R544 regional road. All mining vehicles using public roads will be in a roadworthy condition and their loads will be secured. They will adhere to the speed limits (40 km/h) and all local, provincial, and national regulations with regards to road safety and transport.

At the current stage of the proposed Mining Permit, in terms of the law the applicant is not allowed to conduct exploration before the Mining Permit has been granted and issued by the DMRE. According to the investigation and / research conducted by Singo Consulting (Pty) Ltd, the coal is of high quality and qualifies to be supplied to Kelvin power station, to be sold to Samancor and qualifies to be sold as export coal. The market can only be confirmed after the proposed mining permit has been granted and a Permit issued by the DMRE. Once drilling commences, core logging will be conducted, and based on the available coal resources, the quantity of coal within the mining permit area will be estimated. Coal samples will be taken to the lab to determine the value of the coal to be mined by Siphosizwe Construction cc.

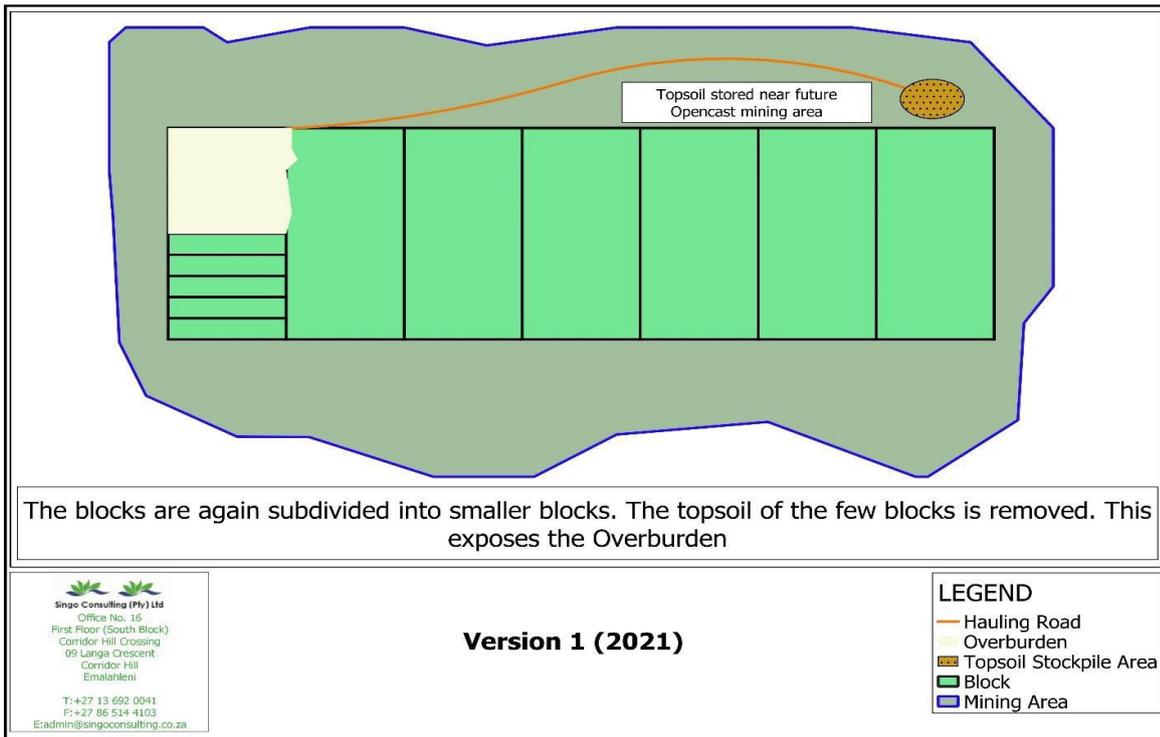


Figure 4:

Opencast mining (Singo Consulting, 2021)

Figure 5: Topsoil removal

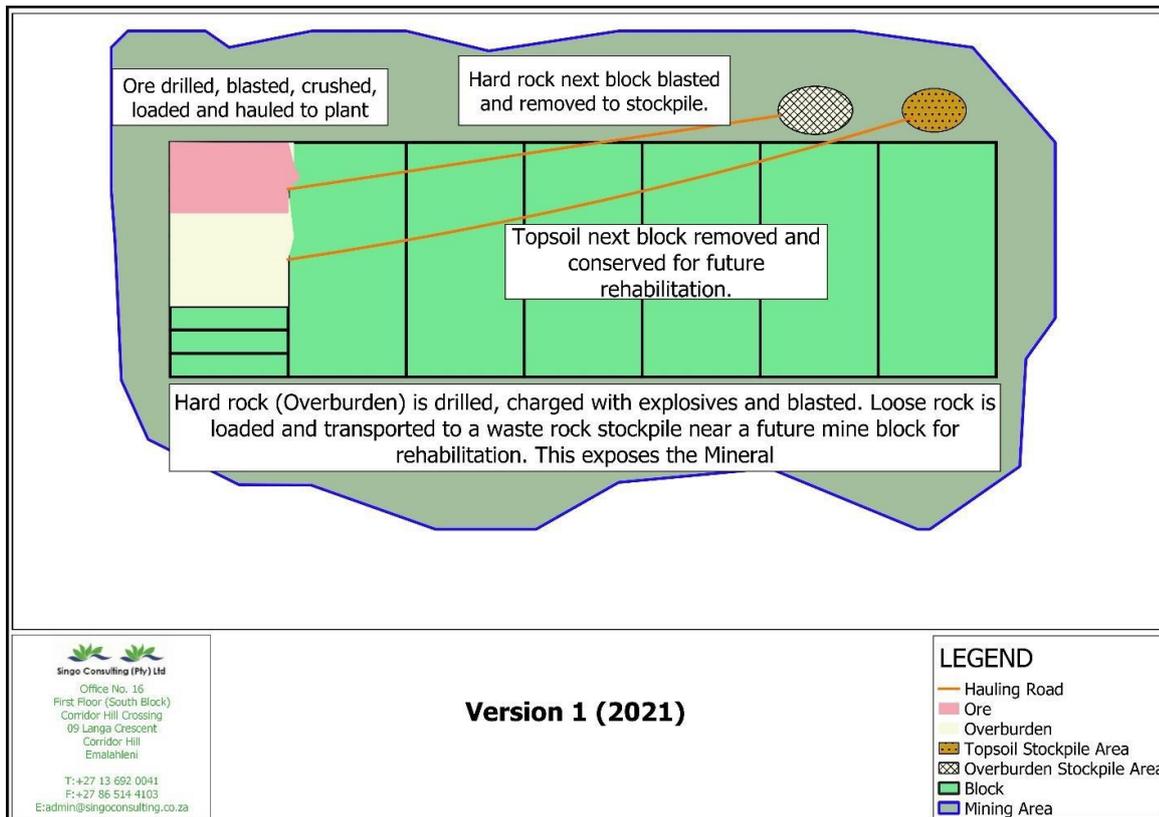


Figure 6: Overburden blasting and removal

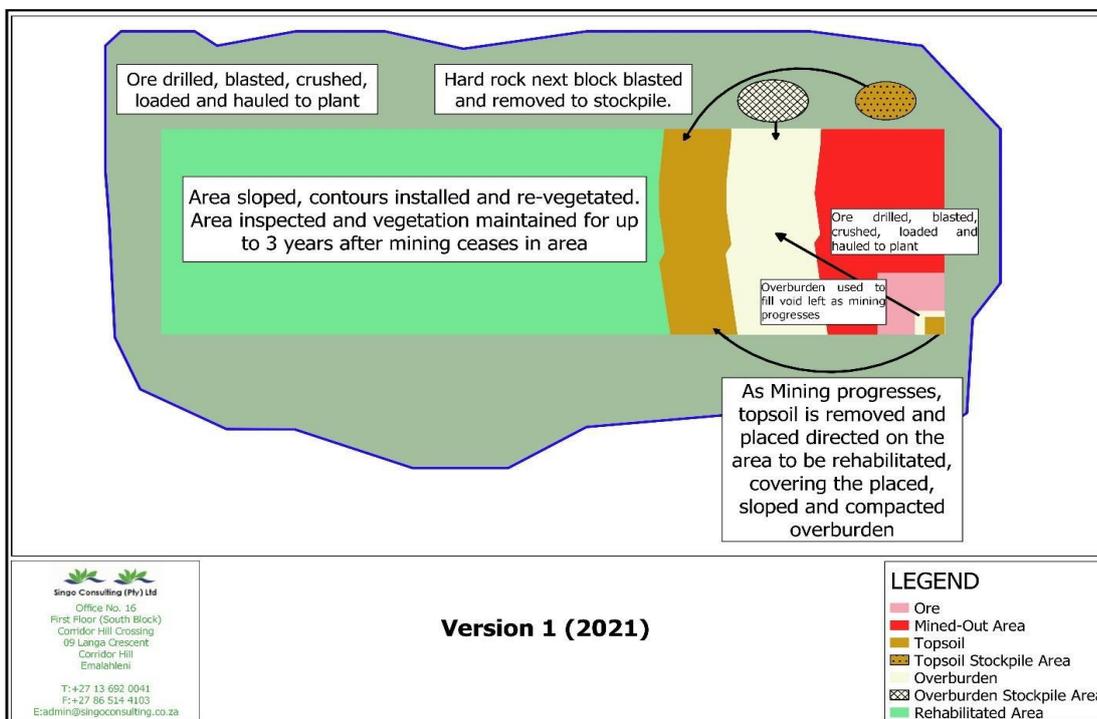


Figure 7: Backfilling and rehabilitation stage

107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014 (as amended) read together with regulation 40-43 of the Act. The triggered activities as reflected on GN 517/2021; LN 1 Activity 21 & 27:

- ❖ LN 1 Activity 27: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for -(i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
- ❖ Activity 21: Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.
- ❖ LN 1 Activity 27 is about clearing of vegetation and this application seek to be authorized for this activity. Deforestation process is required before commencement of any mining activity if the area is vegetated, this process allows the mining company to gain access to the mining area and locating other required infrastructures. Therefore, land clearance will be the first stage as part of development.

Phase	Activity no	Activity
<b>Construction</b>	1	Site clearing: Removal of topsoil and vegetation
	2	Construction of any surface infrastructure, e.g., Haul roads, pipes, storm water diversion berms (incl. transportation of materials and stockpiling)
	3	Free digging and development of initial box cut for mining
	4	Temporary storage of hazardous products (fuel, explosives) and waste
<b>Operation</b>	5	Removal of overburden and backfilling when possible (incl. drilling/free digging of hard overburden and stockpiling)
	6	Use and maintenance of haul roads.
	7	Coal commodity
	8	Water use and storage on site
	9	Storage, handling and treatment of hazardous products (fuel, explosives, oil) and waste activities (waste, discard)
	10	Concurrent replacement of overburden, topsoil and re-vegetation
<b>Decommissioning</b>	11	Removal of all infrastructure (incl. transportation off site)
	12	Rehabilitation (spreading of soil, re-vegetation and profiling)
	13	Installation of post-closure water infrastructure
	14	Environmental monitoring of decommissioning activities
	15	Storage, handling and treatment of hazardous products (fuel,

		explosives, oil) and waste activities (waste discard)
Post-closure	16	Rehabilitation and Post-closure monitoring

#### 2.4.1 Site establishment/construction phase

During site establishment, the applicant will demarcate the site boundaries and clear the topsoil and overburden from the extension area to open it for free digging. Upon stripping, the topsoil and overburden will be stockpiled along the boundaries of the proposed mine for use during the rehabilitation phase. Topsoil stripping will be restricted to the areas to be mined. The complete A-horizon (topsoil – the top 100-200 mm of soil, which is generally darker in colour due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends, the top 300 mm of soil must be stripped.

The topsoil will be stockpiled in the form of a berm alongside the boundary of the proposed mine where it will not be driven over, contaminated, flooded, or moved during the operational phase. The topsoil berm will measure a maximum of 1.5 m high and indigenous grass species must be planted on it, if vegetation does not naturally establish within 6 months of stockpiling, to prevent soil erosion and discourage weed growth. The roots of the grass will improve soil viability for rehabilitation purposes. The stripped overburden will be stockpiled on a designated area after the topsoil has been removed.

Overburden is waste rock consisting of consolidated and unconsolidated material that must be removed to expose the underlying coal. It is desirable to remove as little overburden as possible in order to access the coal of interest, but a larger volume of waste rock is excavated when the mineral deposit is deep. The removal techniques that will be employed are cyclical with interruption in the extraction (drilling, blasting and loading) and removal (haulage) phases. This is particularly true for hard rock overburden which must be drilled and blasted first. An exception to these cyclical effects are, dredges used in hydraulic surface mining and some types of loose material mining with bucket wheel excavators. The fraction of waste rock to coal excavated is defined as the stripping ratio. Stripping ratios of 2:1 up to 4:1 is not uncommon in large mining operations. Ratios above 6:1 tend to be less economically viable, depending on the commodity. Once removed, overburden can be used for road and tailings construction or may have non-mining commercial value as fill dirt.

Surface mining is a mine in which the coal lies near the surface and can be extracted by removing the covering layers of rock and soil. Almost all surface mining operations are exposed to the elements and require no roof support. Open cast mining method employ a conventional mining cycle of operations to extract minerals: rock breakage is usually accomplished by drilling and blasting for consolidated materials and by ripping or direct removal by excavators for unconsolidated soil and/or decomposed rock, followed by materials handling and transportation. Open cast mining method was considered based on the geological data, extrapolation of resource from nearby mines, life span of a permit and the closure

advantage of open cast mining.

During the development and exploitation stages of mining when natural materials are extracted from the earth, remarkably similar unit operations are normally employed. The unit operations of mining are the basic steps used to produce mineral from the deposit, and the auxiliary operations that are used to support them. The steps contributing directly to mineral extraction are production operations, which constitute the production cycle of operations. The ancillary steps that support the production cycle are termed auxiliary operations. The production cycle employs unit operations that are normally grouped into rock breakage and materials handling.

Breakage generally consists of drilling and blasting, and materials handling encompasses loading or excavation and haulage (horizontal transport) and sometimes hoisting (vertical or inclined transport).

Thus, the basic production cycle consists of these unit operations:

**Production cycle=Drill+ Blast + Load+ Haul**

Although production operations tend to be separate and cyclic in nature, the trend in modern mining and tunnelling is to eliminate or combine functions and to increase continuity of extraction. The cycle of operations in surface and underground mining differs primarily by the scale of the equipment. Specialized machines have evolved to meet the unique needs of the two regimes.

The applicant will introduce the mining equipment to the area during the site establishment phase. The equipment to be used on site will include but not limited to:

- Mobile toilet
- Drilling equipment
- Excavating equipment
- Earth moving equipment.

#### **2.4.2 Operational phase**

Drilling and blasting can be defined as the controlled use of explosives and other methods such as gas pressure blasting pyrotechnics, to break rock for excavation. It is practiced most often in mining, quarrying and civil engineering such as dam, tunnel, or road construction. The result of rock blasting is often known as a rock cut.

Drilling and blasting currently utilizes many different varieties of explosives with different compositions and performance properties. Higher velocity explosives are used for relatively hard rock to shatter and break the rock, while low velocity explosives are used in soft rocks to generate more gas pressure and a greater heaving effect. For instance, an early 20th-century blasting manual compared the effects of black

powder to that of a wedge, and dynamite to that of a hammer. The most used explosives in mining today are ANFO based blends due to lower cost than dynamite.



**Figure 8: Blasting Design and Planning for Blasting**

The mining activities will consist of the following:

- Blasting & Ripping
- Excavating
- Crushing
- Stockpiling and Transporting
- Site access road
- Mobile chemical toilets and Sanitation

The operation's machinery will be serviced at the applicant's existing off-site workshop. Only emergency repairs will be performed on-site, with regular maintenance of the equipment performed at the workshop, and drip trays should be placed beneath oil/fuel leaks to avoid soil contamination. The mining site will require the storage of large quantities of diesel. Fuelling of tracked vehicles has to be done in the mine due to logistical reasons. A mobile chemical toilet will be installed on-site for employee use, and it should be serviced on a regular basis, once or twice a week, to promote worker hygiene. To access the mining area, the existing R544.



Figure 9: Example of Mobile toilet.

The stockpiling process includes mechanical loading and transportation of the sought coal. As mentioned previously the coal will be loaded with a front-end loader onto trucks upon which it will be weighed and transported to the client.



Figure 10: typical example of a front loader

The product stockpiling activities will consist of the following:

- Loading of coal.
- Weighing of coal; and

- Transportation of coal.

### **Working hours:**

All proceedings will be undertaken in 24 hours' day shifts to meet schedule demands.

### **Two Shifts will be worked:**

Sunrise to Sunset

Sunset to Sunrise

### **Road and transport**

The site is located along an existing gravel road that joins an unnamed tar road connecting to the R544 regional road.

If new roads must be built, they will be chosen as carefully as possible to avoid watercourses and steep gradients. Where necessary, adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided. Any new roads to be established to the site will be below the threshold of the EIA regulations of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended June 2014.

The existing farm road will be used as access road to the site. Should a portion of the access road need to be newly constructed in future the following will be adhered to:

- The route will be selected that a minimum number of vegetation is cleared, and existing fence lines will be followed as far as possible.
- Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.



Figure 11: Access Road from the gate to the mining permit area

**Water:**

The municipality will supply the water. The water will primarily be used to suppress dust on the crusher plant, roads, and mining area. Drinking water will be transported and stored in a portable tank e.g., JoJo tank.



Figure 12: Typical example of JoJo water tank

**2.4.3 Decommissioning phase**

The closure objectives include making the coal proposed mine safe and ensuring that the remainder of the site is fit for agricultural use such as grazing. The coal proposed mine will be incorporated into the closure objectives of the proposed extension area. Overburden will be top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation is not naturally established in the area within six months of the replacement of the topsoil. Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding (if applicable) has been done in an area. Site management will implement an alien invasive plant management plan during the aftercare period to address germination of problem plants in the area.

The decommissioning activities will include:

- Landscaping during rehabilitation
- Replacing of topsoil
- Implementation of an alien invader plant management plan

**2.5 Policy and legislative context**

This Mining Permit application requires authorization in terms of the following interlinked pieces of legislation:

- ❖ The Mineral and Petroleum Resources Development Act, 2002 (MPRDA, Act 28 of 2002), as amended.
- ❖ The National Environmental Management Act, 1998 (NEMA, Act 107 of 1998), as amended.

These pieces of core legislation stipulate the required studies, reports, and legal processes to be conducted and the results thereof are to be submitted to the relevant authorities for approval prior to commencement. In addition to the above, there are various pieces of legislation which govern certain aspects of the mining operations, and these are summarized in Table 1, together with the main legislative requirements mentioned above.

**Table 4: Policy and Legislative context.**

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
A description of the policy and legislative context within which the development is proposed, including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.		E.g., In terms of the National Water Act (NWA) a Water Use License has/has not been applied for.
Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) and the MPRDA Amendment Act, Act 49 of 2008	Application for a mining permit DMRE reference: MP 30/5/1/1/3/13338 MP	GN 517/2021, Activity 21: Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
		Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.
<p>Constitution of South Africa, specifically everyone has the right to:</p> <p>an environment that is not harmful to their health or wellbeing</p> <p>have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development</p>	Republic of South Africa	The mining activities will only proceed after effective consultation.
Environmental Impact Assessment (EIA) regulations	Application for environmental authorization: DMRE Reference: MP 30/5/1/1/3/13338 MP	GN 517/2021 Activities 21 and 27
National Environmental Management Act, Act 107 of 1998 (as amended) (NEMA)	Application for environmental authorization: DMRE Reference: MP 30/5/1/1/3/13338 MP	GN 517/2021 Activities 21 and 27

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
National Water Act, 1998 (Act 36 of 1998), and GN 704 regulation. Best Practice Guidelines: Series A, G, & H	S 21 & S 26) Water use & mine water management	Best practice guidelines will be followed for water management, water characterization, water resource protection, water treatment, and the development of the mine water management model
National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA)NEM: WA	Management measures Environmental awareness plan	All type of waste will be managed as prescribed by the regulation (NEMWA)
National Heritage Resources Act, 25 of 1999 (NHRA)	Management measures	No mining activities will take place within 500 m of any identified heritage resource, such as a grave. Graves were observed and marked on the southern side of the proposed area and about 30 m away of the permit area
Municipality By-Laws: Waste Management by-law Act 59 of 2008, Air Quality Management By-law Act 39 of 2004, Noise control by-law, Spatial Planning and Land Use Management Act no 16 of 2013 (SPLUMA).	Environmental Management measures awareness plan	Best practice guidelines will be followed for any by-law's management and the development of the mine environmental and other legislative management.

## 2.6 Environmental Authorization Process

### 2.6.1 Mineral and Petroleum Resources Development Act

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002), a Mining Permit must be issued prior to the commencement of any mining activities. As per Section 79(4)(a) and (b) of the MPRDA, the Applicant is required to conduct a Basic Assessment and submit an EMPR for approval as well as to notify in writing and consult with Interested and Affected Parties (I&APs) within 90 days of acceptance of the application. The MPRDA also requires adherence with related legislation, chief

amongst them is the National Environmental Management Act (Act 107 of 1998, NEMA) and the National Water Act (Act 36 of 1998, NWA).

Several amendments have been made to the MPRDA. These include, but are not limited to, the amendment of Section 102, concerning amendment of rights, permits, programmes and plans, to requiring the written permission of the Minister for any amendment or alteration; and the Section 5A(c) requirement that landowners or land occupiers receive twenty-one (21) days' written notice prior to any activities taking place on their properties. One of the most recent amendments requires all mining related activities to follow the full NEMA process as per the 2014 basic assessment Regulations (as amended), which came into effect on 8<sup>th</sup> of December 2014.

A Mining Permit is exclusive, transferable, valid for two (2) years and may be renewed for three periods of which may not exceed one year.

## **2.6.2 National Environmental Management Act**

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA Environmental Impact Assessment (EIA) regulations, the proponent is required to appoint an environmental assessment practitioner (EAP) to undertake the EIA as well as the public participation process. In South Africa, EIA became a legal requirement in 1997 with the promulgation of regulations under the Environmental Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed, and reported on to the competent authority responsible for granting the relevant environmental authorization. On 21 April 2006 the Minister of Environmental Affairs and Tourism promulgated regulations in terms of Chapter 5 of the NEMA.

The objective of the Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment, and reporting of the activities that have been identified. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorized, and that activities which are authorized are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

The aim of the EIA process is to identify and assess the potential impacts associated with the proposed project and to develop measures through which potential negative biophysical and socio-economic impacts can be mitigated and positive benefits can be enhanced. The EIA will ensure that all issues are

integrated into the lifecycle of the mining operation and its infrastructure. This will occur during the planning, construction, operation and decommissioning and site closure phases.

The EIA Report and the associated EMPR will indicate how the identified impacts will be avoided, mitigated and/or managed by setting environmental objectives and goals. The EMPR will further outline the implementation programme for the environmental objectives and goals. The EMPR is a legal requirement of the MPRDA and all mines, existing or new, are required to possess an approved EMPR prior to initiating any mining operations. The EMPR is legally binding, and the proponent is required to meet the requirements specified in the document.

The written decision called an Environmental Authorization, is a legal document setting out the conditions of the Authorization and the actions required to protect human health and the environment. Any affected party may appeal against the decision contained in an Environmental Authorization. Appeals must be lodged with the Minister who considers appeals in terms of the relevant provisions of NEMA and the Environmental Regulations.

An important amendment to the NEMA (December 2014) Regulations is that the Department of Mineral Resources has been the responsible authority for approving and issuing of Environmental Authorizations under the NEMA for mining related activities. The Department of Environmental Affairs is the appeal authority for mining related Environmental Authorizations.

### **2.6.3 National Environmental Management: Waste Amendment Act**

The Regulations pertaining to the NEMWA activities were published on 3<sup>rd</sup> of July 2009 in Government Gazette 32368 under GN 718. These were amended in August 2013 in Government Notice Regulation 921. Regulations regarding the planning and management of residue stockpiles and residue deposits were published and commenced on 24 July 2015 in Government Notice Regulation 632 and the List of waste management activities that have or are likely to have a detrimental effect on the environment were amended on the same date by Government Notice Regulation 921. As per this list the following is of important to note:

- ❖ Category A: (15) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining permit or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

Category B: (11) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

On the 2<sup>nd</sup> of June 2014 the National Environmental Management: Waste Amendment Act came into force. Of importance for mining activities is that according to this amendment, waste resulting from

exploration, mining, quarrying, and physical and chemical treatment of minerals is classified as Hazardous Waste. Waste is accordingly no longer governed by the MPRDA but is subject to all the provisions of the National Environmental Management: Waste Act, 2008 (NEMWA). Section 16 of the NEMWA must also be considered which states as follows:

“A holder of waste must, within the holder’s power, take all reasonable measures to:

- ❖ Avoid the generation of waste and where such generation cannot be avoided, to minimize the toxicity and amounts of waste that are generated.
- ❖ Reduce, re-use, recycle and recover waste.
- ❖ Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner.
- ❖ Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odours, or visual impacts.
- ❖ Prevent any employee or any person under his or her supervision from contravening the Act.
- ❖ Prevent the waste from being used for unauthorized purposes.

These general principles of responsible waste management are incorporated into the requirements in the EMPR to be implemented for this project.

Schedule 3: Defined Wastes have been broken down into two categories: Category A being hazardous wastes and category B being general wastes. Under Category A (hazardous wastes) the act makes allowance for “wastes resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals”.

In order to understand the implications of this it is important to ensure that the definitions of all the relevant terminologies are defined:

- ❖ Hazardous waste: means “any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristic of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.
- ❖ Residue deposits: means “any residue stockpile remaining at the termination, cancellation or expiry of a prospecting right, mining right, mining permit, exploration right or production right.
- ❖ Residue stockpile: means “any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, mineral processing plant waste, ash or any other product derived

from or incidental to a mining operation and which is stockpiled, stored or accumulated within the mining area for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or, production right or an old order right, including historic mines and dumps created before the implementation of this Act.

Various regulations have been drafted in support of the NEMWA, as discussed below:

- ❖ Proposed Regulations regarding the planning and management of waste from a prospecting, mining, exploration or production operations (2014):
- ❖ Chapter 2, Section 3 states the identification and assessment of any environmental impacts, including those on groundwater, arising from waste must be done as part of the Environmental Impact Assessment (EIA) conducted in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998) (hereafter referred to as the NEMA). The pollution control barrier system shall be defined by the (a) Waste Classification and Management Regulations (2013); (b) National Norms and Standards for the Assessment of Wastes for Landfill Disposal (2013); and (c) National Norms and Standards for Disposal of Waste to Landfill (2013).
- ❖ Waste Characterization must be done in terms of physical and chemical composition as well as content. The classification must be done in terms of the health and safety classification and the environmental classification.

Proposed Regulations to exclude a waste stream or a portion of a waste stream from the definition of a waste (2014):

This regulation will give the holder of the right the opportunity to exclude a waste stream, or a portion of a waste stream from the definition of a waste. Chapter 2, Section 4 of this Regulation, Sub-section (1) states that any portion of a waste generated from a source listed in Category A of Schedule 2 of the NEMWA, may be excluded from being defined as hazardous on demonstration that such portion of waste is non-hazardous in accordance with the Waste Management and Classification Regulations of 2013. The application process will be in the form of a prescribed process and application must be made to the Minister. This Regulation is however not yet in force. National Norms and Standards for the assessment of waste for landfill disposal (23 August 2013): These norms and standards prescribe the requirements for the assessment of waste prior to disposal to landfill. The aim of the waste classification tests is to characterize the material to be deposited or stored in terms of the above-mentioned waste classification guidelines set by the Department of Environmental Affairs (DEA).

The outcomes of the tests provide the necessary information in terms of:

- ❖ Identification of chemical substances present in the waste.
- ❖ Determination of the total concentrations (TC) and leachable concentrations (LC) of the elements and chemical substances that have been identified in the waste and that are specified in Section 6 of the above-mentioned Regulations. The obtained TC and LC values of the waste material will be compared to the threshold limits for total concentrations (TCT limits) and leachable concentrations (LCT limits) specified in Section 6 of the above-mentioned Regulations. Based on the TC and LC values of the elements and chemical substances in the waste exceeding the corresponding TCT and LCT limits respectively, the specific type of waste for disposal to landfill will be determined in terms of Section 7 of the Regulations.

#### **2.6.4 The National Environmental Management: Biodiversity Act**

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004, NEMBA), “provides for: the management and conservation of South Africa’s biodiversity within the framework of the NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute (SANBI); and for matters conducted therewith”.

In terms of the Biodiversity Act, the applicant has a responsibility for: The conservation of endangered ecosystems and restriction of activities according to categorization of the area (not just by listed activity as specified in the EIA regulations): Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.

Limit further loss of biodiversity and conserve endangered ecosystems

Regulations published under the NEMBA also provide a list of protected species, according to the Act (GNR 151 dated 23 February 2007, as amended in GNR 1187 dated 14 December 2007). Section 57 of NEMBA identifies restricted activities involving threatened or protected species. Restricted activities include the gathering, collecting, cutting, uprooting, damaging or destroy a listed species.

#### **2.6.5 The National Environmental Management: Protected Areas Act**

The National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEMPAA) serves to: “provide for the protection and conservation of ecologically viable areas representative of South

Africa's biological biodiversity and its natural landscapes and seascape; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; for the continued existence, governance and functions of South African National Parks; and for matters in connection therewith.

The objectives of this Act are –

- ❖ To provide, within the framework of the national legislation, including the National Environmental Management Act, for the declaration and management of protected areas.
- ❖ To provide for co-operation governance in the declaration and management of protected areas.
- ❖ To affect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity.
- ❖ To provide for a diverse and representative network of protected areas on state land, private land, communal land and marine water.
- ❖ To promote sustainable utilization of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas.
- ❖ To promote participation of local communities in the management of protected areas, when appropriate
- ❖ To provide for the continued existence of South African National Parks.

#### **2.6.6 National Water Act**

The National Water Act, 1998 (Act 36 of 1998) (NWA) makes provision for two types of application for water use licenses, namely individual applications, and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the Applicant of the likely effect of the proposed license on the resource quality, and that such assessment be subject to the EIA regulations. A person may use water if the use is-

- ❖ Permissible as a continuation of an existing lawful water use (ELWU).
- ❖ Permissible in terms of a general Authorization (GA).
- ❖ Permissible under Schedule 1.
- ❖ Authorized by a licensed.

The NWA defines 11 water uses. A water use may only be undertaken if authorized. Water users are required to register certain water uses that took place on the date of registration, irrespective of whether the use was lawful or not.

Section 21 of the National Water Act 1998 lists the following 11 water uses which can only be legally undertaken through the water use Authorization issued by the Department of Water and Sanitation (DWS):

- (a) Taking water from a water resource.
- (b) Storing water.
- (c) Impeding or diverting the flow of water in a watercourse.
- (d) Engaging in a stream flow reduction activity contemplated in Section 36.
- (e) Engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1).
- (f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits.
- (g) Disposing of waste in a manner which may detrimentally impact on a water resource.
- (h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.
- (i) Altering the bed, banks, course or characteristics of a watercourse.
- (j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.
- (k) Using water for recreational purposes.

In terms of the National Water Act, no Water Use License has been applied for this project. DWS was engaged about this project so they can direct us whether it is viable or not to apply for water use license.

#### **2.6.7 National Heritage Resources Act**

The National Heritage Resources Act, 1999 (NHRA) stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34(1) of the NHRA states that, “no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority” The NHRA is utilized as the basis for the identification, evaluation, and management of heritage resources and in the case of CRM those resources specifically impacted on by development as stipulated in Section 38 of NHRA, and those developments administered through NEMA, MPRDA and the DFA legislation. In the latter cases the feedback from the relevant heritage resources authority is required by the State and Provincial Departments managing these Acts before any authorizations are granted for development. The last few years have seen a significant change towards the inclusion of heritage assessments as a

major component of Environmental Impacts processes required by NEMA and MPRDA. This change requires us to evaluate the Section of these Acts relevant to heritage (Fourie, 2008b).

The NEMA 23(2)(b) states that an integrated environmental management plan should, "...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage". A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down in Section 33 (Fourie, 2008b).

MPRDA defines 'environment' as it is in the NEMA and therefore acknowledges cultural resources as part of the environment. Section 39(3)(b) of this Act specifically refers to the evaluation, assessment, and identification of impacts on all heritage resources as identified in Section 3(2) of the National Heritage Resources Act that are to be impacted on by activities governed by the MPRDA. Section 40 of the same Act requires the consultation with any State Department administering any law that has relevance on such an application through Section 39 of the MPRDA. This implies the evaluation of Heritage Assessment Reports in Environmental Management Plans or Programmes by the relevant heritage authorities (Fourie, 2008b).

The NHRA identifies 5 activities that require a Heritage Impact Assessment (HIA). An HIA is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources.

An HIA must be done under the following circumstances:

1. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300 m in length.
2. The construction of a bridge or similar structure exceeding 50 m in length.
3. Any development or other activity that will change the character of a site and exceed 5 000 m<sup>2</sup> or involve three or more existing erven or subdivisions thereof.
4. Re-zoning of a site exceeding 10 000 m<sup>2</sup>.
5. Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

South African Heritage Resource Agency has been consulted for this project so they can have an input to the proposed application.

## 2.7 Need and desirability of the proposed activities.

Describe methodology/technology to be employed, including the type of commodity to be prospected/mined and for a linear activity, a description of the route of the activity.

The concept of “need and desirability” relates to, amongst others, the nature, scale, and location of development being proposed, as well as the wise use of land. While essentially, the concept of “need and desirability” can be explained in terms of the general meaning of its two components in which need primarily refers to time and desirability to place (i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed?), “need and desirability” are interrelated and the two components collectively can be considered in an integrated and holistic manner. There are different types of energy resources in the world.

Coal has always played important roles in the mining sector in South Africa. It creates jobs and assists people in escaping poverty. Mining companies are responsible for improving and developing the infrastructure, education, and skill development of the communities in which they operate. Mining activities provide a wide range of businesses to towns, which has a significant economic impact. Furthermore, in most cases, mine-created employment pays more than the average wage. South Africa's mining industry makes a significant contribution to the country's export market. It makes a lot of money from differences in currency exchange rates. The contributions of the mining industry to total government revenue are distributed at the national and subnational levels. Mining companies' revenues, as well as the taxes they collect, contribute to the country's Gross Domestic

First and foremost, the Applicant should hire employees from the directly affected wards. Employees will also receive skill development from the Applicant, which will improve their future employability. The project also highlights community development projects that will benefit the surrounding communities as a result of it. The government's goal, as stated in the MPRDA, is to maximize the benefits of the country's mineral resource for the benefit of all South Africans. This goal can be achieved by developing a new mining business, particularly through the creation of jobs. To minimize environmental consequences, the Applicant is willing to pursue mining of coal.

For a period of two years, the anticipated mine development will result in the employment of about ten to twenty semi-skilled individuals (A mining permit is granted for two years, renewable for another 3 years and cannot extend over 5 hectares by law).

Siphosizwe Construction cc is committed to the socio-economic development of formerly disadvantaged people in the surrounding community and thinks that gender parity is important to South Africa's

economic growth and wealth creation.

Therefore, it is justifiable to say there is already a market for Coal in the area. Hence the proposed operation will generate cash flow in Klarinet area and the surrounding areas, increase employment opportunities, promote development, and boost local economy. Coal is also the major primary energy source for South Africa.

More than 90% of the country's electricity, approximately 30% of the liquid fuel, and about 70% of its total energy needs are produced from coal (DoE, 2016). Coal also plays a significant role in supply to the South African chemicals industry and is an essential component in the steelmaking industry, i.e., metallurgical coal.

### **2.7.1 Advantages**

- Witbank has abundant coal reserves.
- Coal-fired power stations are reliable.
- Mpumalanga's coal resources are at shallow depth, hence the low mining cost.
- South Africa's infrastructure to generate electricity from coal is well-established.
- Burning coal is the most cost-effective and energy-efficient way of generating electricity.

### **2.7.2 Disadvantages**

- Coal has the most waste problems of all energy sources. Waste includes sulphur and nitrogen oxides, organic compounds, greenhouse gases and a lot of ash.
- South Africa's coal fields are concentrated in Mpumalanga, which limits the location options for power stations.

## **2.8 Motivation for the overall preferred site, activities, and technology alternative**

The proposed site earmarked for the mining of the coal will include the opencast. The proposed site was identified as the preferred alternative due to the following reasons:

- The site offers the sought-after resource (coal).
- Very little natural vegetation needs to be disturbed in order to establish the mining boxcut as the mining permit area does not consist of any activities.
- The mining impacts can be contained to one area.
- The mining area can be reached by an existing access road from the regional road R 544 joined by an unnamed tar road leading to Paxton Prison and a gravel road to the project area. No new

road infrastructure needs to be constructed.

- The open cast mining of the coal has been identified as the most effective method to produce the desired coal. The potential impacts on the surrounding environment, associated with open cast mining, is deemed to be of low significance.
- The general waste produced on-site will be contained in sealed refuse bins to be transported to the authorised local municipal landfill site.
- As equipment maintenance and servicing will be done at an off-site workshop, the amount of hazardous waste to be produced at the site will be minimal and mainly because of accidental oil or diesel spillages.
- Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste-handling contractor to be disposed of at a registered hazardous waste handling site.

## **2.9 Full description of process followed to reach proposed preferred alternatives within the site.**

This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties (I&APs), and the consideration of alternatives to the initially proposed site layout.

This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout. Details of the development footprint alternatives have been considered. With reference to the site plan provided and the location of the individual activities on site, provide details of the alternatives considered with respect to:

- The property on which or location where it is proposed to undertake the activity.

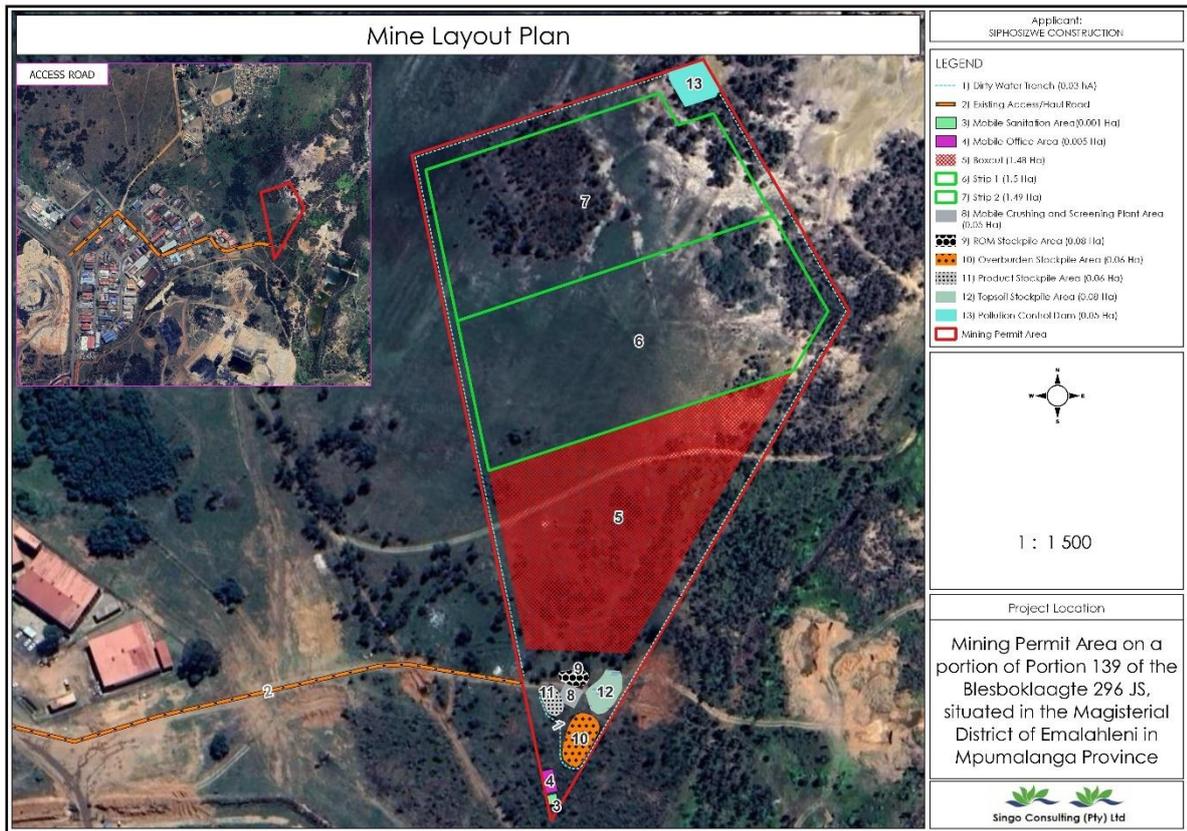


Figure 13: Proposed mine layout (infrastructure plans)

## 2.10 Details of the development footprint alternatives considered.

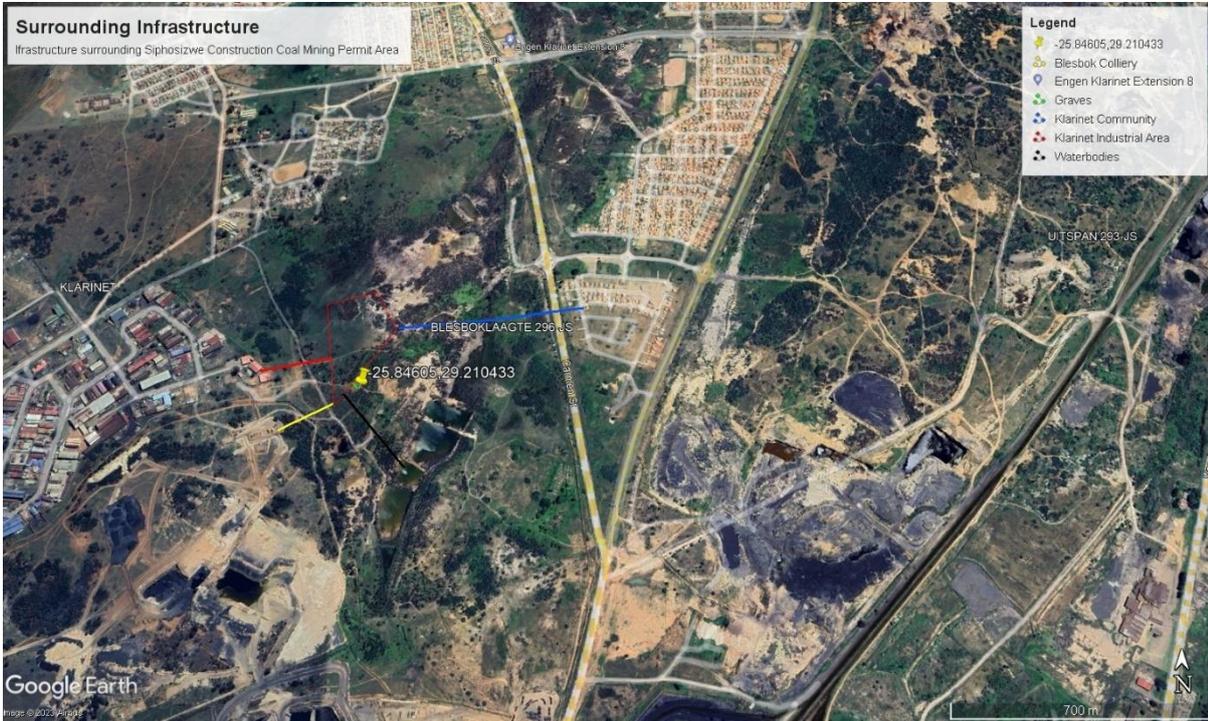
With reference to the site plan provided as Appendix 4 and the location of individual site activities, provide details of the alternatives considered with respect to:

- (a) the property on which or location where it is proposed to undertake the activity
- (b) the type of activity to be undertaken
- (c) the design or layout of the activity
- (d) the technology to be used in the activity
- (e) the operational aspects of the activity
- (f) the option of not implementing the activity

### a) The property on which or location where it is proposed to undertake the activity

The proposed project is located within portion of portion 139 of the farm Blesboklaagte 296 JS, which is located within the local municipality of eMalaheni. The Mining Permit is situated approximately 210 m east of Klarinet Industrials, approximately 770 m north-west of Klarinet, approximately 1.74 km south-west of Corination coal mine.

Geology is the primary driver for determining the location of the mining operation. A fraction of the application area, which is 5 hectares, will be expected to develop. Due to an increase in coal usage and demand in the industry, the company recognized the need for the commodity applied for in the region. The applicant therefore described the proposed area as the preferred and only viable site alternative.



**Figure 14: Google Earth Map showing the Infrastructure and Operations Surrounding the Proposed Siphosizwe Construction Cc Mining Permit**

**b) The type of activity to be undertaken**

The main activity to be undertaken is the extraction of in-situ coal resources on portion of portion 139 of the Farm Blesboklaagte 296 JS using open cast mining technique. The mining method proposed, open cast, allows easy access of machinery to the site and does not require extensive machinery as other methods, making it economical feasible for small-scale miners. It reduces the overall costs associated with the mining process, thus allowing financial viability in small scale mining of coal deposits.

**c) The design or layout of the activity**

The proposed mining method is opencast. The open cast proposed mine will be mined using conventional truck and shovel mechanism using roll over techniques in a single direction. Sustainable development principle to be applied during mining and rehabilitation phase to ensure that the mined-out area is restored to pre-mining condition. The primary procedure that will be implemented during the mining process includes:

- Digging and trenching around mining area

- Build a flat ramp for water bowser
- Topsoil to be stripped and stacked
- Ripping of hard overburden and stockpiling
- Excavation of the initial box cut
- Extraction of coal and run of mine (RoM)
- Load and haul
- Backfilling rehabilitation concurrently as mine progress forward

**d) The technology to be used in the activity**

The opencast mining method will be considered to maximize the coal extraction and use of the coal resource from the area. Truck and shovel operations will be used. A front-end loader will be utilized to load material into haulage trucks that will be used for the hauling of the coal through haul roads that will be constructed in the demarcated Mining Permit area. The coal mined will be crushed and screened utilizing a mobile crushing and screening plant. The mined coal will be processed off-site. These mining methods are standard practice for opencast mining operations as stipulated above. Should the mining activities change, the applicant will be advised to apply for Section 102 of the MPRDA for amendments.



**Figure 15: Typical example of mobile crusher**

- **Types of Blasting Explosives to be Employed.**

Non-Ex Rock Breaking Cartridges will be applied when blasting hard rocks in sensitive areas as it does not contain high explosives and have low vibrations compared to conventional explosives, also used by Samancor Chrome in Gauteng and Waterkloof mine in Rustenburg.

It is a pyrotechnic composition (low explosives) that break rocks by generating tensile force through rapid gas expansion in a sealed (stemmed) drill hole and have no adverse environmental effects.

- **Environmental Impacts Associated with the Non-Ex Rock Breaking Cartridges**

### **Air blast Overpressure**

Air blast overpressure is the pressure produced by blasting over and above that of atmospheric pressure produced by explosives. The three main concerns associated with air blast overpressure are human, structural damage and window damage.

Non-Ex™ method of breaking ensures that expansion gases are contained in the drill hole by effective stemming, which result in very low overpressure levels. Overpressure levels produced by Non-Ex™ are extremely low when compared to conventional explosives and are of a shorter duration and less damaging frequency. This gives Non-Ex™ a major advantage over explosives in environmentally sensitive areas.

### **Noise**

Noise is the part of the air blast pressure wave which falls within the audible frequency region of the human ear. The high frequency portion of the air pressure wave is audible and is responsible for the noise that accompanies a blast. The lower frequency portion is not audible but can excite structures, such as windows, which in turn respond and produce secondary noise such as rattles. Noise levels produced by Non-Ex™ depend largely on the type and nature of the rock broken charge weight, burden, depth of the hole and the effectiveness of the stemming used. A well-stemmed Non-Ex™ cartridge in granite will generally produce a noise level in the range 80 to 85 dBl at 50 meters from the hole. Noise levels can be attenuated by the use of conveyor belting, or other matting, to cover the holes being fired.

### **Ground Vibration**

Ground borne vibrations from blasting can cause damage to buildings and infrastructure which are in the vicinity of the blast. The degree of the vibration-induced damage caused by blasting is dependent on the magnitude, frequency and duration of the vibration. Generally, low frequency, long duration vibrations are more damaging than higher frequency, short duration vibration. The vibration waves produced by Non-Ex™ are mostly of a higher frequency with a mean of 450 Hz, and of short duration and are therefore the least harmful to sensitive structures. In addition, the magnitude of the vibration levels produced by Non-Ex™ is particularly low when compared to explosives over the same distance from the shot hole. When the propellant mixture is a Non-Ex™ cartridge deflagrates, the almost instantaneous change from solid to gaseous matter is accompanied by a very sharp increase in the blasthole pressure and temperature. This is accompanied by a pressure wave that radiates from the drillhole, its amplitude decreasing as the distance

from the drillhole increases. The primary factors known to influence the level of ground vibration from the Non-Ex™ cartridges include:

- The weight of propellant per cartridge;
- The distance between the drillholes and the point of measurement;
- The local geological conditions, and the influence of geology and topography on vibration attenuation.

### **Vibration Limits for Structures**

The degree of vibration-induced damage caused by blasting is dependent on the magnitude, frequency and duration of the vibration. Generally, low frequency, long duration vibrations are more damaging than higher frequency, short duration vibrations.

This general rule is contained in recommendations by both the US Bureau of Mines (“USB”) and the British Standard (“BS”), both of which are widely used in vibration specifications for rock breaking near sensitive structures. The USBM criteria are as follows:

#### Frequencies above 40 Hz

- PPV less than 50 mm/s- safe zone
- PPV greater than 50 mm/s- damage zone

#### Frequencies below 40 Hz

- PPV less than 13 mm/s- safe zone (old wooden house)
- PPV greater than 19.5 mm/s- safe zone (modern house)

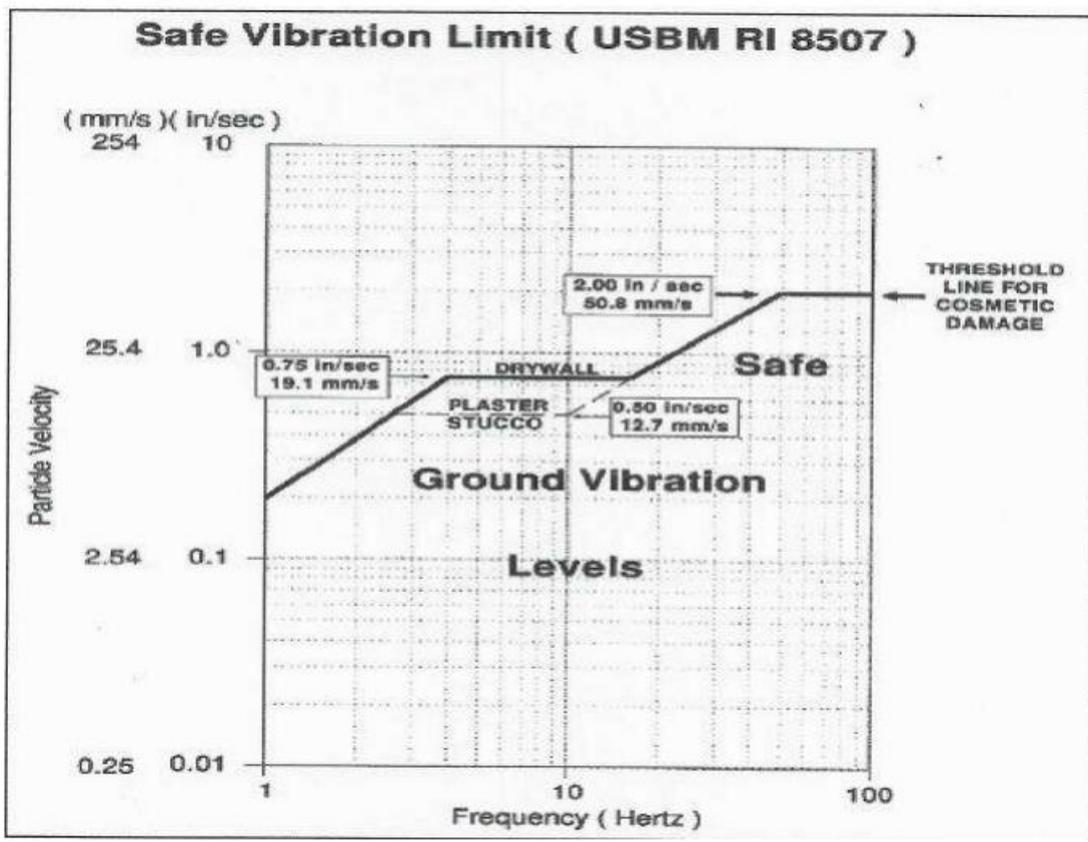


Figure 16: The vibrations generated by Non-Ex™ are well within most imposed restrictions for rock breaking close to sensitive structures.

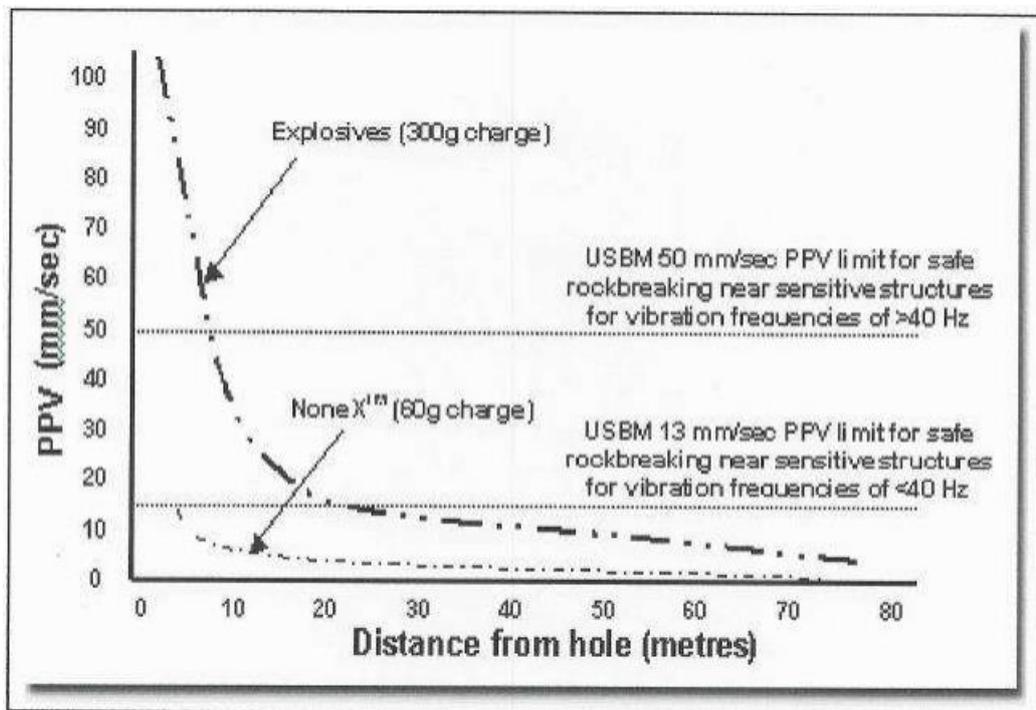


Figure 17: Comparative vibration results of explosives

As can be seen from the above figure, safe vibration levels for rock breaking, as defined in the USBM guidelines, can be achieved by Non-Ex™ within 5 metres of a sensitive structure.

### **Safety Distances**

One of the significant advantages of the Non-Ex Rock Breaking Cartridges is that the safety distances are approximately 50 metres from blasting over-sized rock in the open, without any covering. This means that personnel and equipment only require local clearance instead of complete site evacuation. This benefit is that rocks and boulders can be broken in shifts and close to working operations.

The safety distance to infrastructure and sensitive equipment is further reduced by covering the blast with mats and soft soil.

### **Noxious fumes**

The Non-Ex™ cartridge is oxygen balanced so that sufficient oxygen is available for the chemical reaction to achieve optimal oxidation to produce gases consisting of carbon dioxide, nitrogen and steam and thus avoiding the production of noxious gases such as carbon monoxide and nitrous fumes. The reduced quantities of propellant required to break the rock compared to explosives means that considerably less fumes are emitted by the rock breaking event. As a result of the degree of oxidation achieved in the deflagration process, through the incorporation of an effective oxidizing agent and the relatively small amount of propellant used in each hole, the Non-Ex™ cartridge produces a negligible level of noxious gases which are cleared in minutes when an adequate standard of airflow (nominally a velocity of 0.25 metres per second) is available.

### **Fly rock**

Normally, blasting using conventional explosives requires the rock breaking area to be evacuated for a distance of 500m which means disruption of the production operations and delays to operating equipment. The generation of unpredictable fly rock rules out the use of lay-on charges in any situation where fly rock is restricted.

In contrast, a Non-Ex™ cartridge produces an optimal pressurization of the hole for a given burden and type of rock. By controlling the characteristics of the pressure pulse, the velocity and distance travelled by the dislodged rock can be limited.

Controlled gas release from the Non-Ex™ cartridge, at a relatively low pressure, results in a minimal quantity of low velocity fly rock, which is generally contained within 10m of the rock breaking event.

The table below shows clear advantages in the use of Non-Ex.

Table 5: Comparison of Conventional explosives and Nonex Cartridge.

Particulars	Conventional Explosives	Nonex Cartridge
Environmental effect	Adverse Effects – Landslides, crevasses in earth strata, tunnel collapse etc.	No adverse effect.
Fly Rock	High velocity, uncontrolled, fly rocks up to 500metres	Controllable low velocity fly rocks up to 50m
Shockwave	Supersonic shock wave with significant damage	No shock wave
Dust levels	High level of dust produced by crushing effect.	Minimal dust due to better fragmentation.
Vibrations	High level vibrations – unfit for use in built up areas	Low vibrations – ideal for built up areas/sensitive projects
UN Hazard Division	1.1	1.3C
Functions on	Detonation	Deflagrating
Reaction speed	3,000 -10,000 m/sec.	300 – 1000 m/sec.
Pressure	1200 GPa	450 MPa
Working principle	Produces SHOCK WAVE, resulting in Blast and Shattering effect	NO SHOCK WAVE- Produces gases only which split the rock.
Safety Distance	Minimum 500m	Average 100m
Noxious fumes	Underground mines – 3 hour re-entry time	30 minutes re-entry time

**e) Operation aspect of the activity**

The current mining programme submitted to the Department of Mineral Resources and Energy (DMRE) will be implemented upon the granting of the mining. As part of the public participation process, landowner, Interested and affected parties will be notified of the mining programme to ensure a cooperative and satisfactory working relationship and proper rehabilitation of the area.

**f) Option of not implementing the activity**

The no-go alternative entails no change to the status quo and is therefore a real alternative that needs to be considered. The coal to be stockpiled at the site will be used for power generation, if however, the no-go alternative is implemented the applicant will not be able to utilize the mineral present in the area. If the proposed mining operation is not authorized that can lead to a shortage in the supply of coal to the power stations for power generation purposes and this will have a negative impact on the power stations, as they rely on coal to produce the electricity.

The company identified the need for coal in the area due to an increase in coal usage. In this light the applicant identified the proposed areas as the preferred and only viable site alternative. From extensive work conducted previously in this area, it is known that this area contains the resource being sought. This land may contain levels of contamination on the property is believed to have a higher significance without the need or motivation to justify it.

Various project alternatives were considered during the planning phase of the project. These included the following:

### 2.10.1 Open cast mining (preferred alternative) vs. underground mining

- The open cast mining method is used when deposits of commercially useful minerals or rock are found near the surface, where the overburden is relatively thin, or the material is structurally unsuitable for tunnelling.
- Underground mining is used where the mineral occurs deep below the surface and the overburden is thick.
- Open cast mining of the coal has been identified as the most cost-effective method to produce the desired coal as it is found near the surface, with only a narrow layer of overburden that needs to be removed.
- The geology of the area and depth of coal to be mined is structurally unsuitable for tunnelling.
- The open cast mining method will not produce any residual waste to be disposed of. Due to the location of the proposed coal mines, the potential impacts on the surrounding environment are expected to be significant. It is proposed that all mining-related infrastructure be contained in the boundary of the mining area.

### 2.10.2 Temporary infrastructure (preferred alternative) vs. permanent infrastructure

- Temporary infrastructure use will entail the use of infrastructure and machinery that is either track-based or can easily be removable infrastructure. This includes a mobile in-proposed mine crusher plant, temporary weigh bridge and chemical toilet, with off-site vehicle and equipment servicing (at the applicant's existing workshop). The off-site office will be used for project administration purposes.



Figure 18: Example of temporary office

- **Positive aspects:** The infrastructure can be moved around in the mining area boundaries as mining progresses, decreasing the distance material must be transported from the crusher plant to the stockpile area. In addition, the crusher plant and other equipment can move out of the mining area (and onto the existing road) during a blast to prevent potential fly rock damage. During the

decommissioning phase, infrastructure will be removed from the mining area, making site rehabilitation easy and effective.

- The use of permanent infrastructure will entail the construction of an office building with ablution facilities, installation of a septic tank to be connected to the ablution facilities, installation of a permanent weigh bridge and permanent crusher plant. However, mining permit takes up to 2 years so it's not viable to have septic tanks. An illustration of the septic tank has been shown below.

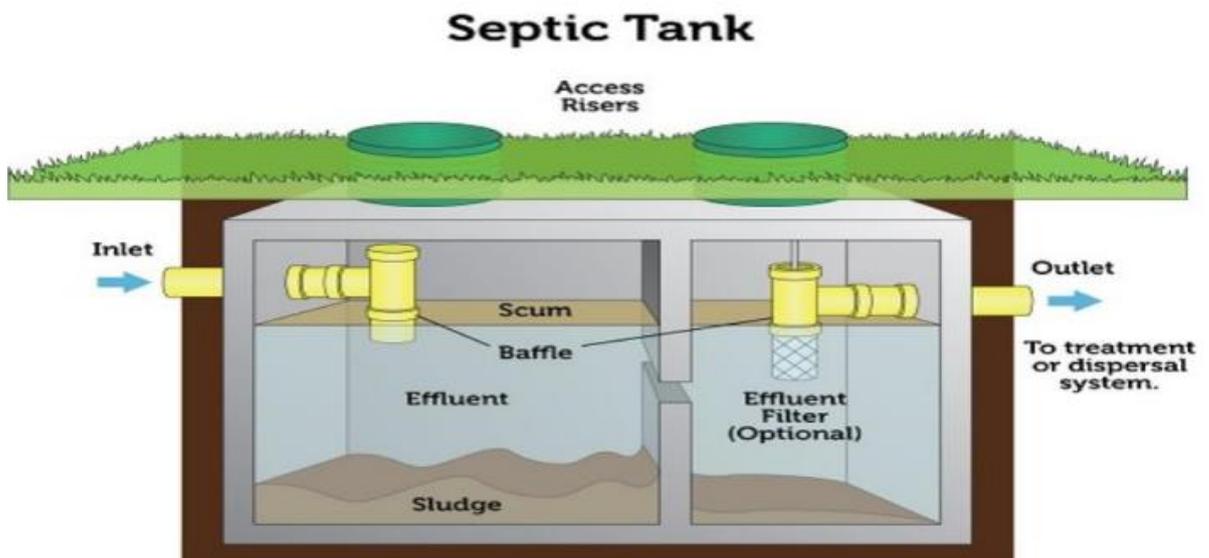


Figure 19: Example of a septic tank system

- Permanent will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, necessitate the use of concrete products on site to establish this infrastructure, lengthen the period required for rehabilitation as well as increase the rehabilitation cost as the permanent infrastructure will either be decommissioned or be maintained after the closure of the site.
- Due to the small size of the mining area the infrastructure may be exposed to fly rock damage during blasting events.
- The construction of permanent infrastructure on site will increase the visual impact of the proposed project on the surrounding environment and additional mitigation measures will have to be implemented to address the impact.
- In the light of the above, the use of temporary infrastructure is deemed to be the most viable preferred alternative.



Figure 20: example of temporary toilets

#### 2.10.3 Access onto provincial road (preferred alternative) vs. national road

- Provincial roads (R 544): The existing access road of the farm connects to the provincial road passing the property to the eastern side-northeast (R544) and to the western side-northwest (R544). It is proposed that this road be used by trucks transporting material from the proposed mine to the clients as it will prevent trucks having to turn from a farm entrance onto the local road, thereby minimising the potential impact on traffic.
- National road (N4): The turning of trucks transporting material from the mining area to clients onto the N4 is not considered here, since the N4 is about 4.46 km away. To minimise the impact the activity may have on traffic, it is proposed that this option is not implemented, and the alternative provincial road (as mentioned above) be used as access road to and from the proposed mining permit.

#### 2.10.4 No-go alternative

The no-go alternative entails no change to the status quo and is therefore a real alternative that needs to be considered. The Coal to be stockpiled at the site will be used power generation, if however, the no-go alternative is implemented the applicant will not be able to utilize the mineral present in the area.

This could have major impacts on aspects such as transporting of material to power stations sites from

far off mining areas, cost effectiveness of coal, impact on roads and road users due to long distance hauling of coal and loss of income to the Emalahleni business area due to the multiplier effect.

The no-go alternative was not deemed to be the preferred alternative as:

- The applicant will not be able to supply in the demand of coal to power stations,
- The application, if approved, would allow the applicant to utilize the available coal as well as provide employment opportunities to local employees. Should the no-go alternative be followed, these opportunities will be lost to the applicant, potential employees, and clients.
- The applicant will not be able to diversify the income of the property.

## **2.11 Details of the Public Participation Process Followed**

Describe the process undertaken to consult I&APs, including public meetings and one-on-one consultation. The affected parties must be specifically consulted regardless of whether they attended public meetings. Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

### **Public Participation Methodology**

- This section of the report provides an overview of the tasks to be undertaken for the PPP. The PPP was conducted in terms of Chapter 6 of the NEMA and included the following:
- Identification and recording of key I&APs and other stakeholders on the stakeholder database.
- Placement of site notices around the farm, and other accessible public areas.
- Publication of a newspaper advert, in the local newspaper.
- Formal notification of the application to key I&APs and other stakeholders via distribution of a notification letter and the background information document.
- Compilation of a consultation report with all responses from I&APs and the EAP.

#### **2.11.1 Identification of key Interested and Affected Parties**

Public participation is the involvement of all parties who are potentially interested and/or affected by the proposed development. The principal objective of public participation is to inform decision-making.

Landowner was identified through a Windeed search conducted online. Adjacent landowners were identified during the site visit. Additional relevant organisations were identified and notified of the application. This includes municipal and state departments with jurisdiction in the project area. I&APs representing the following sectors of society were identified and notified: adjacent landowners, local municipalities, government departments and the community.

## 2.11.2 Formal notification of the application to key Interested and Affected Parties

The project was announced as follows:

Newspaper advertisement	The project was announced (in English and Isizulu) in <i>Witbank news</i> on the 3 <sup>rd</sup> of March 2023. The newspaper notified all I&APs of the proposed project and invited them to register as project stakeholders.
Written notification	A Background Information Document (BID) notifying I&APs and other key stakeholders of the project was published on 07 <sup>th</sup> of March 2023.
Site notice	To inform surroundings, locate landowners and adjacent landowners of the proposed development, site notices were erected on and close to site on the 16 <sup>th</sup> of March 2023.

(Back): Sachin Govender (Bulk Mining Explosives), Sandile Khumalo [National Cleaner Production Centre (NCPC)], Matimba Makhani (NCPC), Patrick Cole (Council for Geoscience), Xolane Motha (Nkangala District), Isaac Sindane (Nkangala District) and Brian Ntuli (Black Power Africa); (Front): Joyce Shongwe (Council for Geoscience), Londeka Ntshangase (Mamadi and Co), Ncedile Dlakude (Mamadi and Co), Sumaya Nassiep (Eskom), Celeste Dias (Mpumalanga Green Cluster Agency) and Nompumelelo Simelane (Nkangala District).

**NOTICE OF A JOINT PUBLIC PARTICIPATION PROCESS FOR A MINING PERMIT AND ENVIRONMENTAL AUTHORISATION APPLICATION**

ISIZULU	ENGLISH
<p>Isicelo Semvume Yezimayini: I- <b>Siphosizwe Construction</b> ifake isicelo Semvume Yezimayini ku-DMRE Ref: <b>MP 30/5/1/1/3/13338 MP</b> ngenhloso yokumba <b>Amalahle</b> kwinyenzi <b>ingxenywe ye-portion 139 ye-Blesboklaagte 296 JS, ese-Blesboklaagte 296 JS, ese- Magisterial District of eMalahleni e Mpumalanga Province.</b></p> <p>Isaziso sinikezwa ngokoMthetho Wezokumbiwa phansi kanye Nezimbiwa noPhethiloli (i-MPRDA) (Umthetho 28 ka 2002) kanye nemigomo ye-EIA 2014, ekhishwe ngaphansi kwesaziso sikaHulumeni Nombolo 982 kuGazethi Nombolo 3822 yomhla ziny-4 kuZibandlela wezi-2014 ukuthi kuchitshiyelwe ngomhla 7 kuMbaso 2017 ukuthi I- <b>Siphosizwe Construction</b> ifake isicelo Semvume Yezimayini kwale minerali eshiwo ngenhla (DMRE Ref: <b>MP 30/5/1/1/3/13338 MP</b>)</p>	<p>Application for a Mining Permit: <b>Siphosizwe Construction</b> has lodged an application for a Mining Permit with <b>DMRE Ref: MP 30/5/1/1/3/13338 MP</b> for the purpose of extracting <b>Coal</b> on <b>portion of Portion 139 of the Farm Blesboklaagte 296 JS, situated in the Magisterial District of eMalahleni in Mpumalanga Province.</b></p> <p>Notice is hereby given in terms of the Mineral and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002) and EIA regulations 2014, published under Government Notice No. 982 in Gazette No. 3822 of 4 December 2014, amended on 7 April 2017, that <b>Siphosizwe Construction</b> has applied for a Mining Permit for the above-mentioned mineral with (DMRE Ref: <b>MP 30/5/1/1/3/13338 MP</b>)</p>
ISIMEMO SOKUPHAWULA NOKUVEZA IMIBONO MAYELANA NALESU SICELU	INVITATION TO COMMENT
<p>Njengengxenywe yenqubo ye-EIA, ikakhulukazi inqubo yokubamba iqhaza komphakathi kule phrojekthi ehlongozwayo, Amaqembu Athintekayo nanentshisekelo (IAPs) ayamanywa ukuba abhalise futhi alethe ngomusa noma yikuphi ukuphawula noma ukukhathazeka (Ulwazi Lwendawo) kufinyelele ku <b>Mr Daniyel Tshinavhe.</b></p> <p>Umphakathi ubuye futhi umenywe ukuthi ubukeze futhi uphawule ngombiko Oyisisekelo Wokuhlola Okuyisisekelo (DBAR) kanye ne-hlelo lokuphawula kwemvelo (EMPr). Umbiko oyilwayo we-BAR kanye ne EMPr uzotholakala ukuthi ubuyekwezwe isikhathi sezinsuku ezingu-30 zekhalenda kusukela ngoMsumbuluko- <b>koMsombuluko 03 ka-Ephreli 2023 kuya koMsombuluko 08 kaMeyi 2023 (Ngaphandle Kwamaholidi Omphakathi).</b> Lo mbiko uzotholakala eKlarinet Public Library (-25.8219653, 29.2215849) nase eMalahleni Local Municipality, nekhophi ethambile uma izicelo ezivela kwa-Singo Consulting (Pty) Ltd kusetshenziswa imininigwane yokuxhumana enikezwe ngezansi.</p> <p>Ukuthola eminye imininigwane noma ukubhalisa njengeNhlango Enentshisekelo noma Ethintekayo, sicela uthinte: -</p>	<p>As part of the EIA process, more especially the public participation process for this proposed project, Interested and Affected Parties (I&amp;APs) are invited to register and kindly submit any comments or concerns (local knowledge) to reach <b>Mr Daniyel Tshinavhe.</b></p> <p>The public is also invited to review and comment on the Draft Basic Assessment Report (DBAR) and Environmental Management Programme report (EMPr). The draft BAR &amp; EMPr will be available for review for 30 days calendar period <b>Monday 03rd of April 2023 to Monday 08th of May 2023 (Excluding Public Holidays).</b> This report will be available at <b>Klarinet Public Library (-25.8219653, 29.2215849) and eMalahleni Local Municipality</b> and a soft copy upon request from Singo Consulting (Pty) Ltd using the detailed EAP's contacts below.</p> <p>For more information, to register as an Interested or Affected Party, please contact the EAP (Singo Consulting (Pty) Ltd);</p>

**EAP, ENVIR. TECH AND APPLICANT CONTACT DETAILS:**

<p><b>Singo Consulting (Pty) Ltd</b></p> <p><b>Physical Address:</b> Office No. 870, 5 Balalala Street, Tasbet Park Ext 2, eMalahleni (Witbank), 1040  <b>Tel No.:</b> +27 13 692 0041  <b>Cell:</b> +27 71 587 3383  <b>Fax:</b> +27 86 514 4103  <b>Email:</b> daniyel@singoconsulting.co.za  <b>Email (Alt):</b> admin@singoconsulting.co.za</p>	<p><b>Siphosizwe Construction</b></p> <p><b>Physical Address:</b> 1410 Tshaka Street, Lynnville, Mpumalanga, 1035  <b>Contact person:</b> Masuku Goodwill Zwelithini  <b>Tel:</b> +27 13 692 0041  <b>Fax:</b> +27 86 514 4103  <b>Email:</b> siphosizwecons@gmail.com</p>
---	--

that her school got a visit from different higher education institutions. "We had a career expo in the main hall. It was beneficial for all the students as we were given more information and advice about the different career fields that each one of us would like to go into after matric and higher education institutions.

The possibilities are endless, but exposure to these institutions is what we need.

We would like for them to return annually, and we are grateful for their visit," she said. Ed-U-College Combined School principal, Ms Ina Loots said the school wanted the learners to see that there are more options after school than just the regular run-of-the-mill universities. "Most

### NKANGALA DISTRICT MUNICIPALITY

**ADOPTED 2021/2022 (AND FINAL 2021/2022)**

Notice is hereby given in terms of Government: Municipal Finance Act that the Oversight Report on the Financial Year was tabled before the Council and was approved without reservation. The Report is available for inspection at the offices at **2A Walter Sisulu Street** and accessed at: [www.nkangaladm.gov.za](http://www.nkangaladm.gov.za)

Enquiries on the above notice should be directed to the Municipal Researcher, **Mr Phala HL**, Email: [siphosizwecons@gmail.com](mailto:siphosizwecons@gmail.com). Contact number: **013 249 2021**.

Figure 21: Published newspaper advert, Witbank News, (03 March 2023)

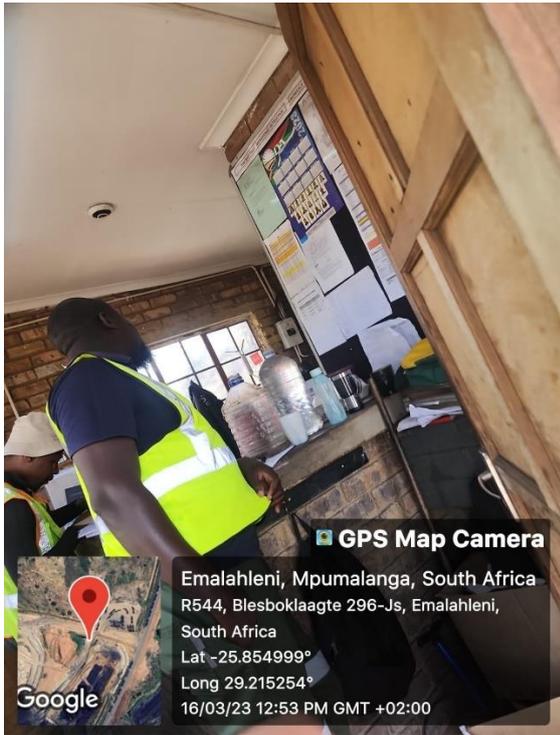




Figure 22: Proof of consultation



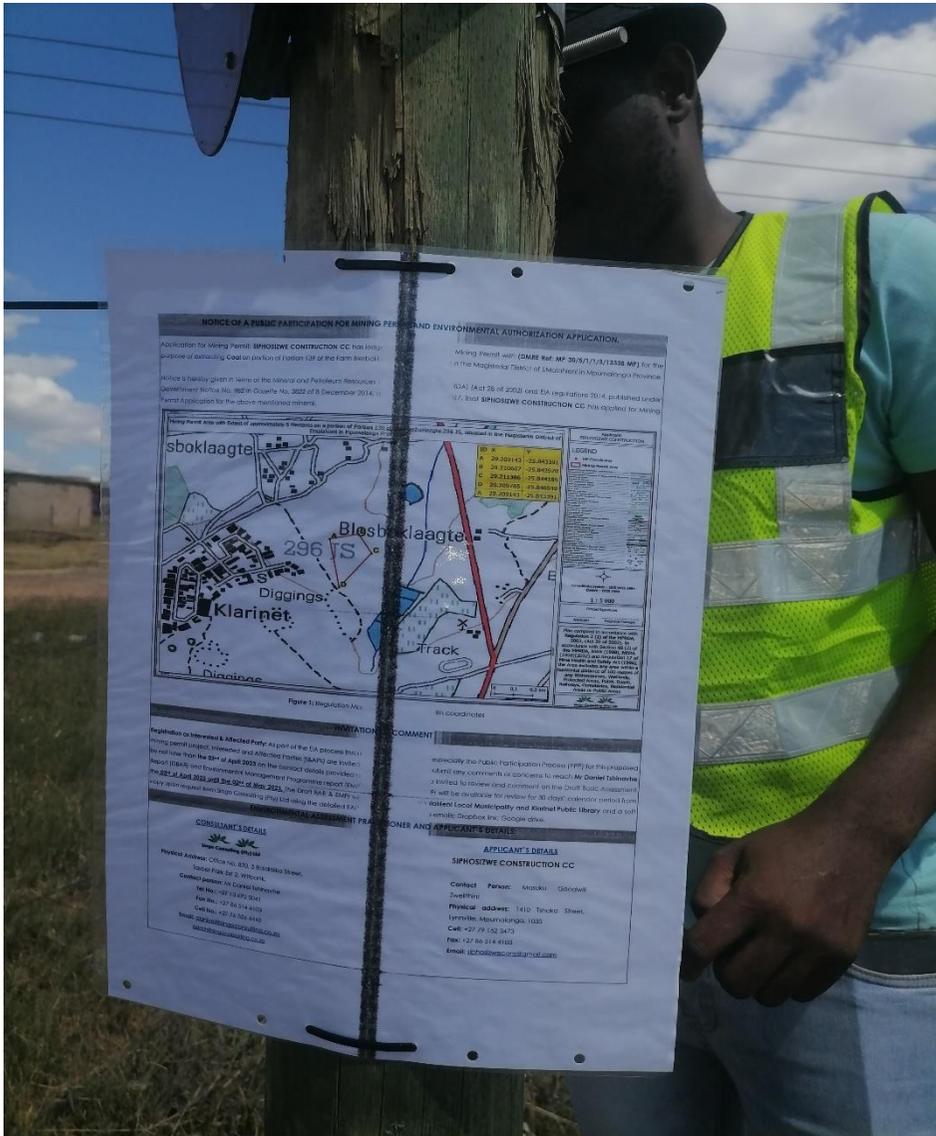


Figure 23: Placement of site notice

### 2.11.3 Landowners and notification methodology

The landowner was identified through Windeed search conducted online. The landowner is Corgros (Pty) Ltd as per title deed. The contact details of the landowner could not be found but however, the Location of landowner was found and is in [REDACTED], Aerorand Nkangala as per the information obtained in the search sites. The landowner will be visited the Landowner for physical consultation. The landowner is indicated by the orange polygon on the below table.

Table 6: Windeed results

## Deeds Office Property

JS, BLESBOKLAAGTE, 296, 139, MPUMALANGA

Lexis® WinDeed



This report is compiled exclusively from the very latest data directly supplied to WinDeed by the Deeds Office.

Any personal information obtained from this search will only be used as per the Terms and Conditions agreed to and in accordance with applicable data protection laws including the Protection of Personal Information Act, 2013 (POPI), and shall not be used for marketing purposes.

\*\* ASTERISKS INDICATE THE INFORMATION IS ENRICHED FROM THE WINDEED DATABASE.

### SEARCH CRITERIA

Search Date	2023/03/07 14:31	Farm Number	296
Reference	-	Registration Division	JS
Report Print Date	2023/03/07 14:33	Portion Number	139
Farm Name	-	Remaining Extent	NO
Deeds Office	Mpumalanga	Search Source	Deeds Office

### PROPERTY INFORMATION

Property Type	FARM	Diagram Deed Number	T14459/940
Farm Name	BLESBOKLAAGTE	Local Authority	MBOMBELA LOCAL MUNICIPALITY
Farm Number	296	Province	MPUMALANGA
Registration Division	JS	Remaining Extent	
Portion Number	139	Extent	
Previous Description	PTN44-LG593/69	LPI Code	
Suburb / Town**	2KM NORTH OF WITBANK	Co-ordinates (Lat/Long)**	

### OWNER INFORMATION (1)

CORGROS PTY LTD			Owner 1 of 1
Company Type**	COMPANY	Document	T15023/1972
Registration Number	70/15374	Microfilm / Scanned Date	1985 093 0 :17:57
Name	CORGROS PTY LTD	Purchase Price (R)	-
Multiple Owners**	NO	Purchase Date	-
Multiple Properties**	NO	Registration Date	1972/06/05
Share (%)	-		

#### DISCLAIMER

This report contains information provided to LNRM by content providers and LNRM cannot control the accuracy of the data nor the timely accessibility. LNRM will not be held liable for any claims based on reliance of the search information provided. This report is subject to the terms and conditions of LexisNexis Risk Management Agreement. LexisNexis Risk Management (Pty) Ltd is a registered credit bureau (NCRCB26).



0861 946 333  
windeed.support@lexisnexis.co.za  
search.windeed.co.za | www.windeed.co.za

## 2.12 List Authorities Identified and Notified

The following authorities have been identified and notified of the proposed Mining Permit project:

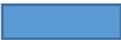
- eMalahleni Local Municipality
- Department of Water Affairs
- Department of Agriculture, Forestry and Fisheries
- Department of Environmental Affairs
- Mpumalanga Tourism and Parks Agency
- Department of Land Restitution Commission
- Department of Rural Development and Land Reform
- South African National Roads Agency Ltd (SANRAL).
- South African Heritage Resources Agency.
- Eskom SOC Limited.

2.12.1 Summary of Issues Raised by I&APs

Table 7: Issues raised by I&APs

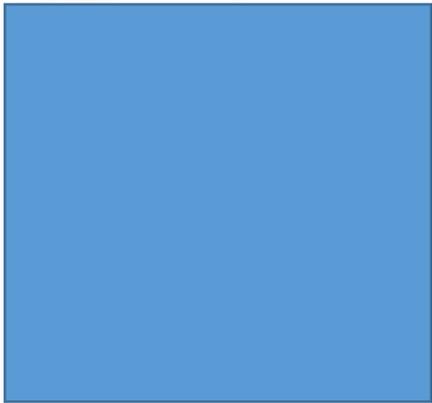
Compile the table summarising comments and issues raised, and reaction to those responses.

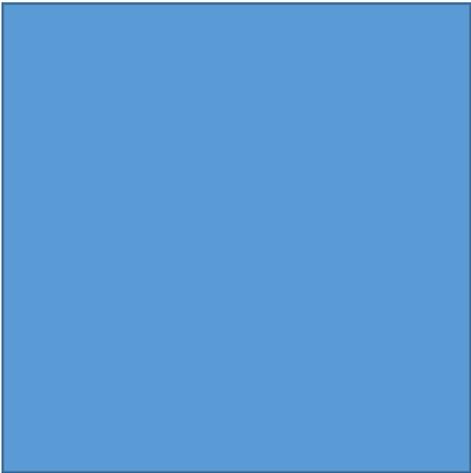
<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date comments received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated	
<b>Affected parties</b>					
Landowner/s					
Corgros (Pty) Ltd (On Title Deeds) Portion 139	X			The contact details of the landowner could not be found but however, the Location of landowner was found and is in [redacted] as per the information obtained in the search sites. The	

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date</b> <b>comments</b> <b>received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated	
				landowner will be visited the Landowner for physical consultation	
<b>Adjacent land occupiers</b>					
<b>Mishumo mining</b>   <b>Phemphetse trading&amp; projects cc.</b> 	X	25/04/2023 Face to face feedback with foreman  Face to face feedback with the receptionist 25/04/2023	I will share the BID with the site manager.  A BID will be shared with 	Face to face consultation was done, a BID was shared with the foreman, and he also shared the contact details of the mine manager.  Face to face consultation was done with the receptionist, a BID was shared and requested for her to share it with the manager.	

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date</b> <b>comments</b> <b>received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
<b>Truckline services cc</b>  	Face to face feedback with the receptionist	A BID will be shared with the Manager.	Face to face consultation was done with the receptionist, a BID was shared and requested for her to share it with the manager.	
<b>Local Municipal Officials</b>				

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date comments received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
  	X	<ul style="list-style-type: none"> <li>No issues raised yet.</li> </ul>	<ul style="list-style-type: none"> <li>Face to face consultation was done on the 16<sup>th</sup> of March 2023, a BID was shared.</li> </ul>	
<b>Organs of state (Responsible for infrastructure that may be affected: Roads Department, Eskom, Telkom, DWA)</b>				
  	X	<ul style="list-style-type: none"> <li>No issues raised yet.</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, a BID, Reg 2.2 and KML file were shared.</li> </ul>	

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date</b> <b>comments</b> <b>received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
				
  	X	<ul style="list-style-type: none"> <li>No issues raised yet</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, a BID, Reg 2.2 and KML file were shared.</li> </ul>	

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date comments received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
 	X	<ul style="list-style-type: none"> <li>No issues raised yet</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, a BID, Reg 2.2 and KML file were shared.</li> </ul>	
<b>Communities</b>				
Klarinet	X		A door-to-door survey was conducted on March 16 and April 25, 2023. Site	

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date comments received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
			announcements were plugged all around the neighborhood.	
<b>Department of Land Affairs</b>				
 <div style="background-color: #4a86e8; height: 50px; width: 228px; margin-top: 10px;"></div>	X	<ul style="list-style-type: none"> <li>No issues raised yet</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, BID and Windeed search results were shared.</li> </ul>	
<b>Mpumalanga Provincial Government</b>				

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date comments received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
 <p><b>environmental affairs</b>  Department:  Environmental Affairs  REPUBLIC OF SOUTH AFRICA</p> <div style="background-color: #4F81BD; height: 150px; width: 245px; margin-top: 10px;"></div>	X	<ul style="list-style-type: none"> <li>No issues raised yet</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, a BID, Reg 2.2 and KML file were shared.</li> </ul>	
<b>Other competent authorities affected</b>				
 <p><b>water &amp; sanitation</b>  Department:  Water and Sanitation  REPUBLIC OF SOUTH AFRICA</p> <div style="background-color: #4F81BD; height: 50px; width: 210px; margin-top: 10px;"></div>	X	<ul style="list-style-type: none"> <li>No issues raised yet</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, a BID, Reg 2.2 and KML file were</li> </ul>	

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date comments received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
			shared.	
 	X	<ul style="list-style-type: none"> <li>No issues raised yet.</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, a BID, Reg 2.2 and KML file were shared.</li> </ul>	
<b>Mpumalanga Tourism Agency</b>  	X	<ul style="list-style-type: none"> <li>No issues raised yet</li> </ul>	<ul style="list-style-type: none"> <li>Consultation email was sent on 07<sup>th</sup> of March 2023, a BID, Reg 2.2 and KML file were</li> </ul>	

<b>I&amp;APs</b> List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	<b>Date</b> <b>comments</b> <b>received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference</b> In this report where issues and/or responses were incorporated
			shared.	
		<ul style="list-style-type: none"> <li>No issues raised yet.</li> </ul>	On 26/4/2023, online consultation on the SAHRA website was conducted. A Heritage study, BID and KML were attached.	
<b>Other affected parties</b>				
N/A				
<b>Interested parties</b>				
N/A				

## **The environmental attributes associated with the alternatives.**

The environmental attributes described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects.

### **3 Baseline environment**

#### **3.1 Type of environment affected by the proposed activity.**

Its current geographical, physical, biological, socio-economic, and cultural character.

##### **3.1.1 Regional geology**

###### **Karoo Supergroup**

The proposed project area falls under the main Karoo supergroup, under Ecca group. The sedimentary part of the Karoo Supergroup is subdivided into four main lithostratigraphic units, which from the base up are the Dwyka, Ecca, Beaufort and Stormberg (Molteno, Elliot and Clarens formations) groups (Johnson et al., 1996; SACS, 1980;). These are capped by some 1.48 km of basaltic lavas of the Drakensberg Group (Johnson et al., 1996; Veevers et al., 1994), the extrusion of which is related to the break-up of Gondwana (Cox, 1992). The basement to the Karoo Supergroup fill in both the MKB and in the northern basins is heterogeneous (Bordy et al., 2004; Hancox, 1998; Rutherford, 2009) and this heterogeneity plays a significant control on the nature of the fill, particularly during the early phases of the deposition of the Karoo Supergroup.

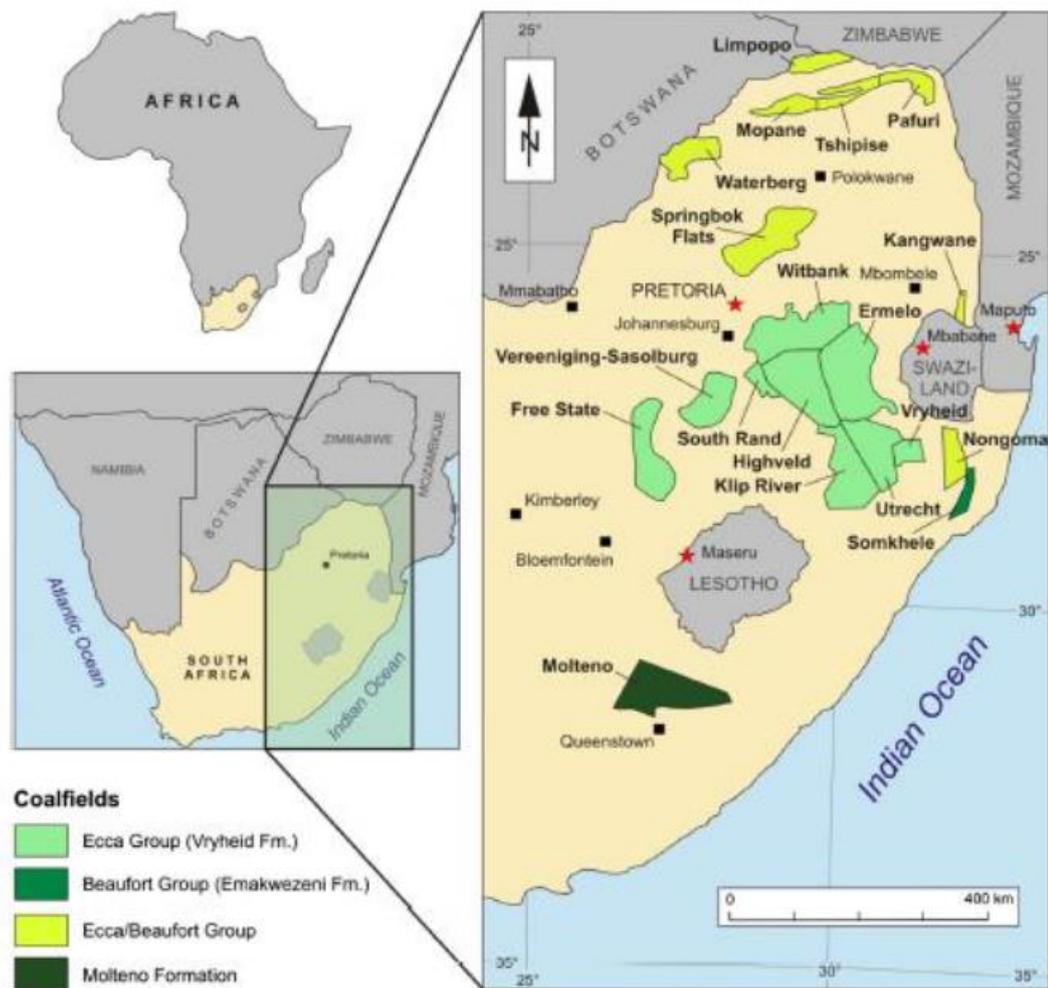


Figure 24: Coal field of South Africa (adopted from Hancox and Gotz, 2014).

### Dwyka Group

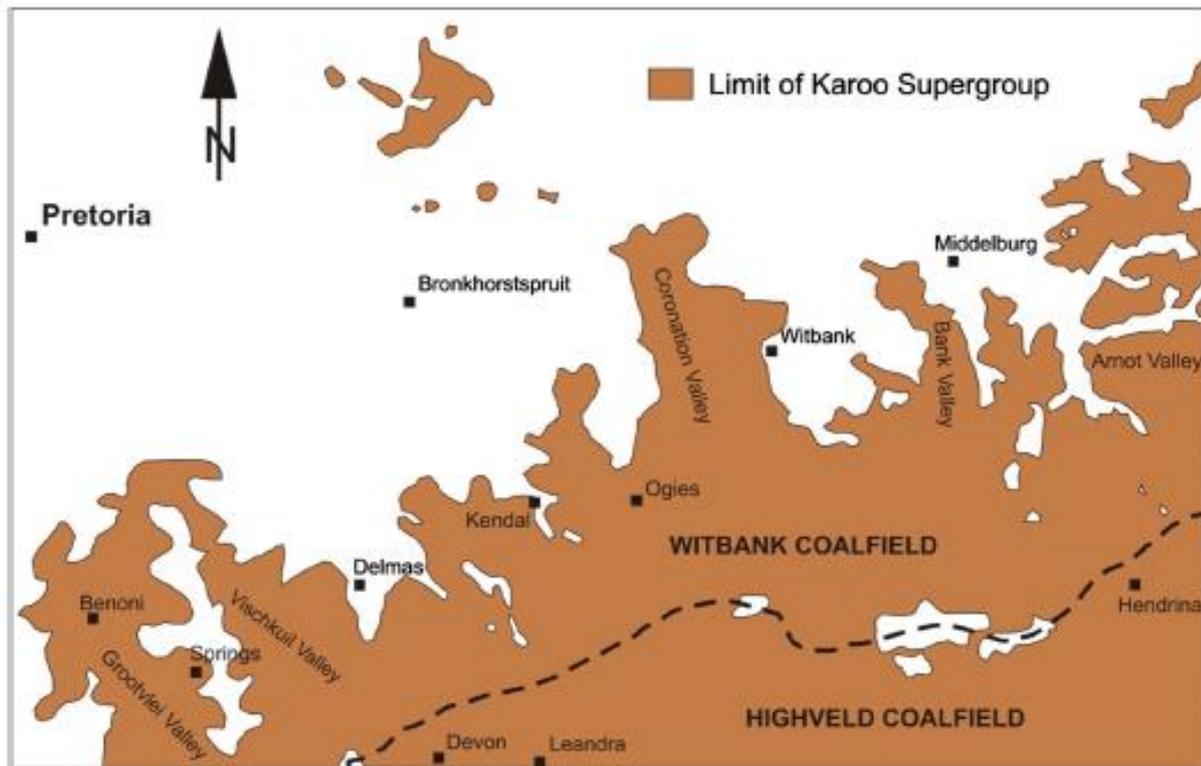
The rocks of the Dwyka Group in South Africa are amongst the most important glaciogenic deposits from Gondwana. This Group is named for exposures along the Dwyka River east of Laingsburg and forms the basal succession of the Karoo Supergroup. Dwyka Group strata are mostly contained within bedrock valleys incised into Archean to lower Palaeozoic bedrock (Visser, 1990; Visser and Kingsley, 1982; Von Brunn, 1996). The lithologies in the areas underlying the coalfields of South Africa consist of a heterolithic arrangement of massive and stratified polymictic diamictites, conglomerates, sandstones and drop stone-bearing varved mudstones. The easily identifiable lithologies form a good marker below the coal bearing Ecca Group. In the distal sector of the MKB these sedimentary strata accumulated largely as ground moraine associated with continental ice sheets and is generally composed of basal lodgement and supraglacial tills. These deposits are generally massive, but crude horizontal bedding occurs in places towards the top (Tankard et al., 1982).

## **Ecca Group**

In the 1970s a number of studies (Cadle, 1974; Hobday, 1973, 1978; Mathew, 1974; Van Vuuren and Cole, 1979) showed that the Ecca Group could be subdivided into several informal units based on the cyclic nature of the sedimentary fills. In 1980 the South African Committee for Stratigraphy (SACS, 1980) introduced a formal lithostratigraphic nomenclature for the Ecca Group in the northern, distal sector of the MKB, which replaced the previously used informal Lower, Middle and Upper subdivisions with the Pietermaritzburg Shale Formation, the Vryheid Formation and the Volksrust Shale Formation.

## **Witbank Coalfield**

The Witbank Coalfield is elongated over 180 km in a west to east direction, it is not surprising that the basement to the Karoo Supergroup succession is varied. From west to east the basement rocks include metasedimentary, metavolcanic, and dolomitic rocks of the Neoproterozoic Transvaal Supergroup, metasedimentary and metavolcanic rocks of the Palaeoproterozoic Waterberg Group and BIC age intrusives (felsites and granites). The changing nature of the basement plays a major role in the nature of the palaeotopography created. For example, in the far east of the Witbank Coalfield, where dolomites of the Transvaal Supergroup form the basement, abnormally thick coals filling karst topography are known. A similar but more extreme case is documented at the Syferfontein Colliery in the West Rand outlier (Stuart-Williams, 1986). In some areas close to the north-western basin margin, the stratigraphic column is reduced to only 80 m. It was also the focus of much of the academic research, including the works of Cairncross (1979) in the Van Dykes Drift area, Le Blanc Smith and Eriksson (1979) to the west of Witbank, and Holland et al. (1989) to the east of Witbank. Cadle and Cairncross (1993) described a sandy bedload dominated system with lateral accretion surfaces from the southern part of the central sector. More recently it has been covered in the regional geological model of Grodner (2002) and Grodner and Cairncross (2006) and various Competent Persons' Reports available on various companies' websites (Goldschmidt et al., 2010a).



**Figure 25:** Geographic extent of Witbank Coalfield

-Five coal seams occur in the Vryheid Formation and these are associated predominantly with the coarser-grained fluvial facies at the top of each sequence. These coal seams can be traced laterally across the entire area of occurrence of the Vryheid Formation in the MKB; however, some disagreement exists as to the exact correlation in the various coalfields. Regional differences allow for the considerable diversity of coal types (organic content), mineral matter composition, and rank (maturity) that is found within the coalfields of South Africa (Falcon, 1986b). The majority of the economically extracted coal in South Africa occurs in rocks of the Vryheid Formation, which ranges in thickness in the MKB from less than 70.0 m to over 500.0 m. It is thickest to the south of the towns of Newcastle and Vryheid, where maximum subsidence took place (Du Toit, 1918; Cadle, 1975; Whateley, 1980a; Stavrakis, 1989; Cadle et al., 1982) and where the basin was the deepest.

The No. 2 Seam Sequence (Figure 4) includes the succession from the top of the basement to the top of the No. 2 Seam, which may be up to a maximum development of 60 m in places (Le Blanc Smith, 1980a). It incorporates the rocks of the Dwyka Group, as well as the overlying No. 1 and No. 2 coal seams. It should be noted that we accept that the Dwyka has separate Group status, but that it is described as the basal part of the No. 2 Seam Sequence. The thickness of the Dwyka Group in the Witbank Coalfield also varies considerably dependant on the nature of the underlying topography. It ranges from being thin or absent over the most prominent pre-Karoo topographic highs, to over 25 m thick in the central part of the Witbank Coalfield (Le Blanc Smith and Eriksson, 1979) to 30 m thick (Glasspool, 2003) in the deeper palaeo valleys.

Le Blanc Smith and Eriksson (1979) note that the fill consists of poorly sorted matrix rich diamictites, laminated sandstones and siltstones, stratified pebbly mudstones and cross-stratified conglomerates.

In the western Witbank Coalfield, the No. 2 Seam Sequence tends to be much more variable in nature than it is in the central part. This is mainly due to the irregular nature of the Transvaal Supergroup (Malmani Group) dolomite floor. The Dwyka Group outcrops in the area around Delmas and is also well known from borehole core, which show the succession to be between 0 and 10 m in thickness. The base of the No. 2 Seam Sequence is usually formed by poorly sorted matrix rich diamictites, with angular to rounded basement clasts, set in a matrix of fine- to medium-grained sandstone, which may be highly carbonaceous in places. Maximum clasts sizes documented by the authors are in the region of 30 cm. According to Le Blanc Smith (1980a) the Dwyka Group diamictites may in turn be overlain by a succession up to 36 m thick of mudstone and siltstone, which grades upwards to sandstone and conglomerate that form the floor of the No. 1 Seam or its carbonaceous mudstone equivalent.

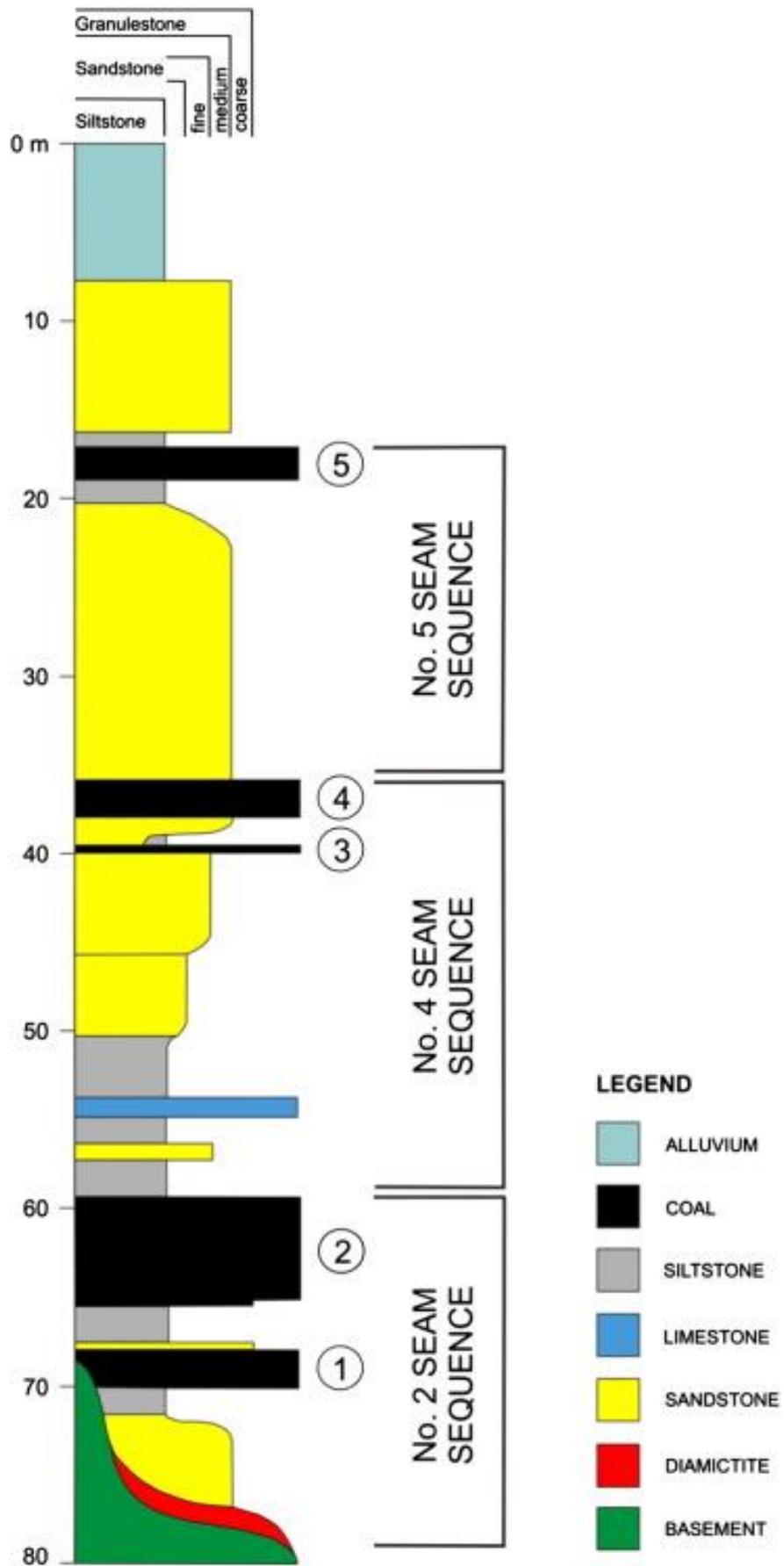


Figure 26: Typical Coal seam of the area.

### 3.1.1.1 Local geology

The Vryheid Formation consists mainly of sandstone and shale with some subordinate coal seams associated with it (SACS, 1980). The sediments of the Vryheid Formation probably represent alluvial plain, upper, and lower delta plain deposits with associated shallow lagoon and coastal swamps (Jermy and Bell, 1990). The change from stable margin to subsiding foreland basin confined the Vryheid.

The Vryheid Formation contains 5 major coal seams, with locally developed partings and splits in the coal seams increasing the number to 8, within an 85 m thick stratigraphic horizon (Greenshields,1986) although this horizon can attain thicknesses up to 160 m in the deeper parts of the basin (Cadle et al., 1990). According to Cidle et al. (1990) all five major seams are still present in the thinnest and most proximal parts of the formation.

Greenshields (1986) states that all four cyclothems exhibit aggressive phase where sedimentation occur red influvio-deltaic environments, followed by a transgressive phase where sedimentation was typical of both marine and non-marine transgressive shorelines. A seam is therefore associated with clastic successions comprising carbonaceous shale or siltstone, fine to coarse-grained sandstone and minor conglomerate (Cadle et al.1990).

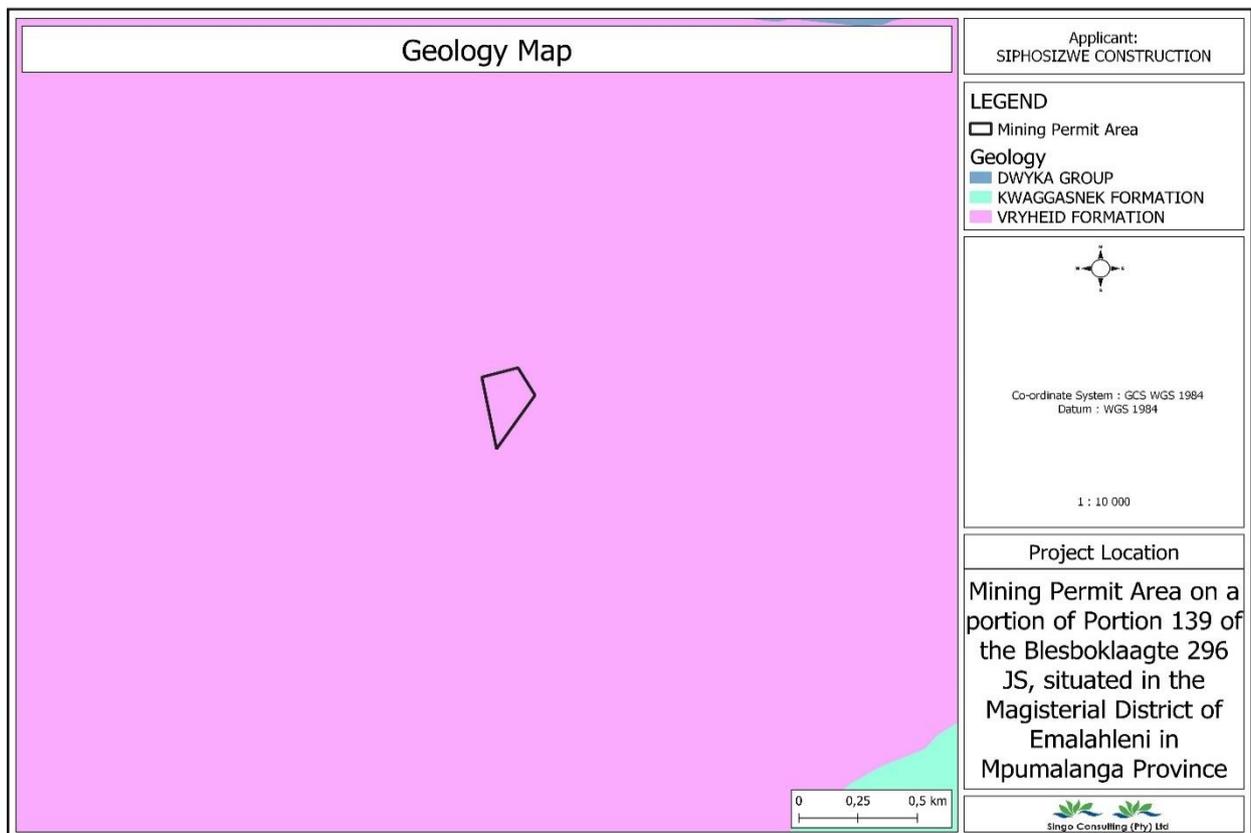


Figure 27: Geological formation within the proposed project

### 3.1.1.2 Natural vegetation

The vegetation cover in the proposed area is classified as moist sandy highveld grassland as indicated in the vegetation map below. Grasslands are dominated by a single layer of grasses (Rutherford & Westfall, 1986). The amount of cover depends on rainfall and the degree of grazing. The vegetation type is endangered nationally with none conserved and 55% altered, primarily by cultivation. The conservation status of this vegetation type is very poor, the proposed area is covered by grasses and Eucalyptus.

The Moist Sandy Highveld Grassland is also found in the sandy plains west of the Belfast-Carolina-Ermelo area, and north of Volksrust in Mpumalanga, at an altitude of 1,600 to 1,800 m. Moist Sandy Highveld Grassland is dominated by the grasses *Eragrostis plana*, *Eragrostis curvula*, *Heteropogon contortus*, *Trachypogon spicatus* and *Themeda triandra*.

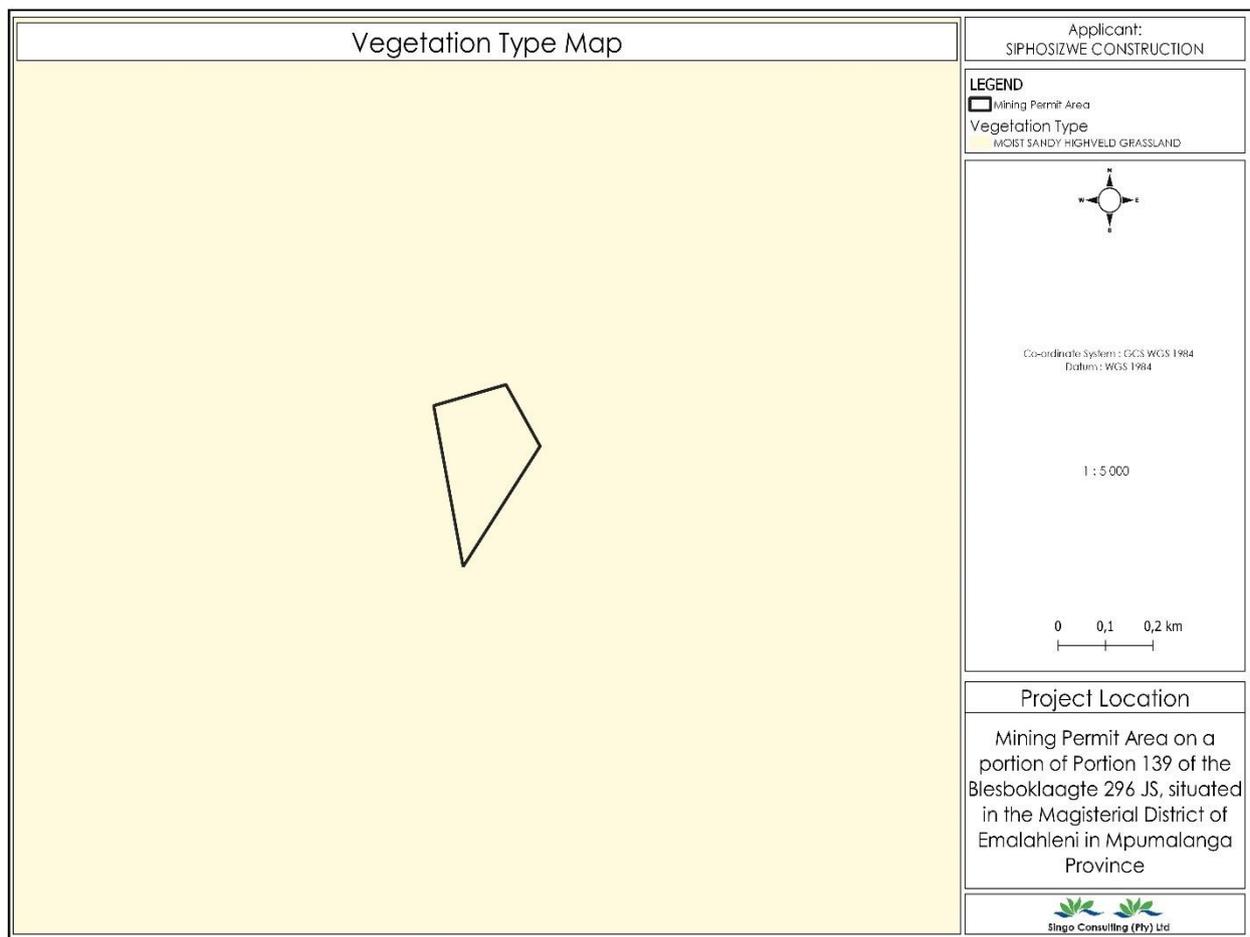


Figure 28: Vegetation map of the project area

The screening below the area consists of high sensitivity of agricultural theme but during site assessment the area was found to be covered by vegetation of grasses and trees.

## MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

### Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High

Figure 29: Relative agricultural theme sensitivity.



Figure 30: Vegetation types observed on site.

During site assessment several plant species were observed as indicated in the figure above. The area is dominated by different types of grasses and Eucalyptus. The species status report by MTPA has indicated that the farm Blesboklaagte 296 JS has plant species namely *Callilepis leptophylla*. *Callilepis leptophylla* is an aromatic perennial herb with needle-like leaves and large flowers early in the season, and it mixes well with grasses. Its stem arises from a large woody rootstock, glabrous in the lower parts. Leaves and younger branches are often softly villose and closely arranged together at the apices. Its leaves are alternate, linear, and needle-like, up to 45 mm long, single-nerved. It has large flowerheads, with cream-white rays and a purplish black disc. It flowers in spring and early summer (September to January), starting early in the season when not many other perennials are in flower.

### 3.1.1.3 Fauna

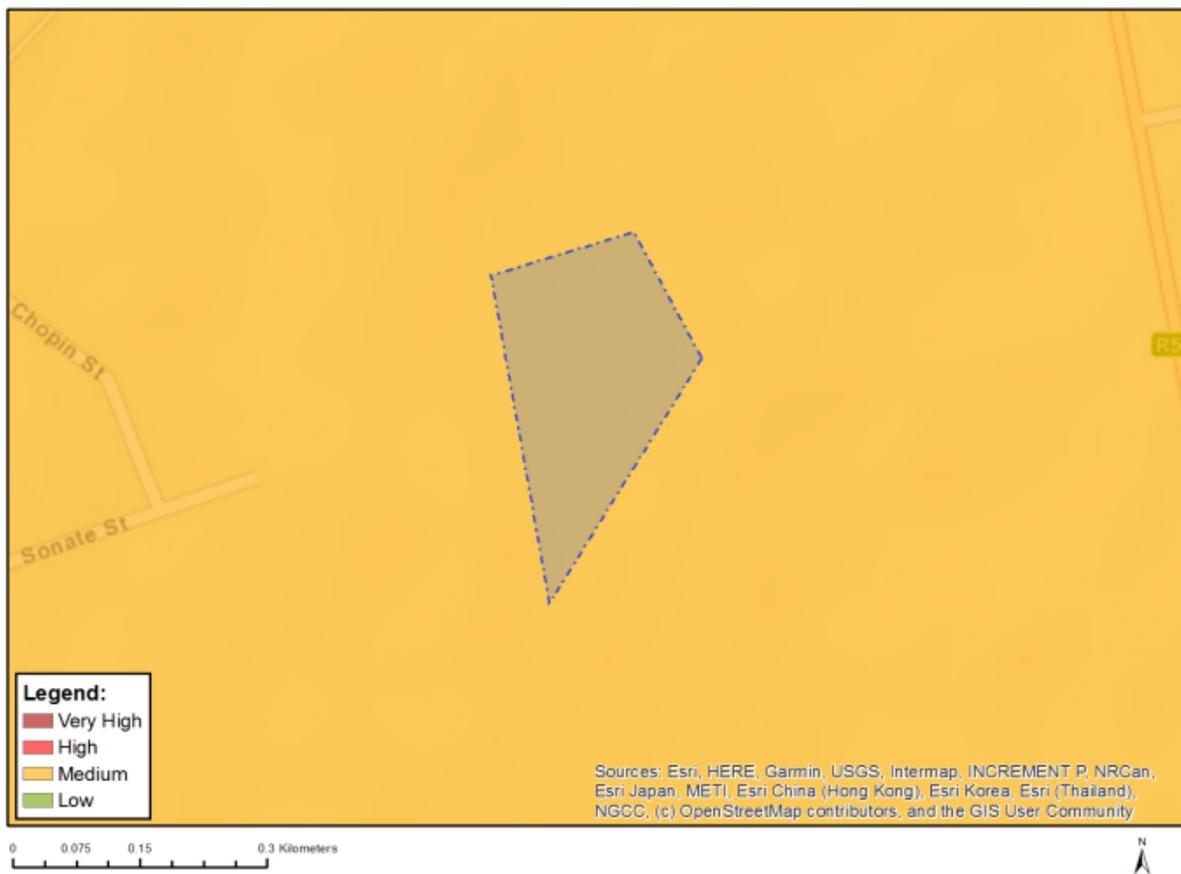
According to the screening report the proposed mining area has medium animal sensitivity. The identified animal species include *Mammalia-Chrysospalax villosus*, *mammalia Crocidura maquassiensis* and *Dasymys robertsii*, *Mammalia-Hydrictis maculicollis*, *Mammalia-Ourebia ourebi ourebi*, *Reptilia-Kinixys lobatsiana*. The Makwassie musk shrew (*Mammalia-Crocidura maquassiensis*) is a species of mammal in the family Soricidae. This is a rare species endemic to South Africa, Swaziland, and Zimbabwe, existing in moist grassland habitats in the Savannah and Grassland biomes.

The main threats to shrews are the loss or degradation of moist, productive areas such as wetlands and rank grasslands within suitable habitat. The two main drivers behind this are abstraction of surface water and draining of wetlands through industrial and residential expansion, and overgrazing of moist grasslands, which leads to the loss of ground cover and decreases small mammal diversity and abundance (Bowland & Perrin 1989, 1993). Suppression of natural ecosystem processes, such as fire, can also lead to habitat degradation through bush encroachment or loss of plant diversity through alien invasive infestation, and is suspected to be increasing with human settlement expansion. There are also clear overlaps and synergistic effects between these threats. We infer a continuing population decline based on loss of natural habitat.



Figure 31: Typical example of Mammalia-Crocidura maquassiensis (adopted from mindat.org)

### MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

**Sensitivity Features:**

Sensitivity	Feature(s)
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Hydrictris maculicollis
Medium	Mammalia-Ourebia ourebi ourebi
Medium	Reptilia-Kinixys lobatsiana

Figure 32: Relative animal species theme sensitivity (adopted from screening report).

**3.1.1.4 Soil**

The soil classes map in figure 25 below, shows that the mining permit area is largely covered with Association of Classes 1 to 4: Undifferentiated structureless soils.

**Association of Classes 1 to 4: Undifferentiated structureless soils.**

The Freely drained, structureless soils can be defined based on their soil depth, Soil Drainage, erodibility, and natural fertility.

**Soil depth**

Depth of the soil profile is from the top to the parent material or bedrock. This type of soil can be classified as a restricted soil depth. A restricted soil depth is a nearly continuous layer that has one or more physical, chemical, or thermal properties.

**Soil Drainage**

Soil drainage is a natural process by which water moves across, throughout of the soil because of the force of gravity. The soils in the proposed area have an excessive drainage due to the soils having very coarse texture. Their typical water table is less than 150.

**Erodibility**

Erodibility is the inherent yielding or non-resistance of soils and rocks to erosion. The freely drained structureless soils have high erodibility. A high erodibility implies that the same amount of work exerted by the erosion processes lead to a larger removal of material.



Figure 33: Soil type within the proposed project

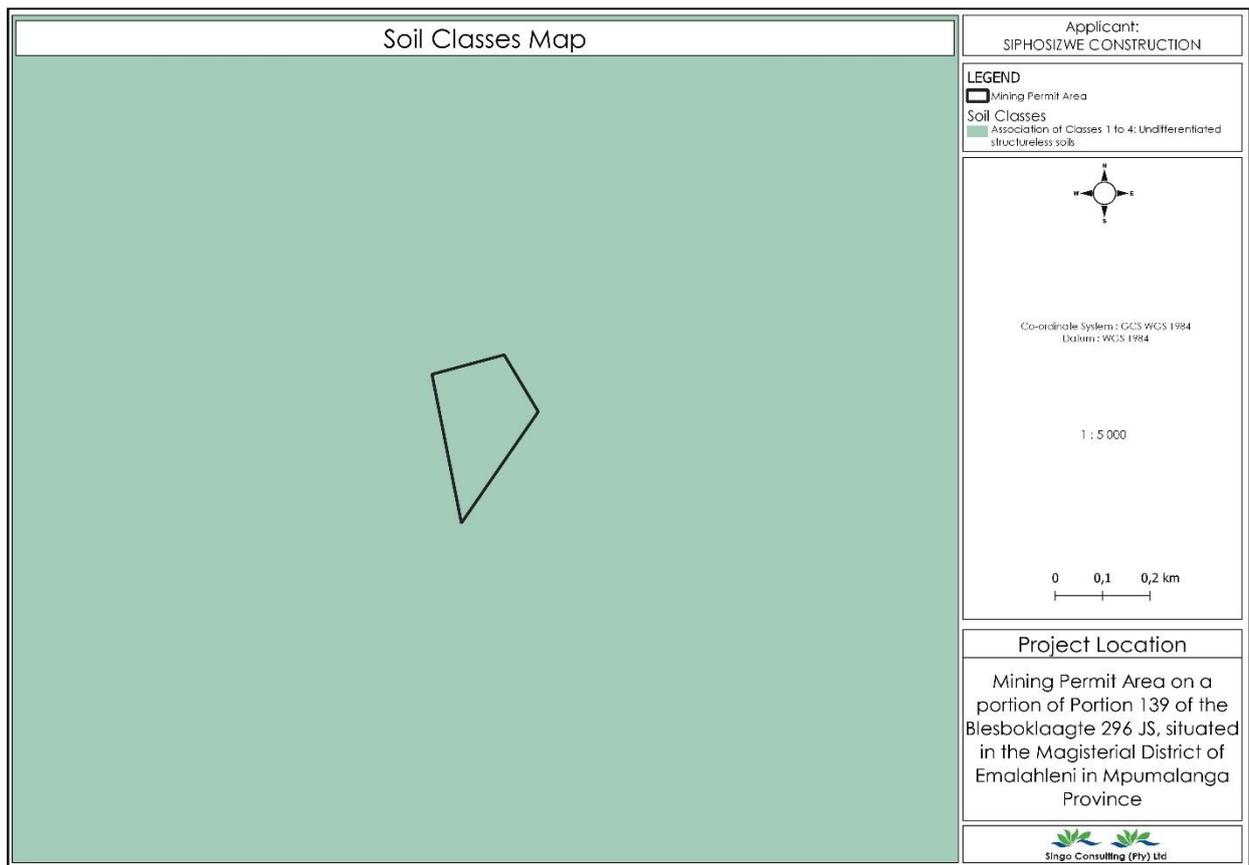


Figure 34: Soil map of the farm

### 3.1.1.5 Surface and ground water

The proposed Coal mining permit area falls within the B11K quaternary catchment in the Olifants Water Management. The hydrology surrounding the proposed area is of vital importance. In this context hydrology is all the surface waters appearing within and nearby the proposed project area, where a potential to be impacted upon by the project existence. The hydrology map illustrates that the following water bodies exists nearby the project area: Channelled valley bottom, perennial and non-perennial river. Valley-bottom wetland with a river channel running through it. Channelled valley-bottom wetlands must be considered as wetland ecosystems that are distinct from, but sometimes associated with, the adjacent river channel itself, which must be classified as a 'river'. During site assessment, a non-perennial river was observed, situated about 500 m in the Southern side of the proposed area.

Figure below is a hydrological map hydrology surrounding the proposed area.

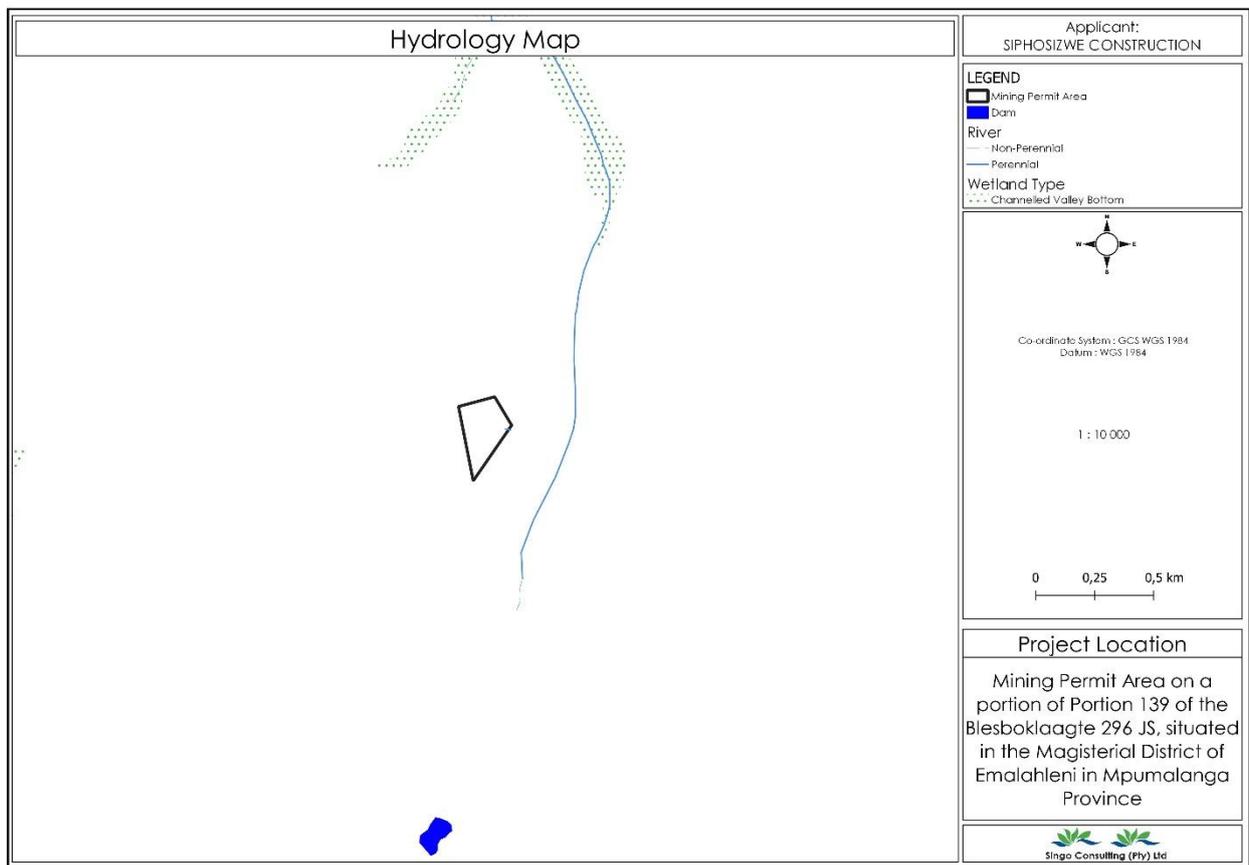


Figure 35: Surface water map

## Groundwater vulnerability

Vulnerability of groundwater is a relative, non-measurable, dimensionless property (IAH, 1994). It is based on the concept that “some land areas are more vulnerable to groundwater contamination than others” (Vrba and Zaporozec 1994). The main concerns in terms of possible groundwater contamination from the proposed mining activity are as follows:

- During the construction phase, Total Petroleum Hydrocarbon (TPH) contamination is possible due to the presence of heavy machinery on site. Spillages may occur which may impact both the soil and groundwater environment.
- During the operational phase, potential contamination may arise due to leaking of machinery. If leaks occur from this machinery, it is possible that the lost product could negatively affect the underlying soil and aquifer.

Because of the ensuing possibility of possible groundwater contamination from the sources or risks mentioned above, the aquifer's vulnerability is analysed. The following evaluation methodologies were used to establish the aquifer's vulnerability to various pollution sources:

**Method 1:** Aquifer Vulnerability Rating (DRASTIC Method).

**Method 1:** evaluates and rates seven key parameters within the hydrogeological setting to determine a final aquifer vulnerability rating. Aquifer Vulnerability Rating (Drastic Method) In the DRASTIC method, aquifer vulnerability is determined within hydrogeological settings by evaluating seven parameters denoted by the acronym:

- Depth to groundwater – Determined from DWA, GRA2 data, confirmed with a hydrocensus
- Recharge – Obtained from DWA, GRA2 data
- Aquifer media – Determined from geological maps and test pit profiles
- Soil media – Determined from test pit profiles
- Topography – Determined by digital elevation data
- Impact on vadose zone – Determined from geological maps and test pit profiles
- Hydraulic Conductivity – Protocol to Manage the Potential of Groundwater Contamination form on-site Sanitation (DWAF, 1997).

Each of the parameters is weighted according to its relative importance. The DRASTIC Index is determined by rating each parameter according to a set of tables, multiplying the assigned rating by the parameter

weighting and summing the resulting products. The higher the DRASTIC Index; the higher the vulnerability to contamination.

### 3.1.1.6 Catchment description

South Africa's water resources are divided into quaternary catchments, which are the country's primary water management units (DWA 2011). In a hierarchical classification system, a quaternary catchment is a fourth order catchment below the primary catchments. The primary drainages are further classified as Water Management Areas (WMA) and Catchment Management Agencies (CMA) (CMA). In accordance with Section 5 subsection 5(1) of the National Water Act, 1998, the Department of Water and Sanitation (DWS) has established nine WMAs and nine CMAs as outlined in the National Water Resource Strategy 2 (2013). (Act No. 36 of 1998). The purpose of establishing these WMAs and CMAs is to improve water governance in various regions of the country, ensuring a fair and equal distribution of the Nation's water resources while ensuring resource quality is maintained.

The proposed mining permit area falls within the Olifants Water Management Area (WMA). The proposed mining permit area falls within the main quaternary catchment B11K. The WR2012 study, presents hydrological parameters for each quaternary catchment including area, mean annual precipitation (MAP) and mean annual runoff (MAR). The regional hydrological setting of the project site is indicated in

**Table 8: Quaternary catchment information (WR, 2012)**

Quaternary Catchment	S-Pan Evaporation		Rainfall	
	Evaporation Zone	MAE (mm)	Rainfall Zone	MAP (mm)
B11K	4A	1700	B1C	684

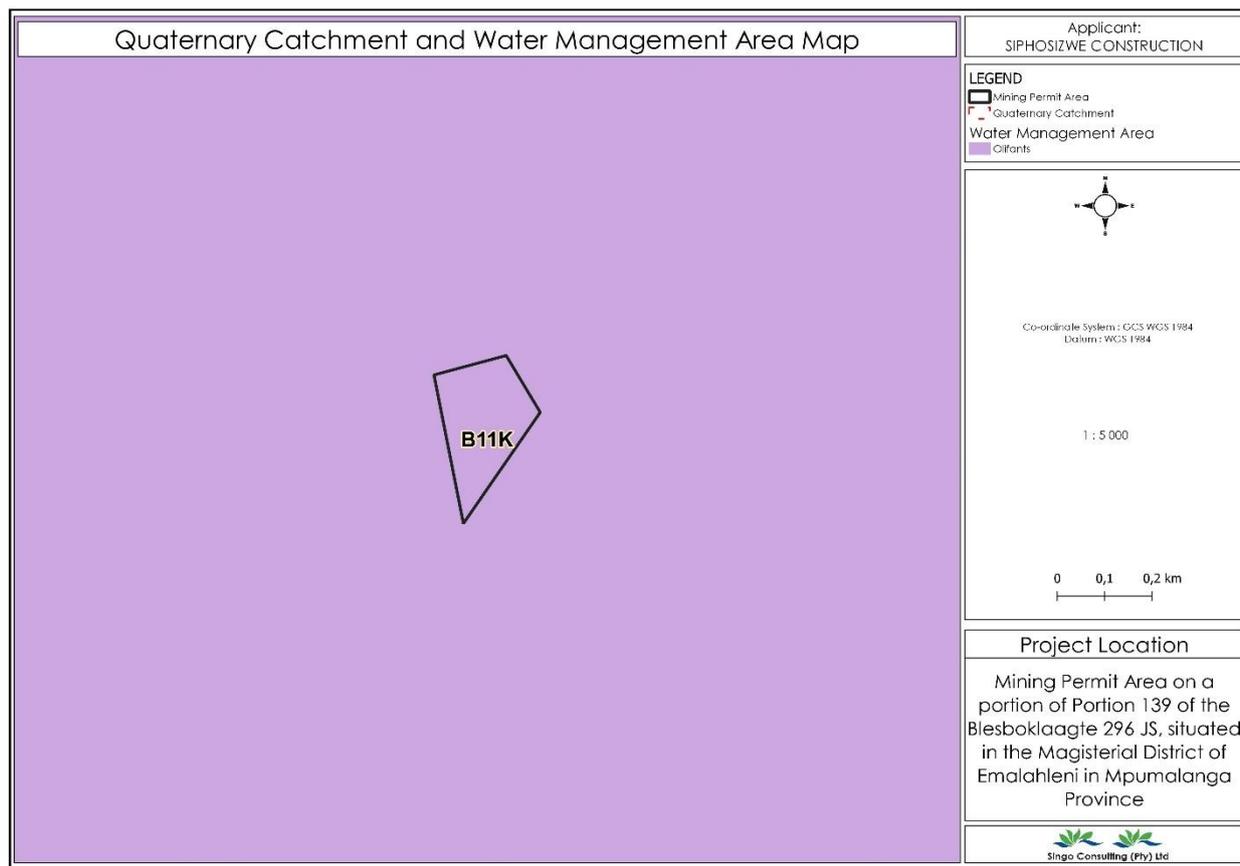


Figure 36: Quaternary catchment and water management

### 3.1.1.7 Climate

The proposed opencast mining area is in the Mpumalanga Highveld Region approximately 1 600m above sea level. Overall, the climate of this region is described as a summer rainfall area, where summers are mild to warm, whilst winters are cool to cold and dry. Witbank climate is classified as warm and temperate. In winter, there is much less rainfall than in summer. The average annual temperature is 15.4 °C. About 693 mm of precipitation falls annually. The least amount of rainfall occurs in July. The average in this month is 6 mm. With an average of 119 mm, the most precipitation falls in January. The temperatures are highest on average in January, at around 20.1 °C. June has the lowest average temperature of the year It is 8.7 °C. The variation in the precipitation between the driest and wettest months is 113 mm. During the year, the average temperatures vary by 11.4 °C.

eMalahleni climate is classified as warm and temperate. In winter, there is much less rainfall in eMalahleni than in summer. According to Köppen and Geiger, this climate is classified as Cwb. In eMalahleni, the average annual minimum temperatures range between 0.1 to 2°C. The mean annual precipitation range between 601 to 800 mm within the proposed mine.

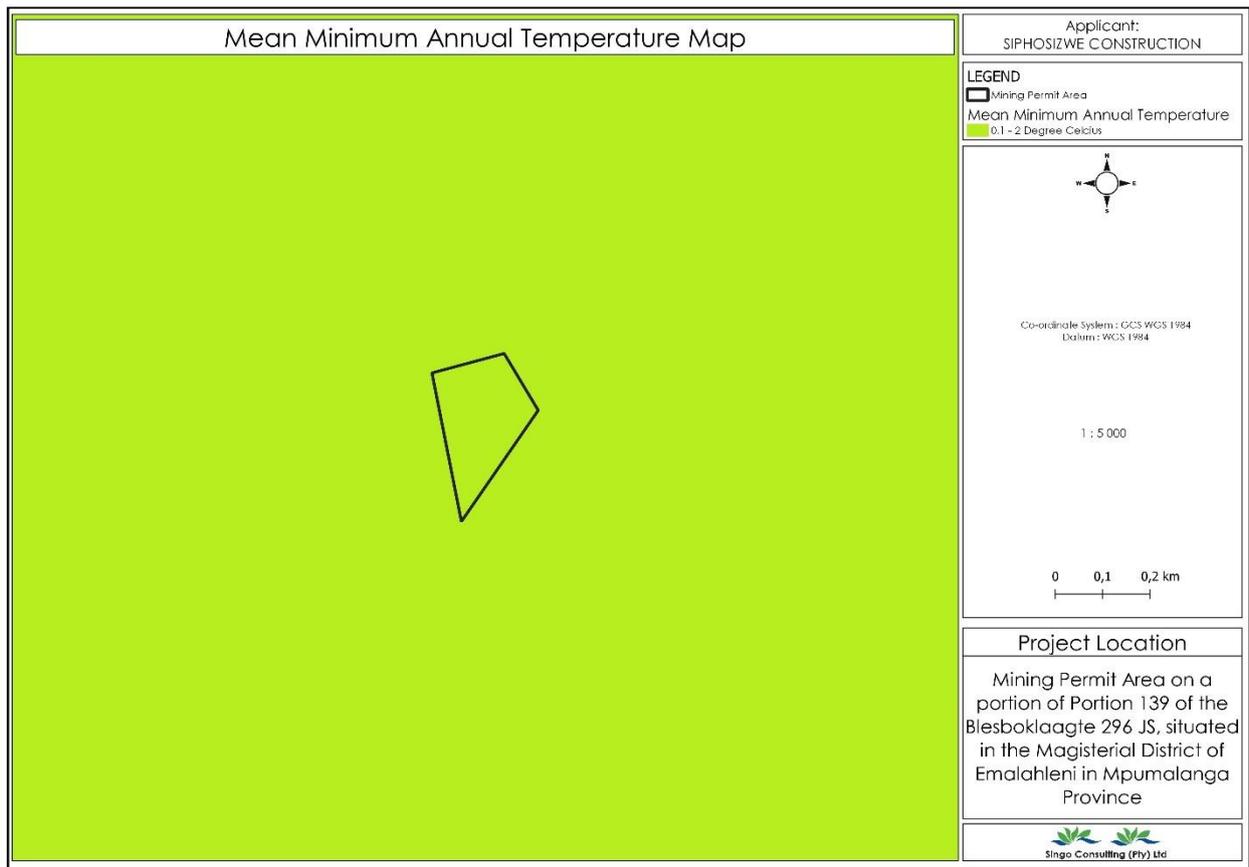


Figure 37: Annual minimum temperatures

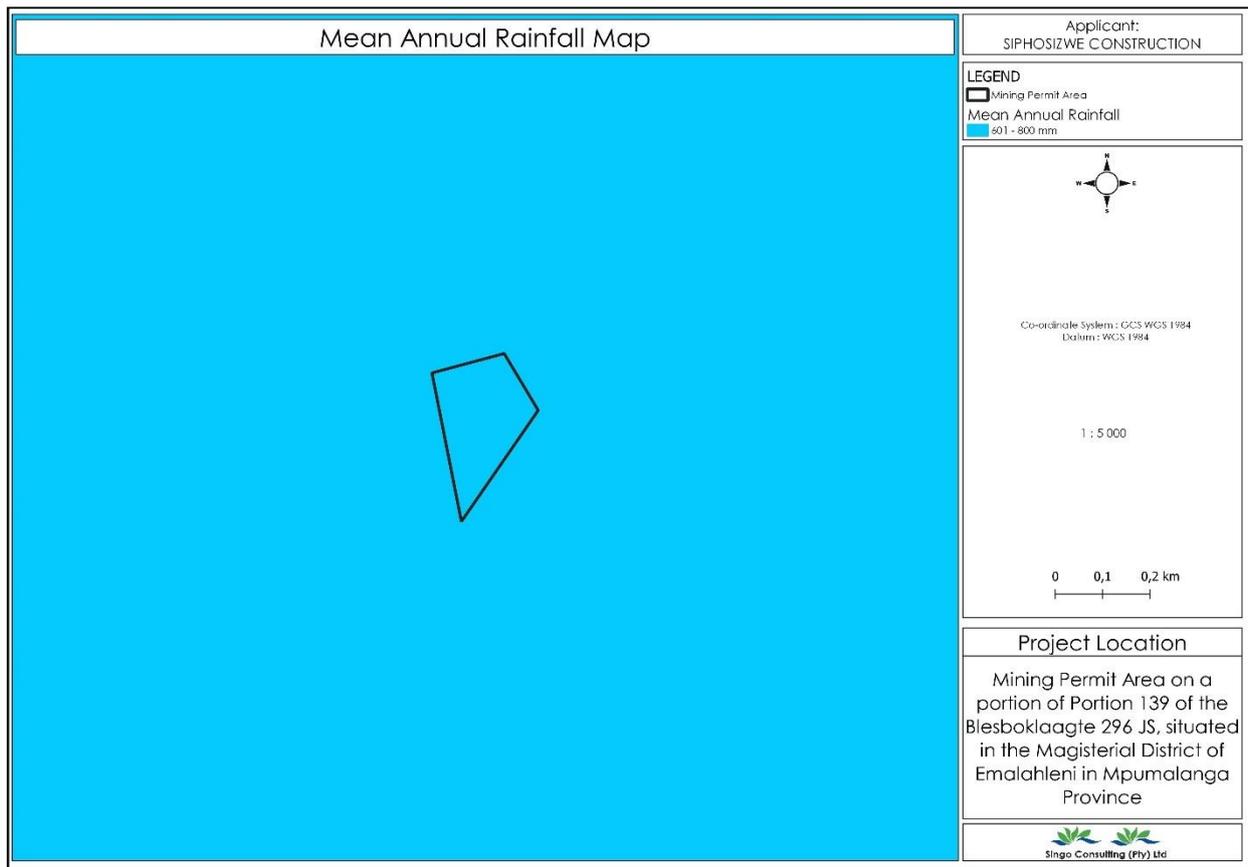


Figure 38: Mean annual rainfall.

### 3.1.1.8 Surface wind field

The average hourly wind speed in Witbank experiences mild seasonal variation over the course of the year. The windier part of the year lasts for 3.9 months, from July 29 to November 26, with average wind speeds of more than 34 m/s. The windiest month of the year in Witbank is September, with an average hourly wind speed of 4 m/s. The calmer time of year lasts for 8.1 months, from November 26 to July 29. The calmest month of the year in Witbank is March, with an average hourly wind speed of 28 m/s.

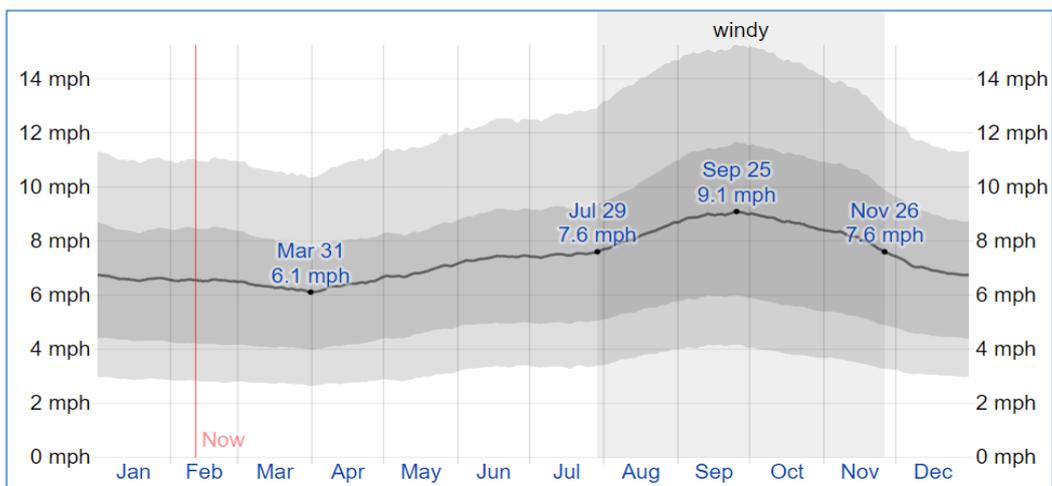


Figure 39: Average wind speed in Witbank.

### 3.1.1.9 Topography

The topology of the area is illustrated below by a topology map. A topographical map shows the physical features of the land. Besides just showing landforms such as mountains and rivers, the map also shows the elevation changes of the land. The topographical map illustrates that the proposed project area is situated in a region generally characterized by a gentle topography as depicted on the topography map below.

Topography is used in this environmental project to determine how soil can be conserved and how water will flow over the land. Topographic data can aid in environmental conservation. Scientists can determine how water and wind cause erosion by understanding the contour of the land. They can aid in the establishment of conservation areas such as watersheds etc.

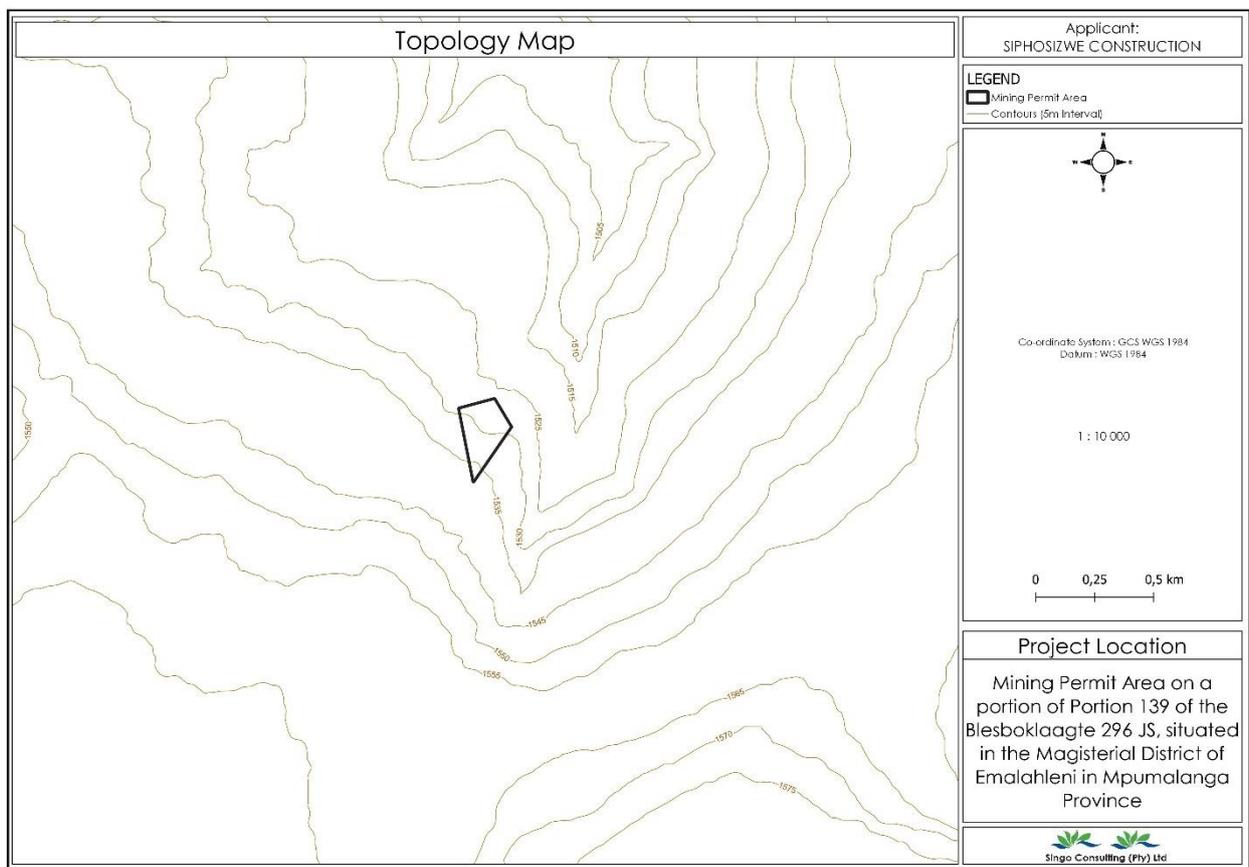


Figure 40: Topography of the study area

### 3.1.1.10 Public roads

N4 is located 4.46 km north from the project area. The site will be accessed via unnamed road from the R544 which will also be used to transport coal to clients. Existing Access gravel road from the unnamed tar road connecting to the R544 Regional Road



#### **3.1.1.11 Graves, heritage, archaeological and cultural resources**

No sites of archaeological or cultural interests were identified on site during a site reconnaissance visit. Property owner should be provided with a registration and comment sheet to highlight cultural or archaeological features that may be occurring on site. The project area is comprised of open spaces where it was simple to see everything on the ground. As a matter of precaution, should any further information confirm existence of such sites, steps will be taken to put measures in place for preservation thereof in line with the National Heritage Resources Act, 1999 (Act No. 25 of 1999). Graves were observed and marked on the southern side of the proposed area and about 30 m away of the permit area. The South African Heritage Resources Agency (SAHRA) will also be notified of such findings.

#### **3.1.1.12 Railway line**

There is no railway line that runs from the proposed mining area.

### **3.1.1.13 Noise**

The proposed mine is located within just 400 m from the nearest residential and industrial setting approximately 210 m away from the Klarinet Industrials which already emits noise to the local environment. The traffic on the public roads surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed mine operation is expected to temporarily increase the noise levels of the area. Blasting noise will be instantaneous and of short duration. Crushing and transportation of the material will generate noise daily. The closest residence (Klarinet) is approximately 400 m away, which makes the significance of noise on the surrounding settlement quite medium to high. Mitigation measures should be implemented to ensure employees conduct them in an acceptable manner while on site to lessen the noise impact of the proposed activity on the surrounding environment.

### **3.1.1.14 Visual exposure**

The proposed mining area will include the coal opencast on the farm. The mining area will not be visible from the N4 but will be noticeable from surrounding community and regional road R544.

The applicant should ensure that housekeeping is managed to standard, as this will mitigate the visual impact during the operational phase of the mine. Upon closure of the mine and decommissioning of the site, the area should be fully rehabilitated, and all exposed areas should be seeded to enhance vegetation recovery should natural vegetation not establish within six months of rehabilitation completion.

### **3.1.1.15 Socio-economic**

eMalahleni Local Municipality is located within the Mpumalanga Province and is situated in the jurisdictional area of the Nkangala District Municipality. The district is located to the northwest of the province and is the smallest district in terms of area (21 %) with the second largest population concentration in the province. It covers an area of about 2 678 km<sup>2</sup> (IDP, 2014/2015).

The eMalahleni Municipality is expected to record a Gross Domestic Product (GDP) growth rate of 3.3% per annum from 2011-2016. The growth rate per annum for the period 1996-2011 was 2.8%. eMalahleni contributed 17.9% to the provincial economy in 2011. eMalahleni Municipality has the third largest economy in the province.

### **3.1.1.16 Population demographics**

According to the 2011 Census by Stats SA, the population of eMalahleni is 395 466. The population grew by 43.1% between 2001 and 2011. The average annual population growth rate was measured at 3.6%. In terms of racial diversity, eMalahleni's population is predominantly black (81.3%) with the remaining portion consisting of 15.7% whites, 1.7% coloured, 0.9% Asians and other 0.3% (IDP, 2014/2015). The population consists of more males than females due to the nature of the local industries, which dictate the type of work available in the area. The sex ratio is 53% male to 47% female (IDP, 2014/2015).

### 3.1.1.17 Education

The number of people over the age of 20 with no schooling totals 14 993, which is 5.8 % of the Municipality’s population. The percentage of the population over the age of 20 with matric or higher was 45.3%. This was the third best in comparison with the other 18 municipal areas. The matric pass rate in 2012 was 72.0%, which places the Municipality 7<sup>th</sup> in the province. The University/degree admission rate was found to be low at only 19.0% in 2012 (IDP, 2014/2015).

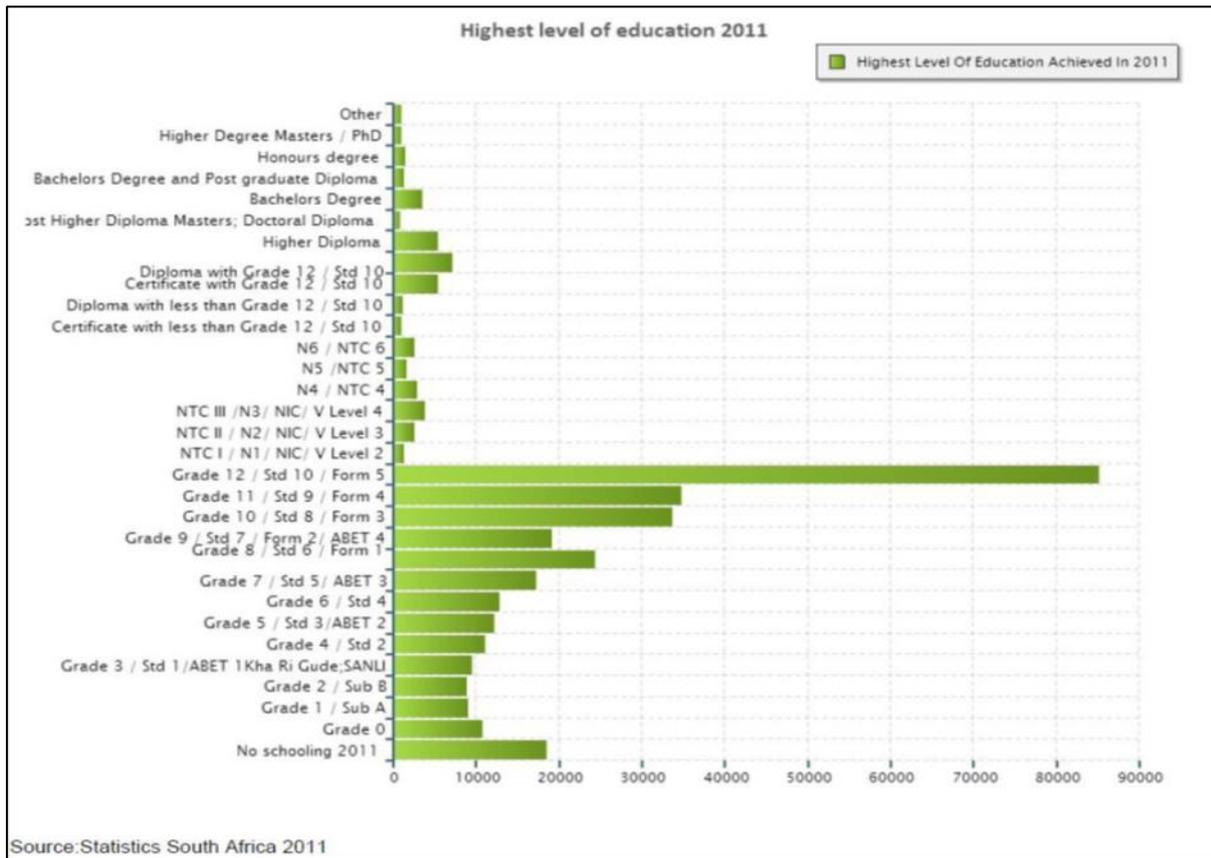


Figure 41: Statistics of South Africa with a reference of eMalahleni

### 3.1.1.18 Employment and income

The leading industry in terms of employment is trade at 21.1%, followed by mining 20.6% and manufacturing 14.2%. Since 2001, there has been an increase in employment in the mining, construction, community services and financial sectors and a decrease in the trade, manufacturing, transport, agriculture, private households and utility sectors.

### 3.1.1.19 HIV, health and wellbeing

HIV, AIDS and Tuberculosis contribute significantly to the burden of disease faced by the South African Government. Huge amounts of resources are expended on serving the health needs of citizens. If the

situation continues unabated, it creates a situation where other services are sacrificed in order to meet the high costs of providing health services to a disproportionately large section of the population. It is for this reason that the South African Government has placed HIV/AIDS at the top of its health priorities.

This goal is in line with the Millennium Development Goals of eradicating HIV/AIDS by 2015. The Emalahleni Metro is equally challenged by its vulnerability to HIV/AIDS. It can never be over-emphasised that the situation needs serious and urgent attention. For South Africa to achieve its goal of eradicating HIV/AIDS by 2015, the responsibility lies with local municipalities, especially metropolitan municipalities, given their expanded functions which include the provision of health services and proximity to local residents. The applicant acknowledges that HIV/AIDS is a national problem and will encourage employees to get tested and know their status by participating in local HIV/AIDS awareness campaigns. Educating employees on the subject matter is important and therefore the project will support the local municipality in its programmes.

### 3.2 Description of current land uses within the proposed Mining Permit Area

The area of interest was found to be covered by natural vegetation with no plantation, Blackwattle (invasive plants) and Eucalyptus tree, with grasses being the dominant vegetation. No agricultural activities, industrial activities, and plantations exist in the area. Sewer Pipeline were observed and marked on the southern side of the Proposed area and about 54 m.

Sewer pipeline observed on site below.



The proposed project area has been significantly altered compared to adjacent natural land, which may be the result of historical human habitation as evidenced by the presence of old structures, graves, and sewer

pipelines on the property. A non-perennial river and wetland were discovered during site assessment within the mining permission area and within a 500 m radius of the permit boundary. The distance between the mining permission area and the Blesbokspruit wetland is 340 m. The mining permit area was discovered to contain an underground mine that stretched outside of its borders, and a mine was also seen outside the proposed mining permit area.

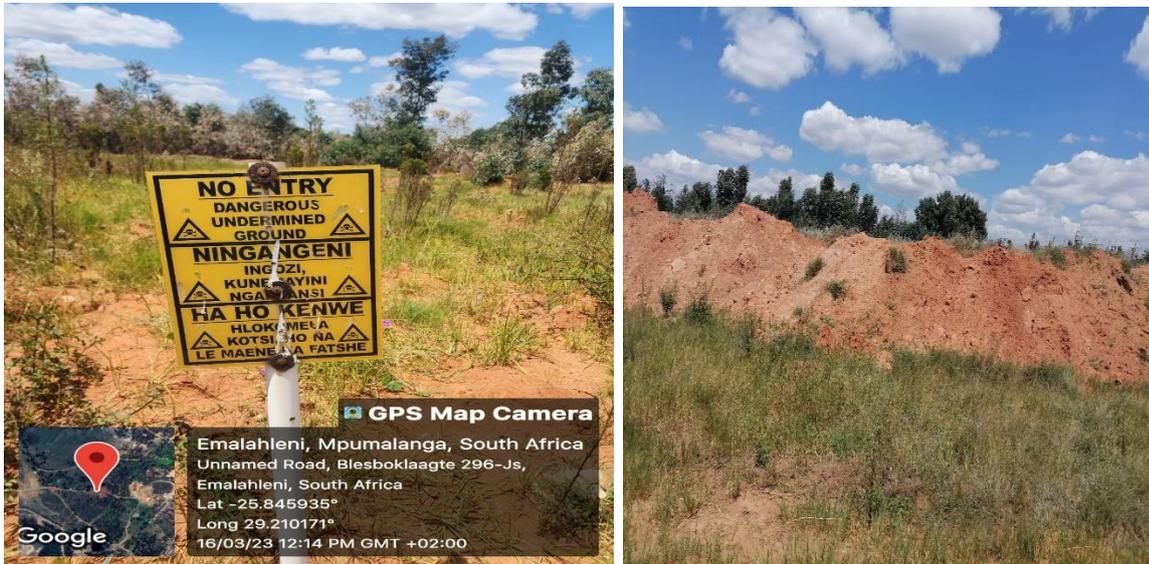
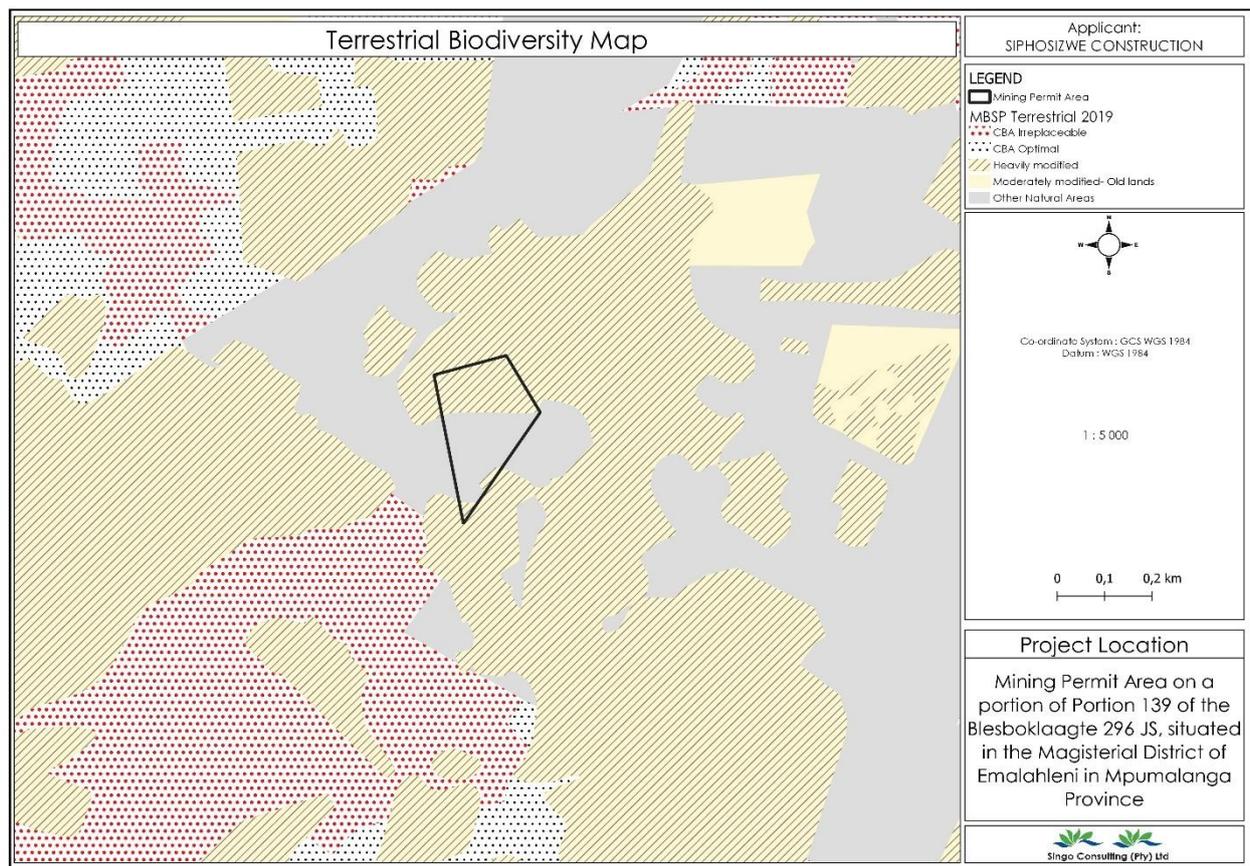


Figure 42: Signs of an existing mine observed on site.

As per the Biodiversity Terrestrial Map produced by the GIS specialist at Singo Consulting, the proposed project area falls largely on Heavily modified and other natural lands. The land is heavily modified due to the underground mining activities that exists in the mining permit area and outside its borders. The land has been modified as the results of historical human habitation as evidenced by the presence of old structures, graves, and sewer pipelines on the property. During site visit, no sensitive areas such as CBA irreplaceable and no species of ecological importance were identified within the proposed project area.

See attached map below.



**Figure 43: The Biodiversity Terrestrial Map produced by the GIS Specialist of Singo Consulting (Pty) Ltd**

SGB industrial cleaning is located approximately 590 m west from the proposed project area, Klarinet community is located approximately 1,42 km north from the proposed project area, Truck strippers is located approximately 1.12 km south west from the proposed project area, Bazil Technologies-Workshop (located approximately 750m south-west from the proposed project area), DSR Mining & industrials (located approximately 820m south-west from the proposed project area), BF panel beaters (located 820 m south-west from the proposed project area) and the proposed Nsele Engineering (located approximately 840m south-west from the proposed project area), Easy Electric Mechanical (Pty) Ltd area located 860 m away from the proposed area, Mahumo Maintenance And Projects located approximately 580 m north-west from the proposed area, ETIS Mvelaphanda Engineering (Pty) Ltd located 385,85 m west from the proposed area, Truck line services CC located 518 south-west from the proposed area, Proauto Commercial Sales located 997 m west, Lesiba industrial solutions located 1.62 km north-west, Klarinet Hardware & steel located 1.42 km north from the proposed area Corriation coal located 1.74 km from the proposed area and Khaya bricks and sand located 1.32 km from the proposed area, were also identified in the close proximity of the proposed project area.

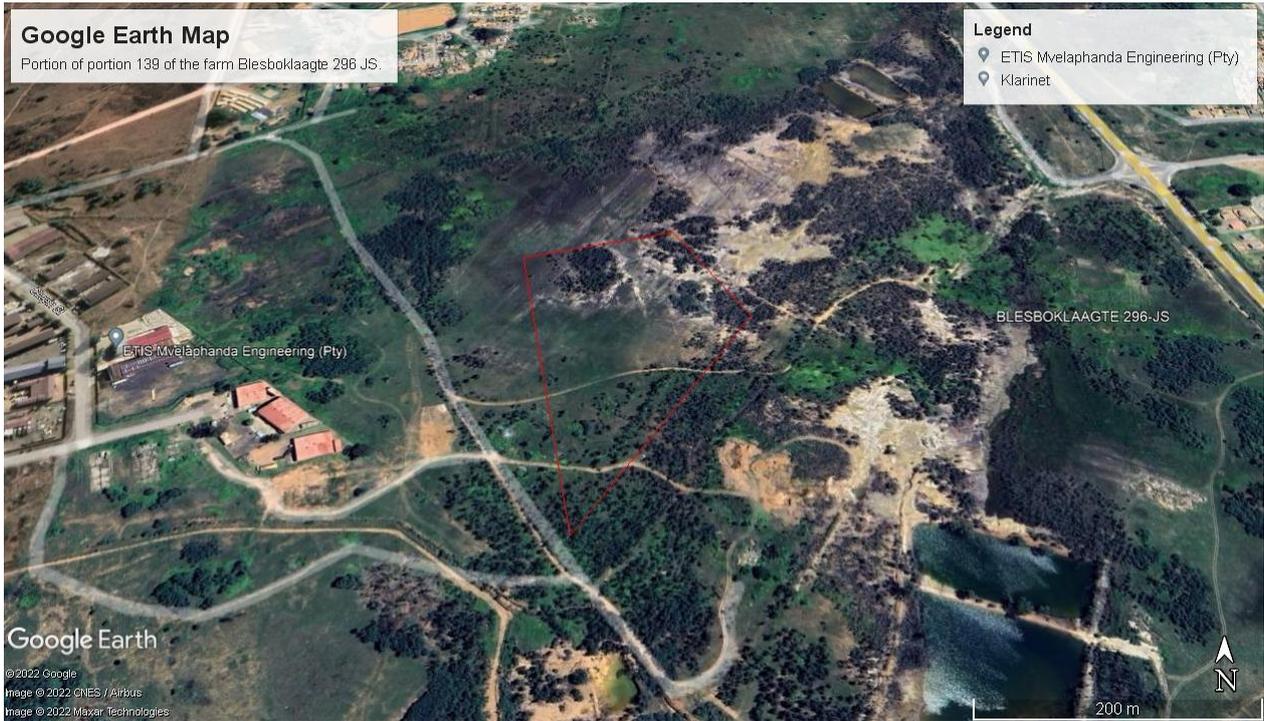


Figure 44:Google Earth Map showing the Infrastructure and Operations Surrounding the Proposed Convex Holdings (Pty) Ltd Mining Permit

### 3.3 Description of site-specific environmental features and infrastructure

The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the site:

Land use character	Yes	No	Description
Natural area	Yes		The area is covered by natural vegetation.
Low-density residential		No	
Medium-density residential		No	
High-density residential	Yes		The Mining Permit is situated approximately 400 m to Klarinet residential.
Informal residential		No	
Retail commercial and warehousing		No	
Light industrial	Yes		
Medium industrial	Yes		The Mining Permit is situated approximately 210 m east of Klarinet Industrials.
Heavy industrial		No	
Power station		No	
Office/consulting room		No	
Military or police base/station/compound		No	
Soil heap or slimes dam		No	
Quarry, sand, mine or borrow proposed mine	Yes		There is an existing mine located on the outside boundary of the proposed mining permit are, situated about 240 m away and an existing underground mine within the proposed mining permit area.
Dam or reservoir		No	
Hospital/medical Centre		No	
School or crèche		No	
School		No	
Tertiary education facility		No	
Church		No	
Old age home		No	

Land use character	Yes	No	Description
Sewage treatment plant	Yes		Sewer Pipeline were observed and Marked on the southern side of the Proposed area and about 54 m.
Train station or shunting yard		No	
Railway line		No	
Major (road 4 lines or more)		No	N4 is located 4.46 km north from the project area. The site will be accessed via unnamed road from the R544 which will also be used to transport coal to delegates.
River, stream or wetland	Yes		There's a Non-perennial river situated about 500 m in the Southern side of the proposed area.
Agriculture		No	
Nature conservation area		No	
Mountain, hill or ridge		No	
Museum		No	
Historical building		No	
Plantation		No	
Landfill/waste treatment site		No	
Archaeological sites	Yes		Graves were observed and marked on the southern side of the proposed area and about 30 m away of the permit area
Other land uses		No	

### 3.4 Environmental and current land use map

Show all environmental and current land use features.

Land use and land cover within the 3 km radius from the proposed area.

- ❖ Natural vegetation
- ❖ Wetland
- ❖ Mines
- ❖ Industrials
- ❖ Plantation
- ❖ Waterbodies
- ❖ Community

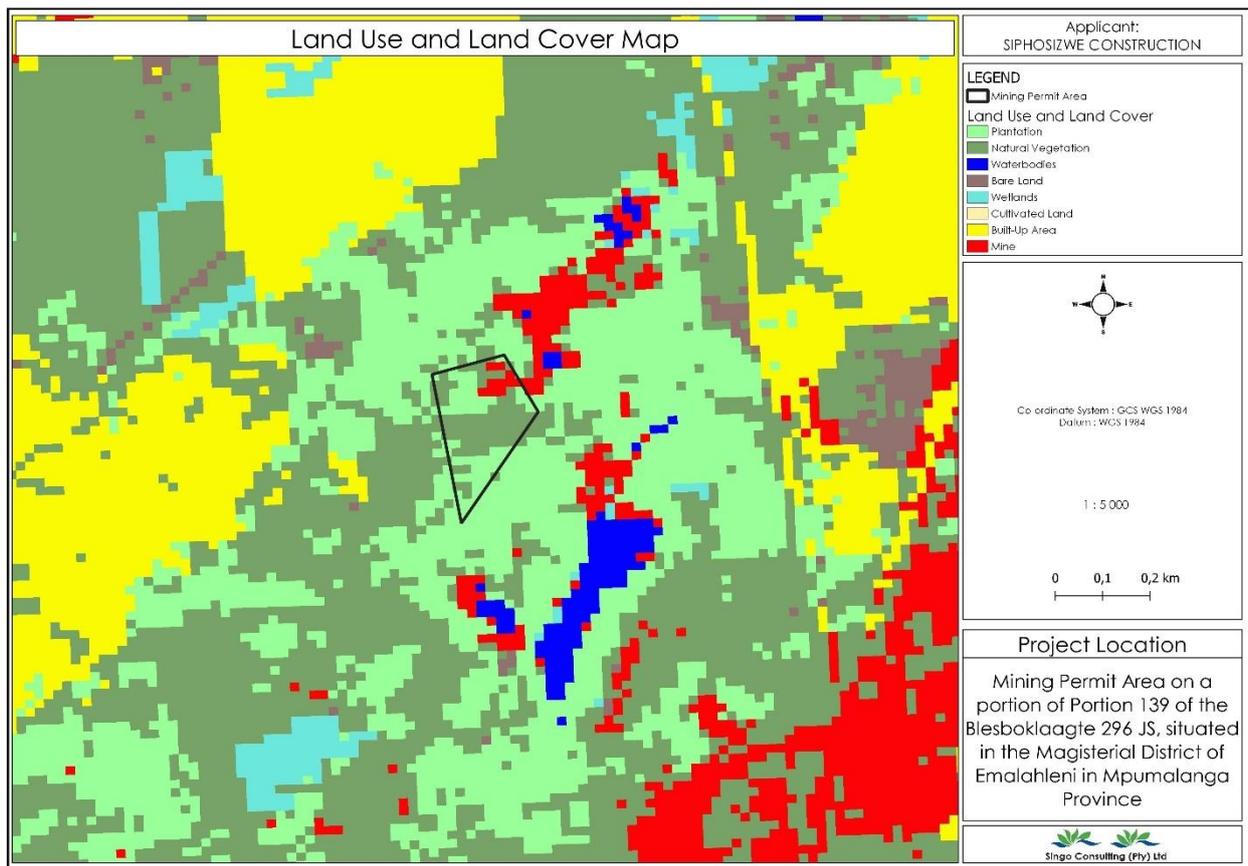


Figure 45: The environmental and current land use map

### **3.5 Impacts and risks identified, including the nature, significance, consequence, extent, duration, and probability of the impacts.**

Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed, or mitigated.

The following potential impacts were identified of each main activity in each phase. The significance rating was determined using the methodology described in. The impact rating listed below was determined for each impact prior to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

#### **3.5.1 Stripping and stockpiling of topsoil**

##### **Significant impacts:**

Visual intrusion associated with the establishment of the mining area.

Dust nuisance caused by soil disturbance.

Noise nuisance caused by machinery stripping and stockpiling the topsoil.

Infestation of the topsoil heaps by weeds or invader plants.

Loss of topsoil due to incorrect storm water management.

Contamination of area with hydrocarbons or hazardous waste materials.

#### **3.5.2 Blasting**

##### **Significant impacts:**

Health and safety risk posed by blasting activities.

Dust nuisance caused by blasting activities.

Noise nuisance caused by blasting activities.

#### **3.5.3 Excavation**

##### **Significant impacts:**

Visual intrusion associated with the excavation activities.

Dust nuisance due to excavation activities.

Noise nuisance generated by excavation equipment.

Unsafe working conditions for employees.

Negative impact of the fauna and flora of the area.

Contamination of area with hydrocarbons or hazardous waste materials.

Weed and invader plant infestation of the area.

#### **3.5.4 In-proposed mine crushing**

##### **Significant impacts:**

Dust nuisance due to the crushing activities.

Noise nuisance generated by the crushing activities.

Contamination of area with hydrocarbons or hazardous waste materials.

#### **3.5.5 Stockpiling and transporting**

##### **Significant impacts:**

Visual intrusion associated with the stockpiled material and vehicles transporting material. Loss of material due to ineffective storm water handling Weed and invader plant infestation of the area due to the disturbance of the soil. Dust nuisance from stockpiled material and vehicles transporting the material Degradation of access roads Noise nuisance caused by vehicles. Contamination of area with hydrocarbons or hazardous waste materials

#### **3.5.6 Sloping and landscaping during rehabilitation**

##### **Significant impacts:**

Soil erosion

Health and safety risk posed by un-sloped areas

Dust nuisance caused during sloping and landscaping activities

Noise nuisance caused by machinery

Contamination of area with hydrocarbons or hazardous waste materials

#### **3.5.7 Replacing of topsoil and rehabilitation of disturbed area**

##### **Significant impacts:**

Loss of reinstated topsoil due to the absence of vegetation

Infestation of the area by weed and invader plants.

### **3.6 Methodology for the assessment of the potential environmental, social, and cultural impacts**

Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision.

The impact assessment process may be summarized as follows:

- ❖ Identification of proposed mining activities including their nature and duration.
- ❖ Screening of activities likely to result in impacts or risks.
- ❖ Utilization of the above-mentioned methodology to assess and score preliminary impacts and risks identified.
- ❖ Inclusion of I&AP comments regarding impact identification and assessment.
- ❖ Finalization of impact identification and scoring.

The impact significance rating methodology is guided by the requirements of the NEMA 2014 EIA Regulations (as amended). Please refer to Section 9.1 for a full description of the impact assessment methodology. Please refer to Table 20 for a description of the activities and associated impacts.

### **3.7 The Impact Assessment Methodology**

The subsections below present the approach to assessing the identified potential environmental impact with the aim of determining the relevant environmental significance.

#### **3.7.1 Method of Assessing Impacts**

The requirements of the NEMA 2014 EIA Regulations guide the impact assessment process (as amended). The Environmental Risk (ER) is calculated by comparing the Consequence (C) of each effect (which includes Nature, Extent, Duration, Magnitude, and Reversibility) to the Probability/Likelihood (P) of the impact occurring. The Environmental Risk is determined by this. Other criteria, including as cumulative impacts, public concern, and the risk of irreversible resource loss, are also considered when determining a Prioritization Factor (PF), which is then applied to the ER to establish the overall Significance (S).

#### **3.7.2 Determination of Environmental Risk**

The significance (S) of an impact is determined by applying a Prioritization Factor (PF) to the Environmental Risk (ER).

The Environmental Risk is dependent on the Consequence (C) of the impact and the Probability (P) of the

impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M) and Reversibility (R) applicable to the specific impact.

To this methodology the Consequence of the impact is represented by:

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary),
	3	Local (i.e. the area within 5 km of the site),
	4	Regional (i.e. extends between 5 and 50 km from the site)
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years)
	3	Medium term (6-15 years)
	4	Long term (the impact will cease after the operational life span of the project),
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude / Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected)
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way)
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease) or
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease)

Reversibility	1	Impact is reversible without any time and cost
	2	Impact is reversible without incurring significant time and cost
	3	Impact is reversible only by incurring significant time and cost
	4	Impact is reversible only by incurring prohibitively high time and cost

$$C = (E+D+M+R) \times N \ 4$$

Each individual aspect in the determination of the Consequence is represented by a rating scale as defined in Table 9.

**Table 9: Criteria for determination of impact Consequence.**

Aspect	Score	Definition
	5	Irreversible Impact

Once the C has been determined the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/scored as per table 10.

**Table 10: Probability scoring.**

	1	Improbable (the possibility of the impact materializing is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows (Table 11):

$$ER = C \times P$$

**Table 11: Determination of Environmental Risk.**

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
Probability						

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 12.

**Table 12: Significance classes.**

Environmental Risk Score	
Value	Description
< 10	Low (i.e. where this impact is unlikely to be a significant environmental risk),
≥ 10; < 20	Medium (i.e. where the impact could have a significant environmental risk),
≥ 20	High (i.e. where the impact will have a significant environmental risk).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/ mitigated.

### 3.7.3 Impact Prioritization

In accordance with Appendix 3(1)(j) of the NEMA 2014 EIA Regulations (as amended) (GNR 326 of 2017), and in addition to the assessment criteria presented in the Section above, each potentially significant impact must be evaluated in terms of cumulative impacts and the degree to which the impact may cause irreplaceable resource loss.

Furthermore, public opinion and attitude about a potential development, as well as its potential consequences, must be considered during the decision-making process.

An impact Prioritization Factor (PF) will be assigned to each impact ER in order to ensure that these considerations are considered (post-mitigation). This element is used to direct the attention of the decision-making authority on the higher priority/significant issues and impacts, rather than to distract from the risk assessments. The PF will be applied to the ER score assuming that all recommended management/mitigation measures are executed.

**Table 13: Criteria for the determination of prioritization.**

Public response (PR)	Low (1)	Issue not raised in public response.
	Medium (2)	Issue has received a meaningful and justifiable public response.
	High (3)	Issue has received an intense meaningful and justifiable public response.
Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable loss of resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criterion. The impact priority is therefore determined as follows:

$$\text{Priority} = \text{PR} + \text{CI} + \text{LR}$$

The result is a priority score which ranges from 3 to 9 and a consequent PF ranging from 1 to 2 (Table 14).

Table 14: Determination of prioritization factor.

Priority	Ranking	Prioritization Factor
3	Low	1
4	Medium	1.17
5	Medium	1.33
6	Medium	1.5
7	Medium	1.67
8	Medium	1.83
9	High	2

To determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is to be able to increase the post mitigation environmental risk rating by a full ranking class, if all the priority attributes are high (i.e. if an impact comes out with a medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential, significant public response, and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance (Table 15).

Table 15: Environmental significance rating.

Environmental Significance Rating	
Value	Description
≤ 1	Very low (impact is negligible. No mitigation required)
>1≤2	Low negative (i.e. where this impact would not have a direct influence on the decision to develop in the area).
>2≤3	Moderate negative (i.e. where the impact could influence the decision to develop in

	the area).
>3≤4	High negative (i.e. where the impact must have an influence on the decision process to develop in the area).
>4≤5	Very high negative (impact is of highest order possible. Mitigation is required to lower impacts to acceptable levels. Potential fatal flaw)
0	No impact
>1≤2	Low positive (i.e. where this impact would not have a direct influence on the decision to develop in the area).
>2≤3	Moderate positive (i.e. where the impact could influence the decision to develop in the area).
>3≤4	
>4≤5	High positive (i.e. where the impact must have an influence on the decision process to develop in the area)

### 3.8 The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties.

The proposed coal mine will be established on a previously underground mined area with minimal natural vegetation cover. The mining permit area is adjacent to the existing underground mine (Mishumo mining) (located approximately 240 m away from the proposed project area), and a wetland (Blesbokspruit located approximately 340 m away from the proposed area. There is a Klarinet 0community located 400 m away from the proposed area.

The existence of a new mine in the proposed area will lead to increased significant negative impacts on the receiving environment and the surrounding communities because of the already existing operations on site and identified adjacent mines. The dust and noise impacts that may emanate from the mining area during the operational phase will have unacceptable negative impacts on the surrounding community if the mitigation measures proposed in this document are not implemented and managed on-site. The operation of the mine will, however, also have several positive impacts, such as permanent job creation

for skilled, semi-skilled and un-skilled workers. The proposed mine will, therefore, contribute to upgrading/ maintaining infrastructure in and around Witbank area, which will indirectly contribute to the economy of the area.

### **3.9 The possible mitigation measures that could be applied and the level of risk.**

With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigation or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered.

#### **3.9.1 Visual mitigation**

The risk of the proposed mining activities having a negative impact on the aesthetic quality of the surrounding environment can be reduced to medium risk through the implementation of the following mitigation measures:

- The site must be always kept neat and in good condition.
- Upon closure, the site must be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is minimal.

#### **3.9.2 Dust handling**

The risk of dust generated from the proposed mining activities having a negative impact on the surrounding environment can be reduced to low medium through the implementation of the following mitigation measures:

- Dust liberation into the surrounding environment must be effectively controlled by the use of, *inter alia*, water spraying and/or other dust-allaying agents.
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Access road speeds must be limited to 40km/h to prevent excessive dust generation.
- Roads must be sprayed with water or an environmentally friendly dust allaying agent, that contains no PCBs (e.g. DAS products), if dust is generated above acceptable limits.
- The in-proposed mine crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.
- Installation of dust monitoring buckets.



**Figure 46: Typical example of dust suppression using water truck.**

### **3.9.3 Noise handling**

The risk of noise, generated from the proposed mining activities, having a negative impact on the surrounding environment can be reduced to low-medium through the implementation of the following mitigation measures:

- The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and kept roadworthy in terms of the Road Transport Act.
- The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity.
- Surrounding landowners must be notified, in writing, prior to blasting occasions.

### **3.9.4 Management of weed or invader plants.**

The risk of weeds or invader plants invading the disturbed area can be reduced to low through the implementation of the following mitigation measures:

- A weed and invader plant control management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of Conservation of Agricultural Act (Act No 43

1983).

- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled or cut off and destroyed completely.
  - The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide.
- The temporary topsoil stockpiles must be kept free of weeds.

### **3.9.5 Storm water handling**

The risk of contamination through dirty storm water escaping from work areas, or erosion or loss of material caused by uncontrolled storm water flowing through the mining area, can be reduced to low by implementing the following mitigation measures:

- Storm water must be diverted around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material.
- Runoff water must also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.
- Mining must be conducted in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions the DWS may impose:
  - Clean water (e.g. rainwater) must be kept clean and routed to a natural watercourse by a system to separate from the dirty water system. Clean water must be prevented from running or spilling into dirty water systems.
  - Dirty water must be collected and contained in a system separate from the clean water system.
  - Dirty water must be prevented from spilling/seeping into clean water systems.
  - The storm water management plan must apply for the entire life cycle of the mine and over different hydrological cycles (rainfall patterns).
  - The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.

### 3.9.6 Management of health and safety risks

The health and safety risk posed by the proposed mining activities can be reduced to low through the implementation of the following mitigation measures:

- The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity,
- The surrounding landowners and communities must be informed, in writing, ahead of any blasting event.
- Measures to limit fly rock must be taken.
- Audible warning of a pending blast must be given at least 3 minutes before the blast.
- All fly rock (with diameters of 150 mm and larger) which falls beyond the working area, together with the rock spill, must be collected and removed,
- Workers must have access to the correct PPE, as required by law.
- All operations must comply with the Occupational Health and Safety Act (OHSA).

### 3.9.7 Waste management

The risk of waste generation having a negative impact on the surrounding environment can be reduced to low through by implementing the following mitigation measures:

- No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies.
- Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. If emergency repairs are needed on equipment unable to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200L closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage and the polluted soil and disposing of it at a recognised facility. Proof hereof should be filed.
- Suitable covered receptacles should be available at all times and conveniently placed for waste disposal.

- Non-biodegradable refuse, such as glass bottles, plastic bags, metal scrap, etc., should be stored in a container with a closable lid at a collecting point, collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.
- Biodegradable refuse generated should be handled as indicated above.

### Types of waste

De bekendste afvalsoorten die tot nu toe nog in veel steden ingezameld/opgehaald  
 wThe best known waste types that are still collected in many cities today are:



### 3.9.8 Management of access roads

The risk on the condition of the roads, as a result of the proposed mining activities, can be reduced to low medium by implementing the following mitigation measures:

- Storm water must be diverted around the access roads to prevent erosion.
- Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent criss-crossing of tracks through undisturbed areas. Rutting and erosion of the access road as a result of the mining activities should be repaired by the applicant.

### 3.9.9 Topsoil handling

The risk of topsoil loss can be reduced to low by implementing the following mitigation measures:

- Where applicable, the first 300 mm of topsoil should be removed in strips and stored along the boundary of the mining area. Stockpiling of topsoil must be done to protect it from erosion, which includes mixing it with overburden or other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.
- The temporary topsoil stockpiles of each removed strip must be kept weed free.
- Topsoil stockpiles must be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rain/storm water.
- Topsoil heaps should not exceed 1.5 m, in order to preserve micro-organisms in the topsoil, which can be lost due to compaction and lack of oxygen.
- Should natural vegetation not establish on the heaps within 6 months of stockpiling, it must be planted with an indigenous grass species.
- Storm and runoff water should be diverted around the stockpile area and access roads to prevent erosion.

#### **3.9.10 Protection of fauna and flora**

The risk on the fauna and flora of the footprint area, as well as the surrounding environment, as a result of the proposed mining activities, can be reduced to low by implementing the following mitigation measures:

- The site manager must ensure that no fauna is caught, killed, harmed, sold or played with.
- Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set, or nests raided for eggs or young.
- No plants or trees may be removed without the approval of the ECO.

#### **Eating areas**

- The Contractor shall designate eating areas for his staff at all locations within the Working area where work is taking place.
- These eating areas shall be clearly demarcated and shall be provided with bins with lids.
- The site manager shall ensure his employees do not consume meals anywhere other than at these eating areas and that noise is limited. All eating areas shall include provision for a smoking area service.
- Temporary services, including pipelines, power lines and telephone lines, shall be in a manner

which will cause the least disturbance to the environment.

- Care shall be taken to ensure that the route alignment for temporary services avoids identified sensitive areas.
- Where possible, the site manager shall ensure that service infrastructure is accommodated within the same trench.

### **3.10 Motivation where no alternative sites were considered.**

Siphosizwe construction CC identified the growing need for coal resources due to an increase in power demand. In this light, the applicant identified the proposed area as the preferred and only viable site alternative because of its immediate availability backed by geological mapping, which has proven that coal resources are available in the area. The establishment of a coal proposed mine in this un-utilised area was found to be most viable.

Various project alternatives were considered during the planning phase of the project and the preferred alternatives proved to be:

- The open cast mining of the coal has been identified as the most effective method to produce the desired coal product.
- The use of temporary infrastructure will reduce the impact on the environment and decrease closure objectives about infrastructure decommissioning.

### **3.11 Statement motivating the alternative development location within overall site.**

Provide a statement motivating the final site layout that is proposed.

The open cast mining of the coal has been identified as the most cost-effective method to produce the desired coal product. The proposed method will produce any residual (overburden) waste to be disposed of. Due to the remote location of the coal proposed mine, the potential impacts on the surrounding environment, associated with open cast mining, is considered of low significance. It's planned that each one mining connected infrastructure are going to be contained inside the boundary of the mining space. As no permanent infrastructure will be established on site, the layout/position of the temporary infrastructure will be determined by the mining progress and accessible space inside the 5-ha mining area.

### **3.12 Process undertaken to identify, assess and rank impacts and risk of site activities.**

Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity, including

(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.

During the impact assessment process, several potential impacts were identified of each main activity in each phase. An initial significance rating was determined for each potential impact, should the mitigation measures proposed in this document not be implemented on-site. The impact assessment process continued to identify mitigation measures to address the impact that the proposed mining activity may have on the surrounding environment. A significance rating was again determined for each impact using a relevant methodology. The impact ratings listed in the following section was determined for each impact after bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

### **3.13 Assessment of each identified potentially significant impact and risk**

This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons and not only those that were raised by registered I&APs)

Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures									Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
1,0	Employment of workers and procurement of materials	Social	Creation of employment	3	3	5	1	1,0	3,7	2,3	2,3	Moderate	<p>Emphasis to employ local individuals must be maximised, reducing the need for migrant labour;</p> <p>the mine should prioritise employment of the local community members and contracts must include employment targets as part of their contractual agreements;</p> <p>Employment requirements should be broadly publicised to ensure that job-seekers do not have unrealistic job expectations;</p> <p>Liaison structures with the local police and community policing forums must be established and development of informal</p>

															settlements within the proposed mining areas to be communicated to the forums for potential monitoring and addressing
2,0	Site clearance and topsoil removal because of the proposed Project.	Air Quality	Dust generation emanating from the activities associated with the Mining Project areas	4	4	4	2	1,0	4,0	3,0	3,0	Moderate	<p>The area of disturbance must be restricted to the required footprint size;</p> <p>Ensure that only vegetation within the designated areas is removed;</p> <p>The drop heights used during the loading of the cleared soils into trucks should be minimised as far as possible; and</p> <p>Dirt roads to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plumes.</p>		

Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures								Mitigation Measures	
				I	F	D	E	P	S	C	IS		SIGNIFICANCE
		Topography and Visual Environment	<p>Topography changes and the disruption of surface water flow.</p> <p>Soil erosion and topsoil loss.</p> <p>Visual impact caused by vegetation and topsoil removal.</p>	3	3	4	1	0,8	3,3	2,2	1,7	Low	<p>Ensure vegetation and topsoil is only cleared when necessary and within the demarcated areas;</p> <p>Ensure topsoil stockpiles are vegetated as soon as possible; and</p> <p>Ensure topsoil stockpiles are contoured and have a steepness of less than 18° to prevent slope failure and erosion and aid in vegetation establishment.</p> <p>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.</p>



																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 established to avoid soil loss through erosion.
			Soil compaction.	4	5	4	1	1,0	4,3	2,7	2,7	Moderate	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.			

Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures									Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
			Loss of land capability and land use potential	2	1	4	1	0,8	2,3	1,7	1,3	Low	<ul style="list-style-type: none"> <li>Any compacted soils must be ripped to alleviate compaction;</li> <li>Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface;</li> <li>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;</li> <li>Slopes of the backfilled surface should change gradually since abrupt changes in slope gradient increase the susceptibility for erosion initiation;</li> <li>The soil fertility status to be determined by soil chemical analysis after levelling (before seeding/re-vegetation).</li> </ul>



																that are adjacent to the mining operations; and <ul style="list-style-type: none"> <li>• Topsoil that will be used for rehabilitation must be stockpiled according to the Rehabilitation Plan. Compaction of stockpiled topsoil must be avoided to ensure the seed bank is viable.</li> </ul>
			Influx and establishment of alien invasive vegetation.	3	3	4	2	0,8	3,3	2,7	2,1	Moderate				Alien invasive vegetation to be identified and removed throughout the LoM.
		Wetlands and Aquatic Ecology	Sedimentation of wetland areas downstream of the stockpiles.	3	3	4	1	0,8	3,3	2,2	1,7	Low				<ul style="list-style-type: none"> <li>• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>• Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>• Implement and maintain alien vegetation management programme;</li> <li>• Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must</li> </ul>

														be removed to an appropriate waste facility.
			Contamination of soils as a result of the ingress of hydrocarbons	3	5	4	1	1,0	4,0	2,5	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>• Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>• Implement and maintain alien vegetation management programme;</li> <li>• 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;</li> <li>• All erosion noted within the construction footprint should be remedied immediately and included as part of an ongoing rehabilitation plan;</li> <li>• All delineated watercourses and their associated 100 m zones of regulation in</li> </ul>	



														barriers associated with impoundments on the affected systems; <ul style="list-style-type: none"> <li>• No material may be dumped or stockpiled within delineated watercourses;</li> <li>• 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;</li> <li>• All vehicles must be regularly inspected for leaks;</li> <li>• Re-fuelling must take place on a sealed surface area away from wetlands to prevent ingress of hydrocarbons into topsoil;</li> <li>• All spills should be immediately cleaned up and treated accordingly; and.</li> </ul>
		Loss of catchment yields and surface water recharge, potential loss of biodiversity,	3	5	4	3	0,6	4,0	3,5	2,1	Moderate		<ul style="list-style-type: none"> <li>• Ensure that as far as possible all infrastructures are placed outside of delineated watercourse areas and their associated zones of regulation;</li> <li>• Ensure that sound environmental management is in place during the planning phase;</li> <li>• Design</li> </ul>	

		<p>impaired water quality, potential loss of instream integrity, potential impacts to freshwater resources further downstream of this point.</p>										<p>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;• It must be ensured that the design and construction of all infrastructures prevents failure.</p>
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Unit Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures								SIGNIFICANCE	Mitigation Measures
				I	F	D	E	P	S	C	IS		
			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.	4	5	4	1	1,0	4,3	2,7	2,7	Moderate	<ul style="list-style-type: none"> <li>• Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions.</li> <li>• Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas.</li> <li>• Ensure safe speed limits in the development area and no open fires.</li> <li>• 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.</li> <li>• 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.</li> </ul>



			vegetated topsoil.												<ul style="list-style-type: none"> <li>vegetation.</li> <li>• Strict speed control measures must be implemented for any vehicles driving within the mining rights area to reduce dust. Refer to existing mine control measures.</li> <li>• 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.</li> <li>• Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed</li> <li>• 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.</li> </ul>
			The destruction or degradation of watercourse vegetation.	1	1	4	2	0,6	2,0	2,0	1,2	Low	<ul style="list-style-type: none"> <li>• Ensure the flow of water through the moist grassland areas remain unchanged.</li> <li>• Monitor the presence of hydrophytes and species with an affinity for moist soils within the moist grasslands. Should such species decrease of be replaced by</li> </ul>		





Unit Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures								SIGNIFICANCE	Mitigation Measures
				I	F	D	E	P	S	C	IS		
			Destruction of vegetation.	4	5	4	1	1,0	4,3	2,7	2,7	Moderate	<p>An independent Environmental Control Officer (ECO) should be appointed to oversee construction activities and ensure the following:</p> <ul style="list-style-type: none"> <li>• Keep the development footprint in Medium categories as small as possible.</li> <li>• A temporary fence or demarcation must be erected around the construction area (include the actual footprint, as well as areas where material is stored).</li> <li>• Maintain site demarcations in position until the cessation of construction work.</li> <li>• Only remove vegetation where necessary and retain vegetation in place for as long as possible prior to removal.</li> <li>• Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area.</li> </ul>

													<ul style="list-style-type: none"> <li>• Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas.</li> <li>• Implement a vegetation rehabilitation plan to ensure areas that can be rehabilitated post construction are adequately vegetated with indigenous grass species.</li> <li>• 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.</li> </ul>
			Erosion and subsequent sedimentation or pollution of proximate moist grassland (watercourse).	4	5	4	1	0,8	4,3	2,7	2,1	Moderate	<ul style="list-style-type: none"> <li>• Make use of existing roads and tracks where feasible, rather than creating new routes through grassland areas.</li> <li>• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).</li> <li>• Runoff from access roads must be managed to avoid erosion and pollution problems.</li> <li>• Ensure that runoff</li> </ul>







Unit Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures								SIGNIFICANCE	Mitigation Measures
				I	F	D	E	P	S	C	IS		
		water courses	Siltation of surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure site clearing is limited to the designated areas, and</li> <li>• Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs).</li> </ul>
			Contamination of groundwater resources	4	5	5	3	1,0	4,7	3,8	3,8	High	<ul style="list-style-type: none"> <li>• Ensure that a stormwater management plan is in place to separate clean and dirty water; and</li> <li>• 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.</li> </ul>
		Noise	Noise emanating from the construction machinery and	4	5	4	2	1,0	4,3	3,2	3,2	High	<ul style="list-style-type: none"> <li>• Ensure site clearing activities are only undertaken during daylight hours;</li> <li>• Mining related machines and vehicles should be serviced on a regular basis to</li> </ul>

			vehicles impacting on surrounding sensitive receptors.											ensure noise suppression mechanisms are effective (e.g. installed exhaust mufflers); and <ul style="list-style-type: none"> <li>• Ensure equipment and machinery is switched off when not in use.</li> </ul>
3,0	Stripping and stockpiling of topsoil	Air Quality	Dust generation emanating from the disturbance of soil.	4	1	1	1	1,0	2,0	1,5	1,5	Low	Ensure that dust suppressants are applied regularly  Ensure that dust suppressants are applied to gravel or unpaved roads that are in use;  Vehicles should obey speed limits	
		Topography and Visual Environment	Topographical change Negative visual impact caused by vehicular activity.	4	4	4	1	0,8	4,0	2,5	2,0	Low	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.	
		Noise pollution	Noise nuisance caused by machinery	3	5	4	1	1,0	4,0	2,5	2,5	Moderate	Avoid through preventative measures (e.g. communication with landowners and timing of activities).	

														Control through implementation of EMPR mitigation measures (e.g. noise abatement measures).
		Traffic	The degradation of the road structures	5	5	4	1	1,0	4,7	2,8	2,8	Moderate	Adhere to the Mine's Traffic Management Plan; and  Gravel roads used must be graded and compacted regularly, should the roads remain unpaved.	
4,0	development and operation of the mine	Soil	Soil contamination and degradation.	4	5	5	2	0,8	4,7	3,3	2,7	Moderate	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;	







Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures									Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
5,0	Mining operations	Social	safety and security risks to landowners and lawful occupiers	3	5	4	1	0,8	4,0	2,5	2,0	Low	<p>The area of disturbance must be restricted to the required footprint size;</p> <p>Ensure that only vegetation within the designated areas is removed;</p> <p>The drop heights used during the loading of the cleared soils into trucks should be minimised as far as possible; and</p> <p>Dirt roads to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plumes.</p>
			interference with existing land uses Crime and violence	3	4	4	1	0,6	3,7	2,3	1,4	Low	<p>Ensure vegetation and topsoil is only cleared when necessary and within the demarcated areas; Ensure topsoil stockpiles are vegetated as soon as possible; and Ensure topsoil stockpiles are</p>



														<ul style="list-style-type: none"> <li>• Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape; and</li> <li>• Limit construction activities at night and down lighting must be used to minimise light pollution.</li> </ul>
		Soils	Soil contamination and degradation.	2	5	4	1	0,8	3,7	2,3	1,9	Low	<ul style="list-style-type: none"> <li>• Ensure soils are stripped and stockpiled prior to the excavation of infrastructure areas; and</li> <li>• Implement Stormwater Management designs to prevent erosion.</li> </ul>	
		Fauna and Flora	Loss of vegetation communities.	2	5	5	2	0,8	4,0	3,0	2,4	Moderate	<ul style="list-style-type: none"> <li>• Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</li> <li>• Ensure a Storm Water Management Plan is implemented; and</li> </ul>	
			Influx and establishment of alien invasive vegetation.	2	5	5	2	0,6	4,0	3,0	1,8	Low	<ul style="list-style-type: none"> <li>• Alien invasive vegetation to be identified and removed throughout the LoM.</li> </ul>	
		Fauna	Destruction of natural habitat and animal life within the	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions.</li> </ul>	



														indigenous grass species. <ul style="list-style-type: none"> <li>• Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed.</li> <li>• Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they emerge.</li> <li>• Monitoring should continue for at least two years after such activities cease.</li> </ul>
		Wetlands and Aquatic Ecology	Contamination and sedimentation of the wetland systems and aquatic ecosystems.	2	5	4	1	0,8	3,7	2,3	1,9	Low	<ul style="list-style-type: none"> <li>• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>• Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>• Implement and maintain alien vegetation management programme;</li> <li>• Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must</li> </ul>	

															be removed to an appropriate waste facility.
		Surface Water	Siltation of surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>• Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>• Implement and maintain alien vegetation management programme;</li> <li>• 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;</li> <li>• All erosion noted within the construction footprint to be remedied immediately and included as part of an ongoing rehabilitation plan;</li> <li>• All delineated watercourses and their associated 100 m zones of regulation in</li> </ul>		



Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures										Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANCE		
														affected systems; <ul style="list-style-type: none"> <li>No material may be dumped or stockpiled within delineated watercourses;</li> </ul>
		Noise	Increased noise levels.	4	2	3	1	0,8	3,0	2,0	1,6	Low	<ul style="list-style-type: none"> <li>Ensuring that all construction equipment operators receive proper training in the use of the equipment and that the equipment is serviced regularly.</li> <li>All blasting and piling driving, if required, should only occur during the day.</li> <li>An environmental noise monitoring survey should be conducted during the construction phase to assess the impact and recommend further actions if required.</li> <li>A public complaints and actions registry should be established to capture public perceptions and complaints regarding noise impacts, track investigation actions,</li> </ul>	



													<p>communities. Additional monitoring points should be included in the vicinity if required/ requested.</p> <ul style="list-style-type: none"> <li>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</li> <li>Construction related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g., installed exhaust mufflers).</li> </ul>
7,0	Construction of RoM Stockpile and associated Water Management Infrastructure.	Air Quality	Fugitive dust generation emanating the RoM Stockpile construction activities.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>Ensure that the areas of disturbance are minimised and restricted to the required footprint areas;</li> <li>Public complaints and actions registry should be established to capture public perceptions and complaints regarding increased air quality impacts;</li> <li>Dust fallout monitoring must be conducted throughout the life of operation</li> </ul>



		Soils	Soil degradation.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Minimise topsoil stockpile heights as far as possible;</li> <li>• Ensure soils are stripped and stockpiled prior to the excavation of infrastructure foundations;</li> <li>• Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis;</li> <li>• Traffic and access to the stockpiles will be restricted;</li> <li>• Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the ecological processes within the soil; and</li> <li>• Implement Stormwater Management designs to prevent erosion.</li> </ul>
		Fauna and Flora	Loss of vegetation communities	2	5	5	2	0,6	4,0	3,0	1,8	Low	<p>Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</p> <p>Ensure a Storm Water Management Plan is implemented; and</p>

														Alien invasive vegetation to be identified and removed throughout the LoM.
		Wetlands and Aquatic Ecology	Contamination and sedimentation of the wetland systems and aquatic ecosystems.	2	5	4	1	0,8	3,7	2,3	1,9	Low	<p>Ensure the statutory buffers are implemented from the wetlands systems and watercourses, unless otherwise stated in the IWUL;</p> <p>Ensure a Storm Water Management Plan is implemented; and</p> <p>Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.</p>	
		Surface Water	Siltation of surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<p>Ensure that the topsoil stockpiles are vegetated to prevent soil erosion;</p> <p>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</p>	

													management facilities must be in accordance with GN R 704 capacity requirements.
		Noise	Increased Noise Levels	2	2	2	2	0,8	2,0	2,0	1,6	Low	<p>Noise levels in the area are already well within 70dBA for the industrial areas during the day and 60 dBA at night as may be associated with mining. Therefore, it is expected that additional noise levels contributed by existing Mine will be insignificant.</p> <p>Trucks, machinery, and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Silencers will be utilised where possible.</p>
		Groundwater	Contamination of groundwater resources Seepage through and runoff from the coal stockpile.	4	4	5	2	1,0	4,3	3,2	3,2	High	<ul style="list-style-type: none"> <li>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;</li> </ul>

													<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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</li> <li>• 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.</li> </ul>
10,0	Storage, use and control of fuel and lubricants to	Soil	Soil contamination and degradation	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</li> <li>• Spillage control kits will be readily</li> </ul>

	be used for the mining activities.														<p>available on site to contain the mobilisation of contaminants and clean up spills;</p> <ul style="list-style-type: none"> <li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li> <li>• Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);</li> <li>• Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and</li> <li>• Vehicles with leaks must have drip trays in place.</li> </ul>
		Groundwater	Groundwater contamination	5	5	5	3	1,0	5,0	4,0	4,0	High		<ul style="list-style-type: none"> <li>• All potential hydrocarbon leaks must be repaired immediately and spillages be cleaned up immediately and the soils remediated;</li> <li>• Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</li> <li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li> <li>• Storage of hydrocarbons and explosives</li> </ul>	

													must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);
11,0	Operation of the RoM Stockpile and associated Water Management Infrastructure.	Air Quality	Fugitive dust generation emanating the RoM Stockpile operational activities.	2	3	4	1	0,8	3,0	2,0	1,6	Low	<ul style="list-style-type: none"> <li>Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and</li> <li>Vehicles with leaks must have drip trays in place; and</li> <li>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.</li> </ul>



Unit Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures									Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
			Soil degradation.	3	3	3	1	1,0	3,0	2,0	2,0	Moderate	<ul style="list-style-type: none"> <li>• Minimise topsoil stockpile heights as far as possible;</li> <li>• Ensure soils are stripped and stockpiled prior to the excavation of infrastructure foundations;</li> <li>• Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis;</li> <li>• Traffic and access to the stockpiles will be restricted;</li> <li>• Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the ecological processes within the soil; and</li> <li>• Implement Stormwater Management designs to prevent erosion.</li> </ul>

		Fauna and Flora	Loss of vegetation communities.  Influx and establishment of alien invasive vegetation.	2	3	3	2	0,6	2,7	2,3	1,4	Low	<ul style="list-style-type: none"> <li>• Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</li> <li>• Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified and removed throughout the LoM.</li> </ul>
		Wetlands and Aquatic Ecology	Contamination and sedimentation of the downstream wetland systems and aquatic ecosystems.	3	3	4	1	1,0	3,3	2,2	2,2	Moderate	<ul style="list-style-type: none"> <li>• Ensure the statutory buffers are implemented from the wetlands systems and watercourses, unless otherwise stated in the IWUL;</li> <li>• Ensure a Storm Water Management Plan is implemented; and</li> <li>• Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.</li> </ul>
		Surface Water	Siltation of downstream surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure that the topsoil stockpiles are vegetated to prevent soil erosion;</li> <li>• Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams</li> </ul>

														(PCDs); and
														<ul style="list-style-type: none"> <li>The design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.</li> </ul>
		Groundwater	Contamination of groundwater resources	3	3	3	3	0,8	3,0	3,0	2,4	Moderate	<ul style="list-style-type: none"> <li>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;</li> <li>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;</li> <li>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</li> </ul>	



		Wetland and aquatic environment	Increased movement of heavy vehicles	2	5	4	1	0,8	3,7	2,3	1,9	Low	<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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;</li> <li>• Limit the footprint area of the operational activities to what is absolutely essential in order to minimise impacts as a result of subsidence;</li> <li>• Ensure that no incision and canalisation of the wetland features present takes place as a result of the proposed operational activities;</li> <li>• 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;</li> </ul>
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												<ul style="list-style-type: none"> <li>• Erosion berms should be installed on roadways and downstream of stockpiles to prevent gully formation and siltation of the freshwater resources.</li> <li>• 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;</li> <li>• 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;</li> <li>• No material may be dumped or stockpiled within any watercourses in the vicinity of the proposed operational footprint;</li> <li>• 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 operational area footprint;</li> <li>• All vehicles must be regularly inspected</li> </ul>
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	Topography and Visual Environment	Topography change and disruption of surface water flow	2	5	5	2	0,6	4,0	3,0	1,8	Low	<ul style="list-style-type: none"> <li>• Ensure that access and haul roads are contoured to limit erosion from surface runoff, preventing further alteration to the topography;</li> <li>• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; and</li> <li>• Vehicles will obey speed limits.</li> </ul>
	Soil	Soil contamination and degradation.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</li> <li>• Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</li> <li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li> <li>• Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);</li> <li>• Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and</li> </ul>



	Surface Water	Contamination and sedimentation of clean water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use and exposed surfaces;</li> <li>• Cover the road going trucks from the tip to KPS with a tarpaulin to prevent coal dust generation;</li> <li>• Vehicles will obey speed limits; and</li> <li>• Monitor surface water resources up and downstream of the Project area to identify potential contamination.</li> </ul>
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Unit Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures								SIGNIFICANCE	Mitigation Measures
				I	F	D	E	P	S	C	IS		
		Noise	noise emanating from mining and vehicular activities impacting on surrounding sensitive receptors.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• 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</li> <li>• Ensure equipment and machinery is switched off when not in use.</li> <li>• The gravel roads must be graded and compacted on a regular basis and as when required, should the roads remain unpaved; and</li> <li>• Adhere to the set speed limit in accordance to the Traffic Management Plan.</li> </ul>
		Traffic	Degradation of the road structures resulting in	3	4	5	2	0,8	4,0	3,0	2,4	Moderate	<ul style="list-style-type: none"> <li>• The gravel roads must be graded and compacted on a regular basis and as when required, should the roads remain unpaved; and</li> </ul>





														hour storm event; <ul style="list-style-type: none"> <li>• Monitor the dirty water management facilities on a monthly basis to identify potential leaks and implement management measures to rectify potential issues; and</li> <li>• Monitor surface water resources up and downstream of the Project area to identify potential contamination.</li> </ul>
		Groundwater	Groundwater contamination.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure that pipelines and diversion channels and berms are monitored for potential leaks and structure failures;</li> <li>• Potential leaks and spills must be contained and cleaned up immediately, as well as the leakage location repaired;</li> <li>• The mine should supply the users with an alternative source of water in case the boreholes are dewatered;);</li> <li>• Monitor and control the potential decant of dirty water from the workings;</li> <li>• Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed</li> </ul>	



												available and used for the correct separation and storage of waste prior to collection and disposal; and
		Contamination of clean water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Generated waste must be removed to an approved disposal facility.</li> <li>• The sewer waster collected from the workings must be disposed of at a licensed sewage treatment facility;</li> <li>• Monitor surface water resources up and downstream of the Project area to identify potential contamination;</li> <li>• Ensure that a stormwater management plan is in place to separate clean and dirty water; and</li> <li>• Waste must be separated at source and stored in appropriately designated areas for disposal at a licensed facility or by a reputable contractor.</li> </ul>
		Surface Water										

**3.14 Summary of specialist reports**

This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form.

List of studies undertaken	Recommendations of specialist reports	Specialist recommendations included in the BASIC ASSESSMENT report Mark with an X where applicable	Reference to applicable report section Where specialist recommendations have been included
Hydrogeological study was deemed necessary for this project as there is a non-perennial river is situated about 500 m in the southern side of the proposed area and wetland vegetation were observed within the proposed area.			
N/A			

Attached copies of specialist reports as appendices.

The following baseline studies will be conducted:

- Soil study
- Hydrological study
- Hydrogeological study

### **3.15 Environmental impact statement**

#### **3.15.1 Summary of the key findings of the basic assessment**

The key findings of the basic assessment are as follows:

- The project entails the establishment of a coal mine on a heavily modified area because of previous underground activities outside the mining permit areas with minimal natural vegetation cover therefore, natural vegetation has to be disturbed by mining activities.
- The existing roads to the proposed coal mine will be used to gain access to the site. No new roads are established/ constructed.
- The applicant's off-site workshop will be used for servicing vehicles, thereby reducing the risk of hazardous spills and contamination at the mining site.
- Due to the remote setting of the coal proposed mine, most potential impacts will be contained within the boundaries of the 5 hectares, if mitigation measures proposed in this document are implemented on-site.
- The mining operation will have a temporary visual impact on the surrounding environment. Upon closure of the proposed mining area the visual impact on the proposed mining area will be mitigated and addressed.
- Non-perennial river was observed, situated about 500 m in the Southern side of the proposed area..

#### **3.15.2 Final site map**

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structure and infrastructure on the environmental sensitivities of the preferred site indicating areas that must be avoided, including buffers. Attach as an Appendix.

The map indicating site activities is attached as appendix.

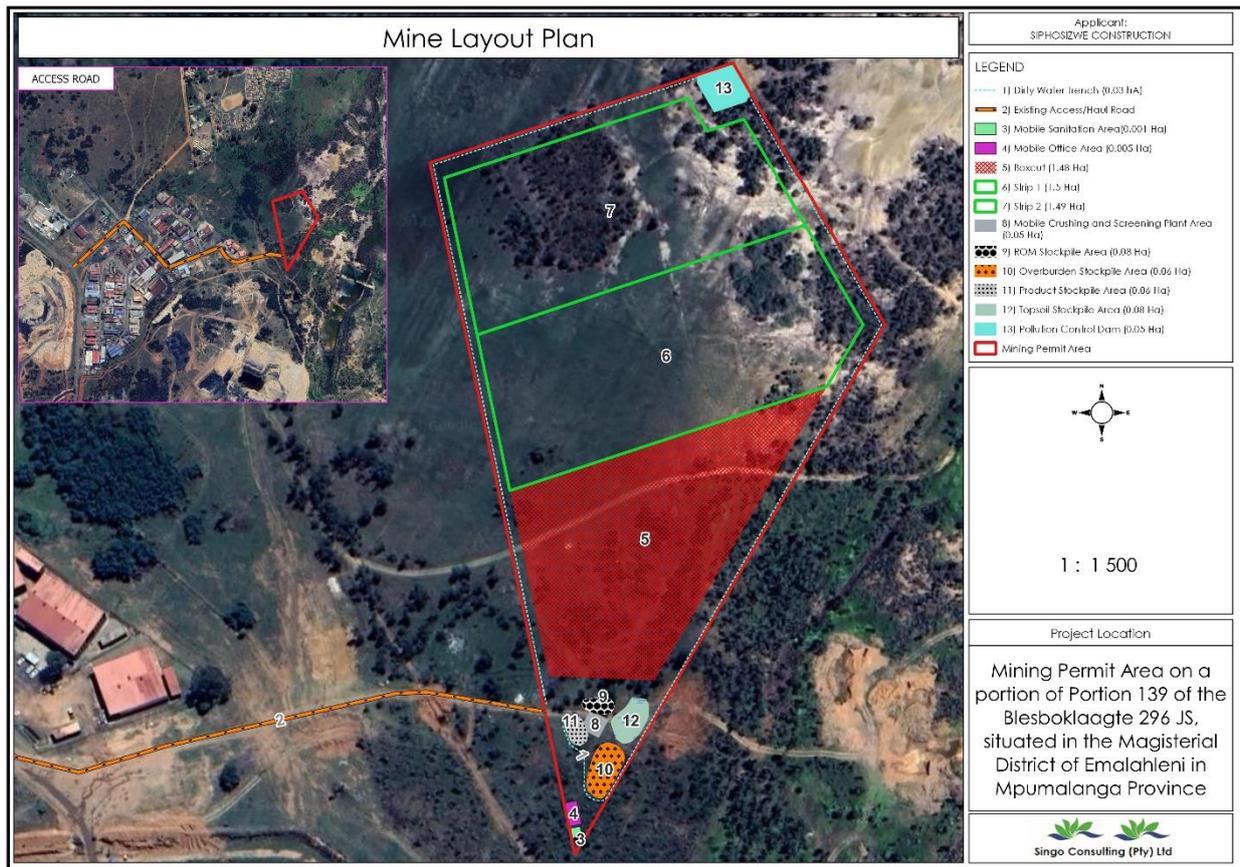


Figure 47: Final Site Map with all activities to be undertaken.

### 3.15.3 Positive and negative impacts of the proposed activity and alternatives

The positive impacts associated with the project include:

- Job creation, although a fixed number of jobs to be created cannot be stated at this stage, will include multiple job opportunities for skilled, semi-skilled and unskilled personnel will be created by this project. This will contribute to the socio-economic status of the Witbank area.
- The coal to be mined will be supplied to dedicated clients, hence it will enhance Eskom's coal resources security to generate electricity without re-occurrence of load shedding.

The negative impacts associated with the project and that were of Low-Medium significance includes:

Visual intrusion associated with the establishment of the mining area	Medium
Visual intrusion associated with the excavation activities	Medium
Visual intrusion associated with the stockpiled material and vehicles transporting the material	Low-medium
Dust nuisance caused by blasting activities	Low-medium
Dust nuisance due to the crushing activities	Low-medium
Noise nuisance generated by excavation equipment	Low-medium

Noise nuisance generated by the crushing activities	Low-medium
Degradation of access roads	Low-medium

### 3.16 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Based on the assessment and, where applicable, recommendations from specialist reports, recording of proposed impact management objectives, and impact management outcomes for development for inclusion in the EMPr and as authorisation condition.

Management objectives	Role	Management outcomes
Dust handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Control dust liberation into the surrounding environment by using water spraying and/or other dust allaying agents.</li> <li>• Limit speed on the access roads to 40km/h to prevent the generation of excess dust.</li> <li>• Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.</li> <li>• Assess effectiveness of dust suppression equipment.</li> <li>• Ensure the crusher plant has operational water sprayer to alleviate dust generation from the conveyor belts.</li> </ul>
Noise handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>• No loud music may be permitted at the mining area.</li> <li>• Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</li> <li>• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity.</li> <li>• Notify surrounding landowners in writing prior to blasting.</li> </ul>
Management of weed/	Site Manager to ensure compliance with EMP guidelines. Compliance to be	<ul style="list-style-type: none"> <li>• Implement a weed and invader plant control management plan.</li> </ul>

Management objectives	Role	Management outcomes
invader plants	monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Control declared invader or exotic species on the rehabilitated areas.</li> <li>• Keep the temporary topsoil stockpiles free of weeds.</li> </ul>
Surface and storm water handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Divert storm water around topsoil heaps, stockpile areas and access roads to prevent erosion and material loss.</li> <li>• Divert runoff water around stockpile areas with trenches and contour structures to prevent erosion of work areas.</li> <li>• Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose.</li> </ul>
Management of health and safety risks	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer. Blasting contractor to comply with national blasting requirements.	<ul style="list-style-type: none"> <li>• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity.</li> <li>• Inform the surrounding landowners and communities of any blasting event.</li> <li>• Use noise mufflers and/or soft explosives during blasting, limit fly rock.</li> <li>• Give audible warning of a pending blast at least 3 minutes in advance of the blast.</li> <li>• Remove all fly rock (of diameter 150 mm and larger) which falls beyond the working area, with the rock spill.</li> <li>• Ensure that workers have access to the correct PPE as required by law.</li> <li>• Ensure all operations comply with the Occupational Health and Safety Act.</li> </ul>
Waste	Site Manager to ensure compliance with	<ul style="list-style-type: none"> <li>• Ensure no waste pile is established within 100 m of the edge of any river channel or other water</li> </ul>

Management objectives	Role	Management outcomes
management	EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	<p>bodies.</p> <ul style="list-style-type: none"> <li>• Ensure regular vehicle maintenance take place within the service bay area of the off-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 l closed container/bin inside the emergency service area.</li> <li>• Collect effluents containing oil, grease or other industrial substances in a suitable receptacle and remove from site, for resale or appropriate disposal at a recognized facility.</li> <li>• Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage and polluted soil and disposing thereof at a recognized facility. File proof.</li> <li>• Ensure availability of suitable covered, conveniently placed receptacles at all times for waste disposal.</li> <li>• Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognized approved landfill site at Witbank. Prevent refuse from being dumped on or in the vicinity of the mine area.</li> <li>• Biodegradable refuse to be handled as indicated above.</li> </ul>
Management of access roads	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Divert storm water around access roads to prevent erosion.</li> <li>• Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas.</li> </ul>
Topsoil handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be	<ul style="list-style-type: none"> <li>• Remove the first 300mm of topsoil in strips and store at stockpile area.</li> </ul>

Management objectives	Role	Management outcomes
	monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Keep the temporary topsoil stockpiles free of weeds.</li> <li>• Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water.</li> <li>• Topsoil heaps should not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.</li> <li>• Seed the stockpiled topsoil heaps if vegetation does not re-establish within 6 months of stockpiling.</li> <li>• Divert storm- and runoff water around the stockpile area and access roads to prevent erosion.</li> </ul>
Fauna and flora	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Ensure no fauna is caught, killed, harmed, sold or played with.</li> <li>• Instruct workers to report any animals that may be trapped in the working area. Ensure no snares are set or nests raided for eggs or young.</li> <li>• Do not remove plants/trees without ECO approval.</li> </ul>

### **3.17 Aspects for inclusion as conditions of authorisation**

Any aspects which must be made conditions of the Environmental Authorisation.

The management objectives listed in this report (4.4) should be considered for inclusion in the environmental authorisation.

### **3.18 Description of any assumptions, uncertainties, and gaps in knowledge**

Which relate to the assessment and mitigation measures proposed.

The assumptions made in this document, which relate to the assessment and mitigation measures proposed, stem from site-specific information gathered from the property owner, as well as site inspections and background information gathering.

### **3.19 Reasoned opinion as to whether the proposed activity should be authorised or not.**

If the proposed project is not authorised, it will impact the socio-economic factor of **eMalahleni** it will also affect the power generation around the town and Mpumalanga as a whole.

### **3.20 Period for which the Environmental Authorisation is required.**

The applicant requests the Environmental Authorisation to be valid for a five-year period, because it is granted for two years with the addition of three years extension.

### **3.21 Undertaking**

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to the Basic Assessment Report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic Assessment Report and the Environmental Management Programme report. The undertaking has been provided at the end of the report.

### **3.22 Financial provision**

State the amount required to manage and rehabilitate the environment.

**CALCULATION OF THE QUANTUM**

Applicant: **SIPHOSIZWE CONSTRUCTION CC**  
 Evaluator: **THILIVHALI**

Ref No.: **MP**  
**30/5/11/13/13338**  
**MP**  
 Date: **23-MAR-21**

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	19	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	271	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	400	1	1	0
3	Rehabilitation of access roads	m2	100	49	1	1	4900
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	471	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	257	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	542	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	284292	1	1	0
7	Sealing of shafts adits and inclines	m3	0	148	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,32	189528	1	1	60648,96
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	238054	1	1	0
8 ( C )	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	685612	1	1	0
9	Rehabilitation of subsided areas	ha	0	158701	1	1	0
10	General surface rehabilitation	ha	5	150138	1	1	750690
11	River diversions	ha	0	150138	1	1	0
12	Fencing	m	0	171	1	1	0
13	Water management	ha	0,08	57087	1	1	4566,96
14	2 to 3 years of maintenance and aftercare	ha	5	19980	1	1	99900
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
<b>Sub Total 1</b>							<b>920705,92</b>

1	Preliminary and General	110484,7104	weighting factor 2	110484,7104
2	Contingencies		1	92070,592
<b>Subtotal 2</b>				<b>1123261,22</b>
<b>VAT (15%)</b>				<b>168489,18</b>
<b>Grand Total</b>				<b>1291750</b>

Sign Date: Thilivhali Ndou 23/03/2023

**Table 16: Financial provision**

**3.22.1 Explain how the aforesaid amount was derived.**

The financial provision amount was derived from the financial calculator/ quantum. The annual amount required to manage and rehabilitate the environment was estimated to be **R1, 291 750**

**3.22.2 Confirm that this amount can be provided from operating expenditure.**

Confirm that the amount is anticipated to be an operating cost and is provided for as such in the Mining Work Programme, Financial and Technical Competence Report or PWP.

The mining operation will be self-funded through income generated by sales of the coal mined. Bridging finance, will be supplied where needed by potential investors.

**3.23 Specific information required by the Competent Authority**

Compliance with the provisions of sections 24(4) (a) and (b) read with section 24 (3)(a) and (7) of the NEMA (107 of 1998). The BASIC ASSESSMENT report must include the:

No specific information was required.

### **3.23.1 Impact on the socio-economic conditions of any directly affected person.**

Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix.

The proposed coal mine will be established on a heavily modified area as a result of previous underground activities with minimal natural vegetation cover. Upon closure, the land will be rehabilitated to its original state.

The dust and noise impacts that may emanate from the mining area during the operational phase will have a negative impact on the surrounding community if the mitigation measures proposed in this document are not implemented and managed on-site. However, due to the distance of the community from the mining area (approximately 880m) these impacts are considered to be of medium-high significance.

The operation of the mine will have several positive impacts, such as job creation for skilled, semi-skilled and unskilled permanent workers. The proposed coal mine will therefore contribute locally by aiding in the development of the area and boosting the local economy through increased municipal revenue. On a national scale, this will aid by boosting the slowly growing SA economy.

### **3.23.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act**

Provide the results of investigation, assessment and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of the Act, attach the investigation report as **Error! Reference source not found.** and confirm that the applicable mitigation is reflected herein.

Heritage resources are, according to the National Heritage Resources Act 25 of 1999, any place or object of cultural significance. In one familiar aspect, heritage resources refer to buildings, monuments, landscapes and artefacts. These resources are relatively permanent, though somewhat very tenuous, environmental features; if they are present, their integrity is highly susceptible to construction and ground disturbance activities like prospecting and mining activities.

With reference to the Map of Relative Archaeological and Cultural Heritage theme sensitivity below sourced from the screening report, the proposed project area has an Archaeological and Cultural Heritage combined sensitivity of low sensitivity. At the time the survey/ ground truthing was undertaken, there

were observations of grave sites, heritage study will be conducted and the South African Heritage Resources Authority (SAHRA) will be notified immediately. See screening outcomes below.

### MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

#### Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

Figure 48: Relative Archaeological and cultural heritage theme sensitivity



Figure 49: Graves observed at site.

### 3.24 Other matters required in terms of section 24(4)(a) and (b) of the Act

The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as an Appendix.

The infrastructure needed in support of the proposed mining project and also the activities included during this application, is so determined by the location of the Coal reserve and also the mining technique to be used.

## PART B

### ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

#### **4 Environmental management programme**

##### **4.1 Details of the EAP**

Confirm that the requirements for the provision of the details and expertise of the EAP are already included in Part A, section 1(a) herein as required).

Refer to section 1 of Part A

##### **4.2 Description of the aspects of the activity**

Confirm that the requirements to describe the aspects of the activity that are covered by the draft environmental management programme is already included in Part A, 2.2, herein, as required.

The aspects of the activity that are covered by the environmental management programme has been described and included in Part A, 2.2.

##### **4.3 Composite map**

Provide a map (attached as an Appendix) at an appropriate scale which superimposes the proposed activity, its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, such as buffers.

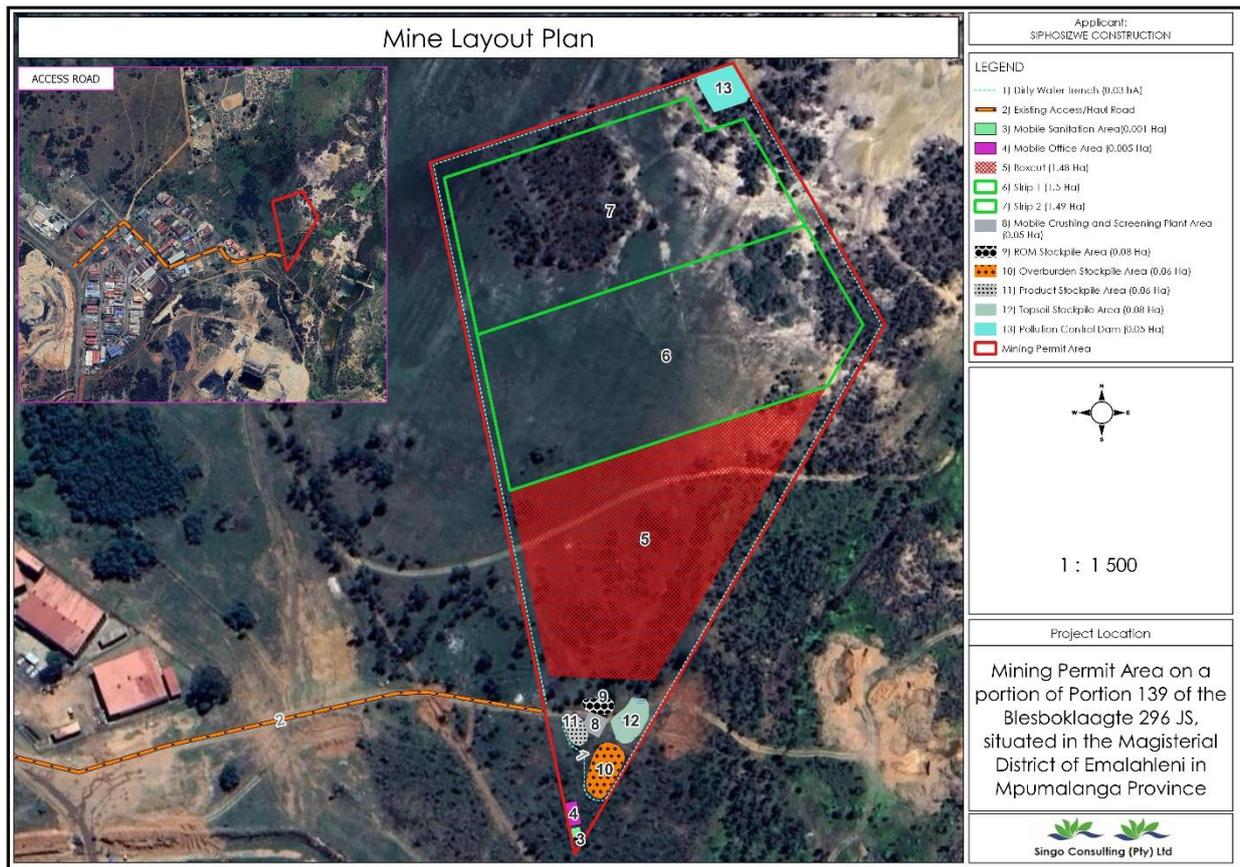


Figure 50: Infrastructure Plan

#### 4.4 Description of impact management objectives, including management statements

##### 4.4.1 Determination of closure objectives

Ensure that the closure objectives are informed by the type of environment described.

The closure objectives are aimed at re-instating the landform, land use and vegetation units to the same as before mining operations took place unless a specific, reasonable alternative land use is requested by the landowner. As such, the intended end use for the disturbed Mining Permit area and the closure objectives will be defined in consultation with the relevant landowner. Proof of such consultation will be submitted together with the Application for Closure Certificate. The overall aim of the rehabilitation plan is to rehabilitate the environment to a condition as close as possible to that which existed prior to mining. This shall be achieved with a number of specific objectives

1. Making the area safe, i.e. decommission mining activities to ensure that the environment is safe for people and animals. This entails refilling the excavations.
2. Recreating a free draining landform. This entails earthworks infilling, reshaping, levelling, etc. to recreate as close as possible the original topography and to ensure a free draining landscape.

3. Re-vegetation. This involves either reseeding or allowing natural succession depending on the area, climate etc.

4. Storm water management and erosion control. Management of stormwater and prevention of erosion during rehabilitation (e.g. cut off drains, berms etc. and erosion control where required)

#### **4.5 Volume and rate of water use required for the operation.**

Water will only be used for dust suppression purposes as the mining method does not require any washing or related process water. Water sprayers will be fixed to the crusher plant and a water truck will be used to spray access roads and stockpile areas to alleviate dust generation. It is estimated that the mining activities will require approximately 18000 L of water per day for dust suppression purposes.

#### **4.6 Has a water use licence has been applied for?**

No, a Water Use License (WUL) Application will be lodged to the Department of Water and Sanitation upon issuing of the Mining Permit by the Department of Mineral Resources and Energy.

#### 4.7 Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity.

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
<p>E.g. for prospecting – drill site, site camp, ablution, facilities, accommodation, equipment storage, sample storage, site office, access route, etc.</p> <p>E.g. for mining – excavations, blasting, stockpiles, discard dumps/dams, loading, hauling and transport.</p> <p>Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water</p>	<p>Of operation in which activity will take place.</p> <p>State: Planning and design, pre-construction, construction, operational, rehabilitation, closure, post-closure</p>	<p>Volumes, tonnages and hectares or m<sup>2</sup></p>	<p>Describe how recommendations herein will remedy the cause of pollution or degradation</p>	<p>Description of how each recommendation herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to rehabilitation specifically this must take place at the earliest opportunity. With regard to rehabilitation, therefore state either: Upon cessation of the individual activity or, upon cessation of mining, bulk sampling or alluvial diamond prospecting as</p>

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
control, berms, roads, pipelines, power lines, conveyors, etc.					the case may be.
Stripping and stockpiling of topsoil	Site establishment/ construction phase	4.84ha	<p><b>Visual mitigation</b></p> <ul style="list-style-type: none"> <li>• The site must be neat and always kept in good condition.</li> <li>• Upon closure, the site must be rehabilitated and sloped to ensure that visual impact on the aesthetic value of the area is minimal.</li> </ul> <p><b>Dust handling</b></p> <ul style="list-style-type: none"> <li>• Dust liberation into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or other dust-allaying agents.</li> <li>• The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness.</li> <li>• Speed on the access roads must be</li> </ul>	<ul style="list-style-type: none"> <li>• Dust and Noise: NEMAQA, 2004</li> <li>• Regulation 6(1)</li> <li>• Weeds: CARA, 1983</li> <li>• Storm Water: NWA, 1998</li> <li>• Waste: NEM:WA, 2008</li> </ul>	Throughout the site establishment phase.

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>limited to 40km/h to prevent excess dust generation.</p> <ul style="list-style-type: none"> <li>• Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCBs (e.g. DAS products) if dust is generated above acceptable limits.</li> </ul> <p><b>Noise handling</b></p> <ul style="list-style-type: none"> <li>• The applicant must ensure that staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.</li> <li>• No loud music permitted at the mining area.</li> <li>• All mining vehicles must be equipped with silencers and kept roadworthy in terms of the Road Transport Act.</li> </ul> <p><b>Weed and invader plant management</b></p> <ul style="list-style-type: none"> <li>• A weed and invader plant control</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of CORA (Act No 43 1983).</p> <ul style="list-style-type: none"> <li>• Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> <li>○ The plants can be uprooted, felled or cut off and can be destroyed completely.</li> <li>○ The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide.</li> <li>○ The temporary topsoil stockpiles must be kept free of</li> </ul> </li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>weeds.</p> <p><b>Storm water handling</b></p> <ul style="list-style-type: none"> <li>• Storm water must be diverted around the topsoil heaps, stockpile areas and access roads to prevent erosion and material loss.</li> <li>• Runoff water must be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.</li> </ul> <p><b>Waste management</b></p> <ul style="list-style-type: none"> <li>• No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies.</li> <li>• Regular vehicle maintenance may only take place in the service bay area of the off-site workshop. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present.</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>All waste products must be disposed of in a 200 l closed container/bin to be removed from the emergency service area to the workshop to ensure proper disposal.</p> <ul style="list-style-type: none"> <li>• Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, for resale or appropriate disposal at a recognized facility.</li> <li>• Spills must be cleaned immediately to the satisfaction of the Regional Manager by removing the spillage and the polluted soil and disposing it at a recognized facility. Proof must be filed.</li> <li>• Suitable covered receptacles must be always available and conveniently placed for waste disposal.</li> <li>• Non-biodegradable refuse, such as</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area.</p> <ul style="list-style-type: none"> <li>• Biodegradable refuse generated must be handled as indicated above.</li> </ul>		
Blasting	Operational phase	3.9ha	<p><b>Management of Health and Safety Risks</b></p> <ul style="list-style-type: none"> <li>• The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity,</li> <li>• The surrounding landowners and communities must be informed in</li> </ul>	<p><b>Health and safety</b></p> <ul style="list-style-type: none"> <li>• MHSA, 1996</li> <li>• OHSA, 1993</li> <li>• OHSAS 18001</li> </ul> <p><b>Dust and noise</b></p> <p>NEMAQA, 2004 Regulation 6(1)</p>	Applicable with each blasting event.

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>writing ahead of any blasting event.</p> <ul style="list-style-type: none"> <li>• Measures to limit fly rock must be taken.</li> <li>• Audible warning of a pending blast must be given at least 3 minutes before the blast.</li> <li>• All fly rock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed,</li> <li>• Workers must have access to the correct PPE as required by law.</li> <li>• All operations must comply with the OHSA.</li> </ul> <p><b>Dust handling</b></p> <ul style="list-style-type: none"> <li>• Dust liberation into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or other dust-allaying agents.</li> <li>• Speed on the access roads must be</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>limited to 40km/h to prevent the generation of excess dust.</p> <p><b>Noise handling</b></p> <ul style="list-style-type: none"> <li>• The applicant must ensure that staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.</li> <li>• No loud music permitted at the mining area.</li> <li>• All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</li> <li>• The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding landowners must be notified in</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			writing prior to blasting.		
Excavation	Operational phase	4.47 ha	<p><b>Visual mitigation</b></p> <ul style="list-style-type: none"> <li>• The site needs to have a neat appearance and be always kept in good condition.</li> <li>• Upon closure the site needs to be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.</li> </ul> <p><b>Dust handling</b></p> <ul style="list-style-type: none"> <li>• Dust liberation into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or other dust-allaying agents.</li> <li>• The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness.</li> <li>• Speed on the access roads must be</li> </ul>	<p><b>Dust and noise</b> NEM:AQA, 2004 Regulation 6(1)</p> <p><b>Health and safety</b> MHSA, 1996 OHSA, 1993 OHSAS 18001</p> <p><b>Fauna and flora</b> NEM:BA, 2004</p> <p><b>Waste</b> NEMWA, 2008</p> <p><b>Weeds</b> CARA, 1983</p>	Throughout the operational phase

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>limited to 40km/h to prevent the generation of excess dust.</p> <ul style="list-style-type: none"> <li>• Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCBs (e.g. DAS products) if dust is generated above acceptable limits.</li> </ul> <p><b>Noise handling</b></p> <ul style="list-style-type: none"> <li>• The applicant must ensure that staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.</li> <li>• No loud music permitted at the mining area.</li> <li>• All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</li> </ul> <p><b>Management of health and safety</b></p>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p><b>risks</b></p> <ul style="list-style-type: none"> <li>• Workers must have access to the correct PPE as required by law.</li> <li>• All operations must comply with the OHSA.</li> </ul> <p><b>Protection of fauna and flora</b></p> <ul style="list-style-type: none"> <li>• The site manager should ensure that no fauna is caught, killed, harmed, sold or played with.</li> <li>• Workers should be instructed to report any animals that may be trapped in the working area.</li> <li>• No snares may be set, or nests raided for eggs or young.</li> <li>• No plants or trees may be removed without the approval of the ECO.</li> </ul> <p><b>Waste management</b></p> <ul style="list-style-type: none"> <li>• No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies.</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<ul style="list-style-type: none"> <li>• Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 L closed container/bin to be removed from the emergency service area to the workshop to ensure proper disposal.</li> <li>• Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from site, for resale/ appropriate disposal at a recognized facility.</li> <li>• Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage and polluted soil and</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>disposing it at a recognized facility. Proof must be filed.</p> <ul style="list-style-type: none"> <li>• Suitable covered receptacles must be always available and conveniently placed for waste disposal.</li> <li>• Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognized landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.</li> <li>• Biodegradable refuse generated must be handled as indicated above.</li> </ul> <p><b>Management of weed/invader plants</b></p> <ul style="list-style-type: none"> <li>• A weed and invader plant control management plan must be</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>implemented at the site to ensure eradication of all listed invader plants in terms of CORA (Act No 43 1983).</p> <ul style="list-style-type: none"> <li>• Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> <li>○ The plants can be uprooted, felled or cut off and can be destroyed completely.</li> <li>○ The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide.</li> <li>○ The temporary topsoil stockpiles need to be kept free of weeds.</li> </ul> </li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
Crushing	Operational phase	0.05 ha	<p><b>Dust handling</b></p> <ul style="list-style-type: none"> <li>• Dust liberation into the surrounding environment must be effectively controlled by using, inter alia, water spraying and/or other dust-allaying agents.</li> <li>• The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness.</li> <li>• Speed on the access roads must be limited to 40km/h to prevent excess dust generation.</li> <li>• The crusher plant must have operational water sprayers to alleviate dust generation from conveyor belts.</li> </ul> <p>Noise handling</p> <ul style="list-style-type: none"> <li>• The applicant must ensure that staff conduct themselves in an acceptable manner while on site,</li> </ul>	<p><b>Dust and noise</b> NEMAQA 2004</p> <p><b>Waste</b> NEMWA 2008</p>	Throughout the operational phase

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>during work hours and after hours.</p> <ul style="list-style-type: none"> <li>• No loud music permitted at the mining area.</li> <li>• All mining vehicles must be equipped with silencers and kept roadworthy in terms of the Road Transport Act.</li> </ul> <p>Waste management</p> <ul style="list-style-type: none"> <li>• No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies.</li> <li>• Regular vehicle maintenance may only take place in the service bay of the off-site workshop. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 l closed container/bin to be removed from the emergency</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>service area to the workshop for proper disposal.</p> <ul style="list-style-type: none"> <li>• Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from site, either for resale or appropriate disposal at a recognized facility.</li> <li>• Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing spillage and polluted soil and by disposing it at a recognized facility. Proof must be filed.</li> <li>• Suitable covered receptacles must be always available and conveniently placed for the disposal of waste.</li> <li>• Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., should be stored in a container with a closable lid at a</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>collecting point and collected on a regular basis and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area.</p> <ul style="list-style-type: none"> <li>• Biodegradable refuse generated must be handled as indicated above.</li> </ul>		
Stockpiling and transporting	Operational phase	0.36 ha	<p><b>Visual mitigation</b></p> <ul style="list-style-type: none"> <li>• The site must be neat and be always kept in good condition.</li> <li>• Upon closure, the site must be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is minimal.</li> </ul> <p><b>Storm water handling</b></p> <ul style="list-style-type: none"> <li>• Storm water must be diverted around the stockpile areas and access roads to prevent erosion and</li> </ul>	<p><b>Storm water</b> NWA, 1998</p> <p><b>Weeds</b> CARA, 1983</p> <p><b>Dust and noise</b> NEMAQA, 2004 Regulation 6(1)</p> <p><b>Waste</b> NEMWA, 2008</p>	Throughout operational phase

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>material loss.</p> <ul style="list-style-type: none"> <li>• Runoff water must be diverted around the stockpile areas with trenches and contour structures to prevent erosion of work areas.</li> <li>• Mining must be conducted in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the DWS, and any other conditions that the DWS may impose:</li> <li>• Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. Prevent clean water from running or spilling into dirty water systems.</li> <li>• Dirty water must be collected and</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>contained in a system separate from the clean water system.</p> <ul style="list-style-type: none"> <li>• Dirty water must be prevented from spilling/seeping into clean water systems.</li> <li>• The storm water management plan must apply for the entire life cycle of the mine and over different hydrological cycles (rainfall patterns).</li> <li>• The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.</li> </ul> <p><b>Management of weed/invader plants</b></p> <ul style="list-style-type: none"> <li>• A weed and invader plant control management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of CORA (Act No 43</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>1983).</p> <ul style="list-style-type: none"> <li>• Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> <li>○ The plants can be uprooted, felled, or cut off and can be destroyed completely.</li> <li>○ The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide.</li> </ul> </li> <li>• The temporary stockpile area must be kept free of weeds.</li> </ul> <p><b>Dust handling</b></p> <ul style="list-style-type: none"> <li>• Dust liberation into the surrounding environment must be effectively controlled by the use of, inter alia,</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>water spraying and/or other dust-allaying agents.</p> <ul style="list-style-type: none"> <li>• The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness.</li> <li>• Speed on the access roads must be limited to 40km/h to prevent excess dust generation.</li> <li>• Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCBs (e.g. DAS products) if dust is generated above acceptable limits.</li> </ul> <p>Management of access roads</p> <ul style="list-style-type: none"> <li>• Storm water should be diverted around the access roads to prevent erosion.</li> <li>• Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>through undisturbed areas.</p> <ul style="list-style-type: none"> <li>• Rutting and erosion of the access road caused as a result of the mining activities must be repaired by the applicant.</li> </ul> <p><b>Noise handling</b></p> <ul style="list-style-type: none"> <li>• The applicant must ensure that staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.</li> <li>• No loud music permitted at the mining area.</li> <li>• All mining vehicles must be equipped with silencers and kept roadworthy in terms of the Road Transport Act.</li> </ul> <p><b>Waste management</b></p> <ul style="list-style-type: none"> <li>• No processing area or waste pile may be established within 100 m of the edge of any river channel or</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>other water bodies.</p> <ul style="list-style-type: none"> <li>• Regular vehicle maintenance may only take place in the service bay area of the off-site workshop. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 l closed container/bin to be removed from the emergency service area to the workshop for proper disposal.</li> <li>• Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from site, for resale or appropriate disposal at a recognized facility.</li> <li>• Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>the spillage and polluted soil and disposing of it at a recognized facility. Proof must be filed.</p> <ul style="list-style-type: none"> <li>• Suitable covered receptacles must be always available and conveniently placed for waste disposal.</li> <li>• Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognized landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.</li> <li>• Biodegradable refuse generated must be handled as indicated above.</li> </ul>		
Sloping and landscaping during rehabilitation	Decommissioning phase	5 ha	<p><b>Storm water handling</b></p> <ul style="list-style-type: none"> <li>• Storm water must be diverted</li> </ul>	<p><b>Storm water</b> NWA, 1998</p>	Upon cessation of mining

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>around the rehabilitated area to prevent erosion and loss of reinstated material.</p> <p><b>Management of health and safety risks</b></p> <ul style="list-style-type: none"> <li>• Excavations must be rehabilitated as stipulated in the closure plan to ensure the site is safe upon closure.</li> <li>• Workers must have access to the correct PPE as required by law.</li> <li>• All operations must comply with the OHSA.</li> </ul> <p><b>Dust handling</b></p> <ul style="list-style-type: none"> <li>• Dust liberation into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or other dust-allaying agents.</li> <li>• The site manager must ensure continuous assessment of all dust suppression equipment to confirm</li> </ul>	<p><b>Health and safety</b></p> <p>MHSA, 1996</p> <p>OHSA, 1993</p> <p>OHSAS 18001</p> <p><b>Dust and noise</b></p> <p>NEMAQA 2004, Regulation 6(1)</p> <p><b>Waste</b></p> <p>NEMWA 2008</p>	

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>its effectiveness.</p> <ul style="list-style-type: none"> <li>• Speed on the access roads must be limited to 40km/h to prevent excess dust generation.</li> <li>• Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCBs (e.g. DAS products) if dust is generated above acceptable limits.</li> </ul> <p><b>Noise handling</b></p> <ul style="list-style-type: none"> <li>• The applicant must ensure that staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.</li> <li>• No loud music permitted at the mining area.</li> <li>• All mining vehicles must be equipped with silencers and kept roadworthy in terms of the Road Transport Act.</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p><b>Waste management</b></p> <ul style="list-style-type: none"> <li>• Waste material of any description, including receptacles, scrap, rubble and tires, will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried/burned on site.</li> <li>• Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from site, for resale/ appropriate disposal at a recognized facility.</li> <li>• Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and disposing of it at a recognized facility. Proof should be filed.</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<ul style="list-style-type: none"> <li>• Suitable covered receptacles must be always available and conveniently placed for waste disposal.</li> <li>• Non-biodegradable refuse, like glass bottles, plastic bags, metal scrap, etc., should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognized landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.</li> <li>• Biodegradable refuse generated must be handled as indicated above.</li> </ul>		
Replacing of topsoil and rehabilitation of disturbed area	Decommissioning phase	5 ha	<p><b>Rehabilitation of excavated area</b></p> <ul style="list-style-type: none"> <li>• Rocks and coarse material removed from the excavation must be dumped into the excavation.</li> <li>• No waste will be permitted to be</li> </ul>	<p><b>Rehabilitation</b> MPRDA, 2008</p> <p><b>Health and safety</b> MHSA, 1996</p>	Upon cessation of mining

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>deposited in the excavations.</p> <ul style="list-style-type: none"> <li>• Once overburden, rocks and coarse natural materials have been added to the excavation and were profiled with acceptable contours and erosion control measures, the topsoil previously stored will be returned to its original depth over the area.</li> <li>• The area will be fertilized if necessary to allow vegetation to establish rapidly. The site will be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from site closure.</li> <li>• If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the</li> </ul>	<p>OHSA, 1993 OHSAS 18001</p> <p><b>Dust and noise</b> NEMAQA, 2004 Regulation 6(1)</p> <p><b>Weeds</b> CARA, 1983</p> <p><b>Waste</b> NEMWA, 2008</p>	

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area seeded with a vegetation seed mix to his or her specification.</p> <p><b>Rehabilitation of plant area</b></p> <ul style="list-style-type: none"> <li>• The compacted areas will be ripped, and the topsoil returned over the area.</li> <li>• Coarse natural material used for the construction of ramps will be removed and dumped into the excavations.</li> <li>• Stockpiles will be removed during the decommissioning phase, the area ripped, and topsoil returned to original depth to provide a growth medium.</li> <li>• On completion of operations, all</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>structures or objects will be dealt with in accordance with Section 44 of the MPRDA 2002 (Act 28 of 2002):</p> <ul style="list-style-type: none"> <li>○ Where sites have been rendered devoid of vegetation/grass or soils have been compacted by traffic, the surface will be scarified or ripped.</li> <li>○ The site will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora if natural vegetation does not re-establish within 6 months of site closure.</li> <li>○ Photographs of the mining area and office sites, before and during the mining operation and after rehabilitation, will be taken at selected fixed points</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>and kept on record for the information of the Regional Manager.</p> <ul style="list-style-type: none"> <li>○ On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, will be scarified to a depth of at least 300 mm and graded to an even surface condition. The previously stored topsoil will be returned to its original depth over the area.</li> <li>○ Prior to replacing the topsoil, the overburden material that was removed from these areas will be replaced in the same order as it originally occurred.</li> <li>○ The area will then be fertilized if necessary to allow vegetation</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>to establish rapidly. The site will be seeded with a local, adapted indigenous seed mix if natural vegetation does not re-establish within 6 months after site closure.</p> <ul style="list-style-type: none"> <li>○ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to their specification.</li> </ul> <p><b>Final rehabilitation</b></p> <ul style="list-style-type: none"> <li>● Rehabilitation of the surface area will entail landscaping, levelling, top dressing, land preparation, seeding</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>(if required) and maintenance, and weed/alien clearing.</p> <ul style="list-style-type: none"> <li>• All infrastructure, equipment, plant, temporary housing, and other items used during the mining period will be removed from the site (section 44 of the MPRDA).</li> <li>• Waste material of any description, including receptacles, scrap, rubble and tires, will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried/burned on site.</li> <li>• Weed/alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1 weeds according to CORA, 1983 – Act 43; Regulations 15 &amp; 16 (as amended in March 2001) must be eradicated</li> </ul>		

Activities	Phase	Size and scale of disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			<p>from the site.</p> <ul style="list-style-type: none"> <li>• Final rehabilitation will be completed within a period specified by the Regional Manager.</li> </ul>		

#### 4.8 Impact management outcomes

A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph.

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
Whether listed or not. E.g. excavations, blasting, stockpiles, discard dumps/ dams, loading, hauling, transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.	E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc.		In which impact is anticipated. E.g. construction, commissioning, operational decommissioning, closure and post-closure.	Modify, remedy, control or stop through, e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity, etc.	Impact avoided, noise levels, dust levels, rehabilitation standards, end-use objectives, etc.
<b>Topsoil stripping and stockpiling</b>	Visual intrusion associated with the establishment of the	The visual impact may affect the residents of the	<b>Site establishment/ construction phase</b>	Control: Implementation of proper	<ul style="list-style-type: none"> <li>• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	mining area.	immediate area.		housekeeping	
	Dust nuisance caused by soil disturbance.	Dust will be contained within property boundaries and therefore affect only the landowner.		Control: Dust suppression	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – particulates &gt;1/10<sup>th</sup> of the occupational exposure limit. NEMAQA 2004, Regulation 6(1)</li> </ul>
	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within property boundaries but might have a periodic impact on the closest residents of the Witbank community.		Control: Noise control measures	<ul style="list-style-type: none"> <li>• Noise levels on the site must be managed and needs to comply with the standards stipulated in NEMAQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i></li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
	Infestation of the topsoil heaps by	Biodiversity		Control and remedy:	<ul style="list-style-type: none"> <li>• The impact must be avoided through the eradication of Category 1 weeds/</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	weeds and invader plants			Implementation of weed control	invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
	Loss of topsoil due to incorrect storm water management.	Loss of topsoil will affect the rehabilitation of the mining area.		Control: Storm water management	<ul style="list-style-type: none"> <li>• The impact must be avoided through the implementation of storm water management.</li> </ul>
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed		Control and remedy: Implementation of waste management	<ul style="list-style-type: none"> <li>• The impact must be avoided through the implementation of the mitigation measures stipulated in this document.</li> <li>• Should spillage occur, the area needs to be cleaned in accordance with the standards of the NEMWA, 2008.</li> </ul>
<b>Blasting</b>	Health and safety risk posed by blasting activities	Impact might affect the employees working on site.	<b>Operational phase</b>	Control: Health and safety monitoring management	<ul style="list-style-type: none"> <li>• Impact must be avoided through compliance with the MHSa, 1996, OHSA, 1993 and OHSAS 18001</li> <li>• Fallout dust levels must comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	Dust nuisance caused by blasting activities	Dependent on the blast, the impact might affect the surrounding community. Blasting will only occur twice a year.		Control: Dust suppression	Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines particulates >1/10 <sup>th</sup> of the occupational exposure limit. NEMAQA, 2004 Regulation 6(1)
	Noise nuisance caused by blasting activities	Dependent on the blast, the impact might affect the surrounding community. Blasting will only occur twice a year.		Control: Noise control measure	<ul style="list-style-type: none"> <li>Noise levels on the site has to be managed and need to comply with the standards stipulated in NEMAQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008</li> <li>Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
<b>Excavation</b>	Visual intrusion associated with the excavation activities	The visual impact may affect the residents of the immediate area.	<b>Operational phase</b>	Control: Implementation of proper housekeeping	<ul style="list-style-type: none"> <li>Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.</li> </ul>
	Dust nuisance due to excavation activities.	Dust will be contained within the property		Control: Dust suppression	<ul style="list-style-type: none"> <li>Fallout dust levels must comply with the acceptable dust fall rate published for non-residential areas, as per National</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
		boundaries and will therefore affect only the landowner.			Dust Control <ul style="list-style-type: none"> <li>• Regulations 2013 – <math>600 &lt; \text{Dust Fall} &lt; 1200 \text{ mg/m}^2/\text{day}</math>.</li> <li>• Gravimetric dust levels must comply with the standard published in the NIOSH guidelines –Particulates <math>&gt;1/10^{\text{th}}</math> of the occupational exposure limit.</li> <li>• NEMAQA, 2004 Regulation 6(1).</li> </ul>
	Noise nuisance generated by excavation equipment	The noise impact must be contained within the boundaries of the property but might have a periodic impact on the closest residents of the Witbank community.		Control: Noise control measures	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEMAQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008.</li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
	Unsafe working conditions for employees.	Impact might affect employees		Control: Health and safety monitoring and management	<ul style="list-style-type: none"> <li>• Impact must be avoided through compliance with the MHSA, 1996, OHSA, 1993 and OHSAS 18001</li> </ul>
<b>Excavation</b>	Negative impact on	Biodiversity	<b>Operational phase</b>	Control: Protection	<ul style="list-style-type: none"> <li>• The impact must be avoided through</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	the fauna and flora of the area.			of fauna and flora through operational phase	implementation of the mitigation measures stipulated in this document. • NEMBA, 2004.
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		Control: Implementation of waste management	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEMWA, 2008.</li> </ul>
	Weed and invader plant infestation of the area.	Biodiversity		Control: Implementation of weed control	<ul style="list-style-type: none"> <li>• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.</li> </ul>
<b>Crushing</b>	Dust nuisance due to the crushing activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	<b>Operational phase</b>	Control: Dust suppression	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>• Gravimetric dust levels have to comply with the standard published in the</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
					<p>NIOSH guidelines – Particulates &gt;1/10<sup>th</sup> of the occupational exposure limit.</p> <ul style="list-style-type: none"> <li>• NEMAQA, 2004 Regulation 6(1).</li> </ul>
	Noise nuisance generated by the crushing activities	The noise impact should be contained within the boundaries of the property but might have a periodic impact on the closest residents of the Witbank community.		Control: Noise control measures	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEMAQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i>.</li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		Control: Implementation of waste management	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEMWA, 2008.</li> </ul>
	Loss of material due to ineffective storm water handling.	Impact will affect income of applicant.		Control: Storm water control measures	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation of storm water management.</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	Weed and invader plant infestation of the area due to the disturbance of the soil	Biodiversity		Control and remedy: Implementation of weed control	<ul style="list-style-type: none"> <li>The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.</li> </ul>
<b>Stockpiling and transporting</b>	Dust nuisance from stockpiled material and vehicles transporting the material.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	<b>Operational phase</b>	Control: Dust suppression	<ul style="list-style-type: none"> <li>Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates &gt;1/10<sup>th</sup> of the occupational exposure limit.</li> <li>NEMAQA, 2004 Regulation 6(1).</li> </ul>
	Degradation of access roads.	All road users will be affected.		Control and remedy: Road management	<ul style="list-style-type: none"> <li>The impact should be avoided through the implementation of the mitigation measures proposed in this document.</li> </ul>
	Noise nuisance caused by vehicles.	The noise impact should be contained within the		Control: Noise management monitoring and	<ul style="list-style-type: none"> <li>Noise levels on the site has to be managed and need to comply with the standards stipulated in NEMAQA, 2004</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
		boundaries of the property but might have a periodic impact on the closest residents of the Witbank community.		management	Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i> . <ul style="list-style-type: none"> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
<b>Sloping and landscaping during rehabilitation</b>	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water contamination if not addressed.	<b>Decommissioning phase</b>	Control: Implementation of waste management	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.</li> </ul>
	Soil erosion	Biodiversity		Control: Soil management	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• CARA, 1993</li> </ul>
	Health and safety risk posed by un-sloped areas	Impact will affect employees and residents of the property		Control: Health and safety monitoring and management.	<ul style="list-style-type: none"> <li>• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	Dust nuisance caused during sloping and landscaping activities.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		Control: Dust suppression	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates &gt;1/10 of the occupational exposure limit. NEM:AQA, 2004 Regulation 6(1).</li> </ul>
	Noise nuisance caused by machinery.	The noise impact should be contained within the boundaries of the property but might have a periodic impact on the closest residents of the Witbank community.		Control: Noise monitoring	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i>.</li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
	Contamination of area with hydrocarbons or	Contamination may cause surface or		Control: Waste management	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	hazardous waste materials.	ground water contamination if not addressed.			<p>measures stipulated in this document.</p> <ul style="list-style-type: none"> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.</li> </ul>
<b>Replacing of topsoil and rehabilitation of disturbed area</b>	Loss of reinstated topsoil due to the absence of vegetation	Biodiversity and soil management	<b>Decommissioning phase</b>	Control: Soil management	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• CARA, 1993</li> </ul>
	Infestation of the area by weed and invader plants.	Biodiversity and soil management		Control and remedy: Implementation of weed control	<ul style="list-style-type: none"> <li>• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.</li> </ul>

#### 4.9 Impact management actions

A description of impact management actions, identifying the manner in which the impact management objectives and outcomes in paragraph (c) and (d) will be achieved.

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
Whether listed or not, e.g. excavations, blasting, stockpiles, discard dumps/dams, loading, hauling, transport, water supply dams, boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.	E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc.	Modify, remedy, control or stop through, e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity, etc. E.g. Modify through alternative method, control through noise control, control through management and monitoring, and remedy through rehabilitation.	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation therefore state either – Upon cessation of the individual activity or upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
Topsoil stripping and stockpiling	Visual intrusion associated with the establishment of the mining area.	Control: Implementation of proper housekeeping	To be implemented daily throughout the site establishment / construction phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	Impact on the surrounding environment must be mitigated until rehabilitation standards can be implemented in terms of the MRDA.
	Dust nuisance caused by the disturbance of soil.	Control: Dust suppression	To be implemented daily throughout the site establishment / construction phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates &gt;1/10<sup>th</sup> of the occupational exposure limit NEMAQA, 2004 Regulation 6(1)</li> </ul>
	Noise nuisance caused by machinery stripping	Control: Noise control measures	To be implemented daily throughout the site	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
	and stockpiling the topsoil.		establishment / construction phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i> . <ul style="list-style-type: none"> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
	Infestation of the topsoil heaps by weeds and invader plants	Control and remedy: Implementation of weed control	To be implemented when necessary, throughout the site establishment / construction phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.</li> </ul>
	Loss of topsoil due to incorrect storm water management.	Control: Storm water management	To be implemented daily throughout the site establishment / construction phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation of storm water management.</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
			site management. <ul style="list-style-type: none"> <li>• Quarterly compliance monitoring of site by an Environmental Control officer</li> </ul>	
	Contamination of area with hydrocarbons or hazardous waste materials	Control and remedy: Implementation of waste management	To be implemented daily throughout the site establishment / construction phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation of the mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.</li> </ul>
<b>Blasting</b>	Health and safety risk posed by blasting activities	Control: Health and safety monitoring and management	To be implemented when necessary throughout the operational phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSWA, 1993 and OHSAS 18001</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
	Dust nuisance caused by blasting activities	Control: Dust suppression	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – <math>600 &lt; \text{Dust Fall} &lt; 1\,200 \text{ mg/m}^2/\text{day}</math>.</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates <math>&gt;1/10^{\text{th}}</math> of the occupational exposure limit.</li> <li>• NEMAQA, 2004 Regulation 6(1)</li> </ul>
	Noise nuisance caused by blasting activities	Control: Noise control measures	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008.</li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
Excavation	Visual intrusion associated with the excavation activities	Control: Implementation of proper housekeeping	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.</li> </ul>
	Dust nuisance due to excavation activities.	Control: Dust suppression	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates &gt;1/10<sup>th</sup> of the occupational exposure limit.</li> <li>• NEM:AQA, 2004 Regulation 6(1).</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
	Noise nuisance generated by excavation equipment.	Control: Noise control measures	To be implemented daily throughout the operational phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i>.</li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>
	Unsafe working conditions for employees.	Control: Health and safety monitoring and management	To be daily throughout the operational phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001</li> </ul>
	Negative impact on the fauna and flora of the area.	Control: Protection of fauna and flora through operational phase	To be daily throughout the operational phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation of the mitigation measures stipulated in this document.</li> <li>• NEM:BA, 2004.</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
			<ul style="list-style-type: none"> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	
	Contamination of area with hydrocarbons or hazardous waste materials.	Control: Implementation of waste management	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.</li> </ul>
	Weed and invader plant infestation of the area.	Control: implementation of weed control	<p>To be implemented when necessary throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
Crushing	Dust nuisance due to the crushing activities	Control: Dust suppression	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates &gt;1/10<sup>th</sup> of the occupational exposure limit.</li> <li>• NEM:AQA, 2004 Regulation 6(1).</li> </ul>
	Noise nuisance generated by the crushing activities.	Control: Noise control measures	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i>.</li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
	Contamination of area with hydrocarbons or hazardous waste materials.	Control: Implementation of waste management	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.</li> </ul>
<b>Stockpiling and transporting</b>	Visual intrusion associated with the stockpiled material and vehicles transporting the material.	Control: Implementation of proper housekeeping	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.</li> </ul>
	Loss of material due to ineffective storm water handling.	Control: Storm water control measures	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation of storm water management</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
			<ul style="list-style-type: none"> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	
	Weed and invader plant infestation of the area due to the disturbance of the soil	Control and remedy: Implementation of weed control	<p>To be implemented when necessary throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.</li> </ul>
	Dust nuisance from stockpiled material and vehicles transporting the material.	Control: Dust suppression	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates &gt;1/10<sup>th</sup> of the occupational exposure limit.</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
	Degradation of access roads	Control and remedy: Road management	<p>To be implemented when necessary throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• NEM:AQA, 2004 Regulation 6(1).</li> <li>• The impact should be avoided through the implementation of the mitigation measures proposed in this document.</li> </ul>
	Noise nuisance caused by vehicles.	Control: Noise management monitoring and management	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i>.</li> <li>• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
	Contamination of area with hydrocarbons or hazardous waste materials.	Control: Implementation of waste management	<p>To be implemented daily throughout the operational phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEMWA, 2008.</li> </ul>
<b>Sloping and landscaping during rehabilitation</b>	Soil erosion	Control: Soil management	<p>To be implemented throughout the rehabilitation / closure phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• CARA, 1993</li> </ul>
	Health and safety risk posed by un-sloped areas	Control: Health and safety monitoring and management.	<p>To be implemented throughout the rehabilitation / closure phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
			<ul style="list-style-type: none"> <li>• Compliance monitoring of site by an Environmental Control Officer.</li> </ul>	
	Dust nuisance caused during sloping and landscaping activities.	Control: Dust suppression	<p>To be implemented throughout the rehabilitation / closure phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 &lt; Dust Fall &lt; 1 200 mg/m<sup>2</sup>/day.</li> <li>• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates &gt;1/10<sup>th</sup> of the occupational exposure limit.</li> <li>• NEM:AQA, 2004 Regulation 6(1).</li> </ul>
	Noise nuisance caused by machinery.	Control: Noise monitoring	<p>To be implemented throughout the rehabilitation / closure phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Compliance monitoring of site by an Environmental Control</li> </ul>	<ul style="list-style-type: none"> <li>• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the <i>noise standards of SANS 10103:2008</i>.</li> <li>• Employees working in areas with</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
			Officer.	noise levels of more than 82dBA need to be issue with hearing protection.
	Contamination of area with hydrocarbons or hazardous waste materials.	Controls: Waste management	To be implemented throughout the rehabilitation / closure phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact must be avoided through implementation of mitigation measures stipulated in this document.</li> <li>• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEMWA, 2008.</li> </ul>
<b>Replacing of topsoil and rehabilitation of disturbed area</b>	Loss of reinstated topsoil due to the absence of vegetation	Control: Soil management	To be implemented throughout the rehabilitation / closure phase: <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the implementation the mitigation measures stipulated in this document.</li> <li>• CARA, 1993</li> </ul>

Activity	Potential impact	Mitigation type	Time period for implementation	Compliance with standards
	<p>Infestation of the area by weed and invader plants.</p>	<p>Control and remedy: Implementation of weed control</p>	<p>To be implemented throughout the rehabilitation / closure phase:</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Compliance monitoring of site by an Environmental Control Officer.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.</li> </ul>

## **5 Determination of the amount of financial provision**

### **5.1 Closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.**

The closure objectives and rehabilitation measures include the following:

- Facilities are either left for future users or sold for removal. Site are decontaminated, and therefore will be restored. This may be done on an individual basis in consultation with stakeholders. The site will be renovated to the maximum amount of the natural condition as it was before mine operation.
- Ensure that all areas are steady and there is no risk of erosion.
- Haul roads will be ripped and rehabilitated to required standard.
- Ensure that no soil compaction left on site.
- Prevent the alien plant invasion on site until the area is in a stable condition.
- Ensure that no contaminated material left on site.
- Ensure that the site is free draining and non-polluting.
- Ensure that no degradation in land capability remains.
- Ensure that vegetation re-establishment is successful.

### **5.2 Confirm specifically that the environmental objectives in relation to closure ha been consulted with landowner and I&Aps.**

This report, the Draft Basic Assessment Report, includes all the environmental objectives in relation to closure and is made available for perusal of I &AP's and stakeholders. Any other comments received during the commenting period will be added to the Final Basic Assessment Report to be submitted to DMRE for approval.

### **5.3 Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.**

#### **5.3.1 Integrated Rehabilitation and Closure Plan**

The main aim in developing this rehabilitation plan is to mitigate the impacts caused by the mining activities and to restore land back to a satisfactory standard. It is best practice to develop the rehabilitation plan as early as possible to ensure the optimal management of rehabilitation issues that may arise. It is important that the project's closure plan is defined and understood before starting the process and is complementary to the rehabilitation goals. Rehabilitation and closure objectives need to be tailored to the project and be aligned with the EMPR.

The overall rehabilitation objectives for this project are as follows:

Maintain and minimize impacts to the ecosystem within the study area.

- ❖ Re-establishment of the pre-developed land capability to allow for a suitable post-mining land use.
- ❖ Prevent soil, surface water and groundwater contamination.
- ❖ Comply with the relevant local and national regulatory requirements.
- ❖ Maintain and monitor the rehabilitated areas.

Successful rehabilitation must be sustainable, requires an understanding of the basic baseline environment and project management to ensure that the rehabilitation program is a success.

#### **5.3.1.1 Phase 1: Making Safe**

The Mining activity will result in an opencast. The purpose of rehabilitation will be to ensure the site becomes safe for humans and animals. The opencast will be filled with overburden. The overburden will be loaded, trucked, and placed into the proposed mine, and the topography in the area adjacent to the proposed mine shaped to ensure that a free draining topography results.

Once the proposed mine has been backfilled, 300mm thick topsoil or soft overburden in place of soil will be spread on rehabilitated areas. Once placed, the “growth medium” should then be fertilized, ripped and revegetated. A small topsoil stockpile should be left for remedial work.

The following actions are required to meet the objectives of this phase:

- ❖ Remove all the facilities and equipment from the site.
- ❖ Inert waste with a salvage value to individuals such as scrap metal, building materials, etc. will be removed and disposed of at a proper facility.
- ❖ The company contracted to supply fuel will be requested to remove all fuel storage and reticulation facilities.
- ❖ Those sections of haul road where a lot of Coal spillage has occurred, will be picked up and the waste material taken back to the discard dump.
- ❖ Remove or control residual hazardous materials. Identify any potential toxic overburden or exposed strata and manage them so as to prevent environmental damage.
- ❖ Access roads around the site should be ripped for all areas except those needed to access the facilities for inspection after closure. Roads that can and will be used by other users post closure should, however, be left provided this is agreed upon by all parties concerned. For the rehabilitation of roads, a cost has been allocated to rip the area, add 300 mm topsoil, and vegetate.
- ❖ Negotiations will take place with landowners to establish which sections of haul road they will

require. The extra portions not required will be left and the remainder ripped. This would normally mean that the edges or verges are ripped, and the center portion remains. They will be responsible for maintaining the roads after closure.

#### **5.3.1.2 Phase 2: Landform Design, Erosion Control and Revegetation**

Landform, erosion control and re-vegetation are important parts of the rehabilitation process. Landform and land use are closely interrelated, and the landform should be returned as closely as possible to the original landform. Community expectations, compatibility with local land use practices and regional infrastructure, or the need to replace natural ecosystems and faunal habitats all support returning the land as closely as possible to its original appearance and productive capacity.

This requires the following:

- ❖ Deep rip compacted surfaces to encourage infiltration, allow plant root growth and key the topsoil to the subsoil, unless subsurface conditions dictate otherwise.
- ❖ Reinststate natural drainage patterns disrupted by mining wherever possible.
- ❖ Characterize the topsoil and retain it for use in rehabilitation. It is preferable to reuse the topsoil immediately rather than storing it in stockpiles. Only discard if it is physically or chemically undesirable, or if it contains high levels of weed seeds or plant pathogens.
- ❖ If topsoil is unsuitable or absent, identify and test alternatives substrates, e.g. overburden that may a suitable substitute after addition of soil improving substances.
- ❖ Lime and superphosphate are applied to the surface.
- ❖ These ameliorants are then incorporated by deep ripping, which penetrated 100 mm through the soil into the underlying overburden material.
- ❖ Fertilizer is applied as part of seedbed preparation.
- ❖ Consider spreading the cleared vegetation on disturbed areas.
- ❖ Re-vegetate the area with plant species consistent with the post mining land use.
- ❖ The site is then mulched together with an indigenous grass seed mix. This is to stimulate the long term establishment of indigenous vegetation and to reduce erosion during early plant growth.

#### **5.3.1.3 Phase 3: Monitoring and Maintenance**

The post-operational monitoring and management period following decommissioning of mining activities must be implemented by a suitable qualified independent party for a minimum of one (1) year unless

otherwise specified by the Competent Authority.

Maintenance will specifically focus on annual fertilizing the rehabilitated area (where required), control of all other alien plants and general maintenance, including rehabilitation of cracks, subsidence, and erosion gullies. Continuous erosion monitoring of rehabilitated areas and slopes should be undertaken and zones with excessive erosion should be identified. The cause of the erosion should be identified and rectified. Zones with erosion will need to be repaired with topsoil.

The monitoring activities during this period will include but not be limited to:

- ❖ Biodiversity monitoring.
- ❖ Re-vegetation of disturbed areas where required.

Provision must be made to monitor any unforeseen impact that may arise because of the proposed mining activities and incorporated into post closure monitoring and management. The small-scale mine shall continue to monitor and manage rehabilitation areas until the vegetation is self-sustaining and meets the requirements of the landowner or land manager, until their management can be integrated into the management of the surrounding area.

#### **5.3.1.4 Post-Closure Monitoring and Maintenance**

Prior to decommissioning and rehabilitation activities, a monitoring programme shall be developed and submitted to the relevant authority for approval, as a part of the Final Rehabilitation Plan. The programme is to include proposed monitoring during and after the closure of the trench site and related activities.

It is recommended that the post-closure monitoring include the following:

- ❖ Confirmation that any waste, wastewater or other pollutants that is generated as a result of decommissioning will be managed appropriately, as per the detailed requirements set out in the Final Rehabilitation Plan.
- ❖ Confirmation that all de-contaminated sites are free of residual pollution after decommissioning.
- ❖ Confirmation that acceptable cover has been achieved in areas where natural vegetation is being re- established. 'Acceptable cover' means re-establishment of pioneer grass communities over the disturbed areas at a density similar to surrounding undisturbed areas, non-eroding and free of invasive alien plants.
- ❖ Confirmation that the Mining Permit site is safe and is not resulting in a pollution hazard.

Annual environmental reports will be submitted to the Designated Authority and other relevant

Departments for at least one-year post-decommissioning. The frequency and duration of this reporting period may be increased to include longer term monitoring, at intervals to be agreed with the Designated Authority.

The monitoring reports shall include a list of any remedial action necessary to ensure that infrastructure that has not been removed remains safe and pollution free and that rehabilitation of project sites are in a stable, weed and free condition.

#### **5.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.**

The rehabilitation plan is compatible with the closure objectives in that it seeks to ensure that negative impacts on the receiving environment that could not be prevented or mitigated during mining are rehabilitated. The use of indigenous species during re-vegetation will ensure that ecosystem restoration is initiated and prevent invasion by alien species. The appropriate disposal of waste will ensure that land is usable, in alignment with surrounding land uses and that no hazardous materials are left on-site post-mining.

##### **5.4.1 Rehabilitation of the excavated area**

- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials has been added to the excavation and was profiled with acceptable contours and erosion control measures, the topsoil previously stored will be returned to its original depth over the area.
- The area will be fertilised if necessary to allow vegetation to establish rapidly. The site will be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from site closure.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to their specification.

##### **5.4.2 Rehabilitation of plant area**

- The compacted areas will be ripped, and the topsoil returned over the area.
- Coarse natural material used for the construction of ramps will be removed and dumped into the

excavations.

- Stockpiles will be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.
- On completion of operations, all structures or objects will be dealt with in accordance with Section 44 of the MPRDA, 2002 (Act 28 of 2002):
  - Where sites have been rendered devoid of vegetation/grass or soils have been compacted owing to traffic, the surface will be scarified or ripped.
  - The site will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora if natural vegetation does not re-establish within 6 months of the closure of the site.
- Photographs of the mining area and office sites, before and during the mining operation and after rehabilitation, will be taken at selected fixed points and kept on record for the information of the Regional Manager.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, will be scarified to a depth of at least 300 mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area.
- Prior to replacing the topsoil, the overburden material that was removed from these areas will be replaced in the same order as it originally occurred.
- The area shall then be fertilised if necessary to allow vegetation to establish rapidly. The site will be seeded with a local, adapted indigenous seed mix if natural vegetation does not re-establish within 6 months after site closure.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to their specification.

#### **5.4.3 Final rehabilitation**

- Rehabilitation of the surface area will entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and weed/ alien clearing.
- All infrastructures, equipment, plant, temporary housing and other items used during the mining period will be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be

permitted to be buried/burned on site.

- Weed/alien clearing will be done in a sporadic manner during the life of the mining activities.
- Species considered Category 1 weeds as per CARA, 1983 – Act 43, Regulations 15 & 16 (as amended in March 2001) must be eradicated from site.
- Final rehabilitation will be completed within a period specified by the Regional Manager.

**5.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.**

The calculation of the quantum for financial provision was according to Section B of the working manual.

**5.5.1 Mine type and saleable mineral by-product**

According to Tables B.12, B.13 and B.14:

Mine type	Coal
Saleable mineral by-product	None

**5.5.2 Risk ranking**

According to Tables B.12, B.13 and B.14:

Primary risk ranking (either Table B.12 or B.13)	C (Low risk)
Revised risk ranking (B.14)	N/A

**5.5.3 Environmental sensitivity of the mine area**

According to Table B.4:

Environmental sensitivity of the mine area	Low
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**5.5.4 Level of information**

According to Step 4.2:

Level of information available	Limited
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**5.5.5 Identify closure components.**

According to Table B.5 and site-specific conditions:

Component nr	Main description	Applicability of closure components

1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		No
2 (A)	Demolition of steel buildings and structures		No
2 (B)	Demolition of reinforced concrete buildings and structures		No
3	Rehabilitation of access roads		No
4 (A)	Demolition and rehabilitation of electrified railway lines		No
4 (B)	Demolition and rehabilitation of non-electrified railway lines		No
5	Demolition of housing and facilities		No
6	Opencast rehabilitation including final voids and ramps	Yes	
7	Sealing of shafts, audits and inclines		No
8 (A)	Rehabilitation of overburden and spoils	Yes	
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)		No
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)		No
9	Rehabilitation of subsided areas		No
10	General surface rehabilitation, including grassing of all denuded areas	Yes	
11	River diversions		No
12	Fencing		No
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		No
14	2 to 3 years of maintenance and aftercare	Yes	

5.5.6 Calculation of closure costs

CALCULATION OF THE QUANTUM							
Applicant: SIPHOSIZWE CONSTRUCTION CC				Ref No.: MP			
Evaluator: THILIVHALI				30/5/11/13/13338			
				MP			
				Date: 23-MAR-23			
No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	19	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	271	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	400	1	1	0
3	Rehabilitation of access roads	m2	100	49	1	1	4900
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	471	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	257	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	542	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	284292	1	1	0
7	Sealing of shafts adits and inclines	m3	0	146	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,32	189528	1	1	60648,96
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	236054	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	685612	1	1	0
9	Rehabilitation of subsided areas	ha	0	158701	1	1	0
10	General surface rehabilitation	ha	5	150138	1	1	750690
11	River diversions	ha	0	150138	1	1	0
12	Fencing	m	0	171	1	1	0
13	Water management	ha	0,08	57087	1	1	4566,96
14	2 to 3 years of maintenance and aftercare	ha	5	19980	1	1	99900
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
						Sub Total 1	920705,92
1	Preliminary and General		110484,7104	weighting factor 2		1	110484,7104
2	Contingencies						92070,592
						Subtotal 2	1123261,22
Sign	Thilivhali Ndou			VAT (15%)		168489,18	
Date	23/03/2023			Grand Total		1291750	

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of R1, 291 750.

5.6 Confirm that the financial provision will be provided as determined.

The amount will be provided from the operating expenditure.

## 5.7 Mechanisms for compliance monitoring against EMP

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including:

- a) Monitoring of Impact Management Actions
- b) Monitoring and reporting frequency
- c) Responsible persons
- d) Time period for implementing impact management actions
- e) Mechanisms for monitoring compliance

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
<ul style="list-style-type: none"> <li>• Topsoil stripping and stockpiling</li> <li>• Blasting</li> <li>• Excavation</li> <li>• Crushing</li> <li>• Stockpiling and transporting</li> <li>• Sloping and landscaping during</li> </ul>	<p><b>Dust monitoring</b></p> <ul style="list-style-type: none"> <li>• The dust generated by the mining activities should be continuously monitored and addressed by the implementation of dust suppression methods.</li> </ul>	<p><b>Dust handling and monitoring</b></p> <ul style="list-style-type: none"> <li>• Dust suppression equipment, like a water car and water dispenser. The applicant already has this equipment available.</li> </ul>	<p><b>Role</b></p> <ul style="list-style-type: none"> <li>• Site Manager to ensure compliance with EMPr guidelines.</li> <li>• Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><b>Responsibility</b></p> <ul style="list-style-type: none"> <li>• Control dust liberation into surrounding environment by using, e.g., water spraying and/or other dust-allaying agents.</li> <li>• Limit speed on access roads to 40km/h to prevent excess dust generation.</li> </ul>	<p>Throughout construction, operational and decommissioning phase</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
rehabilitation			<ul style="list-style-type: none"> <li>• Spray roads with water/environmentally friendly dust allaying agent that contains no PCBs (e.g. DAS products) if dust is generated above acceptable limits.</li> <li>• Assess effectiveness of dust suppression equipment.</li> <li>• Re-vegetate all disturbed/exposed areas as soon as possible to prevent any dust source from being created.</li> <li>• Ensure the crusher is equipped with water sprayers.</li> </ul>	
<ul style="list-style-type: none"> <li>• Topsoil stripping and stockpiling</li> <li>• Blasting</li> <li>• Excavation</li> <li>• Crushing</li> <li>• Sloping and landscaping during rehabilitation</li> </ul>	<p><b>Noise monitoring</b></p> <ul style="list-style-type: none"> <li>• The noise generated by the mining activities should be continuously monitored, and any excessive noise should be addressed.</li> </ul>	<p><b>Noise handling and monitoring</b></p> <ul style="list-style-type: none"> <li>• Site manager to ensure that the vehicles are equipped with silencers and kept roadworthy.</li> <li>• Compliance with the appropriate legislation with respect to noise</li> </ul>	<p><b>Role</b></p> <ul style="list-style-type: none"> <li>• Site Manager to ensure compliance with EMPr guidelines.</li> <li>• Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><b>Responsibility</b></p> <ul style="list-style-type: none"> <li>• Ensure that staff conduct themselves in an acceptable manner while on site.</li> <li>• No loud music permitted at mining area.</li> <li>• Ensure that all mining vehicles are equipped with silencers and kept roadworthy in terms of the Road Transport Act.</li> </ul>	<p>Throughout construction, operational and decommissioning phase</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
		will be mandatory.	<ul style="list-style-type: none"> <li>• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity.</li> <li>• Notify surrounding landowners in writing prior blasting occasions.</li> <li>• Use noise mufflers and/or soft explosives during blasting.</li> </ul>	
<ul style="list-style-type: none"> <li>• Topsoil stripping and stockpiling</li> <li>• Excavation</li> <li>Stockpiling and transporting</li> </ul>	<p><b>Management of weed or invader plants</b></p> <ul style="list-style-type: none"> <li>• The presence of weed and/or invader plants should be continuously monitored, and any unwanted plants should be removed.</li> </ul>	<p><b>Management of weed or invader plants</b></p> <ul style="list-style-type: none"> <li>• Removal of weeds should be manually or by the use of an approved herbicide</li> </ul>	<p><b>Role</b></p> <ul style="list-style-type: none"> <li>• Site Manager to ensure compliance with EMPr guidelines.</li> <li>• Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><b>Responsibility</b></p> <ul style="list-style-type: none"> <li>• Implement a weed and invader plant control management plan.</li> <li>• Control declared invader or exotic species on the rehabilitated areas.</li> <li>• Keep the temporary topsoil stockpiles free of weeds.</li> </ul>	<p>Throughout operational and decommissioning phase</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>• Stockpiling and</li> </ul>	<b>Surface and storm</b>	<b>Surface and storm</b>	<b>Role</b>	

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
transporting <ul style="list-style-type: none"> <li>Sloping and Landscaping during rehabilitation</li> </ul>	<b>water monitoring</b> <ul style="list-style-type: none"> <li>The effectiveness of the storm water infrastructure needs to be continuously monitored.</li> </ul>	<b>water handling</b> <ul style="list-style-type: none"> <li>Trenches and contours to be made to direct storm- and runoff water around the stockpile areas.</li> </ul>	<ul style="list-style-type: none"> <li>Site Manager to ensure compliance with EMPr guidelines. Compliance to be monitored by the Environmental Control Officer.</li> </ul> <b>Responsibility</b> <ul style="list-style-type: none"> <li>Divert storm water around topsoil heaps, stockpile areas and access roads to prevent erosion and material loss.</li> <li>Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.</li> <li>Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the DWS, and any other conditions the DWS may impose.</li> </ul>	
<ul style="list-style-type: none"> <li>Blasting</li> <li>Excavation</li> <li>Sloping and Landscaping</li> </ul>	<b>Management of health and safety</b> <ul style="list-style-type: none"> <li>All health and safety aspects need to be</li> </ul>	<b>Management of health and safety risks</b> <ul style="list-style-type: none"> <li>Site manager to</li> </ul>	<b>Role</b> <ul style="list-style-type: none"> <li>Site Manager to ensure compliance with EMPr guidelines.</li> <li>Compliance to be monitored by the Environmental</li> </ul>	Throughout construction, operational and decommissioning phase <ul style="list-style-type: none"> <li>Daily compliance</li> </ul>

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
during rehabilitation	monitored on a daily basis.	<p>ensure that workers are equipped with required PPE while operating on site.</p> <ul style="list-style-type: none"> <li>• The necessary warning signs must be present at the site to inform the public and workers of mining activities.</li> </ul>	<p>Control Officer.</p> <p><b>Responsibility</b></p> <ul style="list-style-type: none"> <li>• Submit an application for approval of access onto the R555 to the Department of Roads and Public Works prior to the commencement of work.</li> <li>• Inform the Traffic Department of each blast. If necessary, arrange for temporary road closure during a blast.</li> <li>• Plan the type, duration, and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity.</li> <li>• Inform the surrounding landowners and communities of any blasting event.</li> <li>• Use noise mufflers and/or soft explosives during blasting.</li> <li>• Limit fly rock.</li> <li>• Give audible warning of a pending blast at least 3 minutes before the blast.</li> <li>• Remove all fly rock (diameter 150mm and larger) which</li> </ul>	<p>monitoring by site management.</p> <ul style="list-style-type: none"> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer</li> </ul>

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
			<p>falls beyond working area, together with the rock spill.</p> <ul style="list-style-type: none"> <li>• Ensure that workers have access to the correct PPE as required by law.</li> </ul>	
<ul style="list-style-type: none"> <li>• Excavation</li> <li>• Crushing stockpiling and transporting</li> <li>• Sloping and landscaping during rehabilitation</li> </ul>	<p><b>Waste management</b></p> <ul style="list-style-type: none"> <li>• Management of waste should be a daily monitoring activity.</li> <li>• Hydrocarbon spills need to be cleaned immediately and the site manager should check compliance daily.</li> </ul>	<p><b>Waste management</b></p> <ul style="list-style-type: none"> <li>• Closed containers for the storage of general/hazardous waste until waste is removed to the appropriate landfill site.</li> <li>• Hydrocarbon spill kits to enable sufficient clean-up of contaminated areas.</li> <li>• Drip trays should be available to place underneath</li> </ul>	<p><b>Role</b></p> <ul style="list-style-type: none"> <li>• Site Manager to ensure compliance with EMPr guidelines.</li> </ul> <p>Compliance to be monitored by the Environmental Control Officer.</p> <p><b>Responsibility</b></p> <ul style="list-style-type: none"> <li>• Ensure that vehicle repairs only take place in the service bay area and all waste products are disposed of in a 200 l closed container/bin inside the emergency service area.</li> <li>• Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove from site, for resale or appropriate disposal at a recognized facility.</li> <li>• Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage and polluted soil and by disposing of them at a recognized facility.</li> </ul>	<p>Throughout construction, operational and decommissioning phase</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an</li> <li>• Environmental Control Officer.</li> </ul>

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
		<p>haul vehicles while the vehicles are parked at night.</p> <ul style="list-style-type: none"> <li>• Should a vehicle have a break down, it should be serviced immediately.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure availability of suitable covered, conveniently placed receptacles at all times for waste disposal.</li> <li>• Place all used oils, grease or hydraulic fluids therein and remove receptacles from site regularly for disposal at a registered/licensed hazardous disposal facility.</li> <li>• Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection should take place regularly and disposed of at the recognized landfill site at Witbank. Prevent refuse from being dumped on or in the vicinity of the mine area.</li> <li>• Biodegradable refuse to be handled as indicated above.</li> </ul>	

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
Stockpiling and transporting	<p><b>Management of access roads</b></p> <ul style="list-style-type: none"> <li>• Access road conditions must be continuously monitored.</li> <li>• Vehicles carrying materials has to be equipped with adequate tarpaulin type covers to ensure that material being transported will not leave the vehicle during transportation.</li> </ul>	<p><b>Management of access roads</b></p> <ul style="list-style-type: none"> <li>• Dust suppression equipment such as a water car and dispenser.</li> <li>• Trenches and contours to be made to direct storm- and runoff water around the access roads.</li> </ul>	<p><b>Role</b></p> <ul style="list-style-type: none"> <li>• Site Manager to ensure compliance with EMPr guidelines.</li> <li>• Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><b>Responsibility</b></p> <ul style="list-style-type: none"> <li>• Maintain newly constructed access roads (if applicable) to minimize dust, erosion or undue surface damage.</li> <li>• Divert storm water around access roads to prevent erosion.</li> <li>• Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas.</li> <li>• Cover vehicles carrying materials with adequate tarpaulin type covers to ensure that material being transported does leave the vehicle during transportation.</li> <li>• Ensure vehicles entering and using the public road system from the site does not exceed the permissible</li> </ul>	<p>Throughout construction, operational and decommissioning phase</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance monitoring of site by an</li> <li>• Environmental Control Officer.</li> </ul>

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
			<p>legal limits on gross vehicle mass and individual axle loads as prescribed in terms of the National Road Traffic Act (Act No 93 of 1996).</p>	
<p>Topsoil stripping and stockpiling</p>	<p><b>Topsoil handling</b></p> <ul style="list-style-type: none"> <li>• When topsoil has been removed from any area the topsoil heaps need to be continuously protected against</li> </ul>	<p><b>Topsoil handling</b></p> <ul style="list-style-type: none"> <li>• Excavating equipment to remove the first 300mm of topsoil from the proposed work areas. The</li> </ul>	<p><b>Role</b></p> <ul style="list-style-type: none"> <li>• Site Manager to ensure compliance with EMPr guidelines.</li> <li>• Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><b>Responsibility</b></p> <ul style="list-style-type: none"> <li>• Remove the first 300mm of topsoil in strips and store at</li> </ul>	<p>Throughout construction, operational and decommissioning phase</p> <ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management.</li> <li>• Quarterly compliance</li> </ul>

Source activity	Impacts required monitoring programme	Functional requirements for monitoring	Roles and responsibilities for the execution of monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
	<p>loss of soil due to wind and water erosion.</p>	<p>applicant already has this equipment available.</p> <ul style="list-style-type: none"> <li>• Trenches and contours to be made to direct storm and runoff water around stockpiled topsoil area.</li> </ul>	<p>the stockpile area.</p> <ul style="list-style-type: none"> <li>• Keep the temporary topsoil stockpiles free of weeds.</li> <li>• Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water.</li> <li>• Topsoil heaps should not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.</li> <li>• Divert storm- and runoff water around the stockpile area and access roads to prevent erosion.</li> </ul>	<p>monitoring of site by an</p> <ul style="list-style-type: none"> <li>• Environmental Control Officer.</li> </ul>

**5.8 Indicate frequency of the submission of the performance assessment/ environmental audit report**

The committed time frames for monitoring and reporting are stipulated in the following:

Monitoring aspect	Time frames	Reporting
Dust handling	Throughout construction, operational and decommissioning phase	<ul style="list-style-type: none"> <li>• Daily compliance monitoring by site management</li> <li>• Quarterly compliance monitoring of site by an Environmental Control Officer</li> </ul>
Noise handling		
Management of weed/invader plants	Throughout operational and decommissioning phase	
Surface and storm water handling		
Management of health and safety risks	Throughout construction, operational and decommissioning phase	
Waste management		
Management of access roads		
Topsoil handling		

It is proposed that the performance assessment/environmental audit report be quarterly submitted to DMRE.

**5.9 Environmental Awareness Plan**

**5.9.1 Manner in which the applicant intends to inform employees of any environmental risk which may result from their work.**



**Figure 51: example of induction meeting on site**

Training, as detailed below, will address the specific measures and actions required for specific emergency

events. In this way, each employee will be provided the knowledge required for their job to, firstly, prevent impact and secondly identify if an impact is likely to occur and then to report the possibility of risk or impact immediately so as to ensure immediate response. The most likely potential environmental emergencies in this proposed mining operation are fires and explosion, chemical spills/leaks, and flooding. In the case of environmental emergencies, the remedial measures and actions as listed in the Emergency Response Plan should be followed, in addition the following relevant authorities should be contacted:

**Dept. of Water Affairs**

Mr Masala Mulaudzi (Acting Chief Director: Mpumalanga)

Private Bag X11259

NELSPRUIT

1200

Tel: (013) 759 7300

Fax: (013) 759 7525

Cell: 082 327 5886

Prorom Building

c/o Brown & Paul Kruger Streets

NELSPRUIT

1200

MulaudziM@dws.gov.za

**Dept. of Mineral Resources & Energy**

Mpumalanga

Saveways Crescent Centre, Mandela Drive, Emalahleni, 1035

Private Bag X7279, EMALAHLENI, 1035(013) 653 0500 (013) 690 3288

Secretary

Ms L Maphopha

Lydia.Maphopha@dmr.gov.za

**eMalahleni Fire Department**

WOLTEMADE STREET, EMALAHLENI (WITBANK), 1034

PO BOX 3, EMALAHLENI (WITBANK), 1035

Contact number (s)(013) 690-6360 Fax (013) 690-6380

**5.9.1.1 Fire and explosion control measures**

Hazardous waste and dangerous substances can, by the verify definition, be flammable and reactive. As such, special precautionary measures must be taken when handling these substances. On the other hand,

veld fires and fires resulting from other sources must be handled with extreme caution. In the event of a fire:

- Fire extinguishers must be placed around the mine at accessible locations and needs to be frequently inspected and maintained in working condition.
- An alarm must be activated to alert all employees and contractors.
- Identify the type of fire and the appropriate extinguishing material. E.g., water for a grass fire and mono ammonium phosphate-based fire extinguisher for chemical and electrical fires
- In the event of a small fire, the fire extinguishers placed around the mine should be used to contain and extinguish the fire.
- In the event of a large fire, the fire department will be notified.
- All staff will receive training in response to a fire emergency on site, including evacuation procedures.
- A Fire Association should be set up with the mine and surrounding landowners (especially other mining permits and major collieries in close proximity) to facilitate communication during fire events and assist in fighting fires, where necessary. If such an association exists, the mine will join it.
- If possible, surrounding drains, such as storm water drains must be covered and/or protected to prevent any contaminated water from entering the drains.
- In case of a chemical or petroleum fire, run-off from the area must be contained as far as possible using the most appropriate measures, e.g. spill absorbent cushions, sand or a physical barrier.
- Contaminated run-off must be diverted into an oil sump or cleaned up.

Control measures include:

- Minimizing the storage of flammable liquids on site (e.g., fuel, flammable wastes)
- Using a nitrogen atmosphere for organic waste liquid with a low flashpoint stored in tanks.
- Not allowing smoking anywhere on site
- Providing an emergency tipping area for waste loads identified to be on fire or otherwise deemed an immediate risk.
- Preparing and annually reviewing a fire risk assessment
- Ensuring all staff are appropriately trained for fire and explosion hazards.

Other than explosion incidents related to mining, explosions can occur in the workshop areas when

working with gas cylinders and chemicals. These could result in large numbers of employees being injured and requiring medical assistance.

The procedure to be followed includes:

- Devising safe evacuation routes in the event of an uncontrolled explosion and all staff trained on relevant evacuation routes and assembly points.
- Providing first aid to injured parties, once safe to do so for first responders.
- Notifying the DMR of the incident.

#### **5.9.1.2 Chemical spills**

Hydrocarbons such as diesel, petrol, and oil used as fuel for mine machinery will be kept on site, meaning that spillage may occur. As this is a coal mine there is also the possibility of a coal spillage occurring. Any chemicals contained on site, such as those associated with explosives may also be detrimental to the environment if spills occur. In the event of a spillage, procedures must be put into place to ensure that there are minimal impacts to the surrounding environment.

The following procedure applies to a chemical spill:

- The incident must be reported to the SHE officers immediately.
- The SHE officer will assess the situation from the information provided and set up an investigation team. Included in this team could be the General Mine Manager, SHE Officer, the employee who reported the incident and an individual responsible for the incident.
- When investigating the incident, priority must be given to safety.
- Once the situation has been assessed, the Environmental Coordinator must report back to the Mine Manager.
- The General Mine Manager and the investigation team must make a decision on what measures can be taken to limit the damage caused by the incident, and if possible, any remediation measures that can be taken.
- In the event of a small spillage, the soil must be treated in situ, using Hazmat clean up kits and bioremediation.
- Every precaution must be taken to prevent the spill from entering the surface water environment.
- In the event of a large spillage, adequate emergency equipment for spill containment or collection, such as additional supplies of booms and absorbent materials, will be made available and if required, a specialized clean-up crew will be called in to decontaminate the area. The soil must be removed and treated at a special soil rehabilitation facility.

- Reasonable measures must be taken to stop the spread of spills and secure the area to limit access.

### 5.9.1.3 Flooding

There is always potential for flooding during the rainy season. This could result in a large volume of water accumulating in a water containment facility, which could cause major damage to equipment and endanger the lives of employees on site. Procedures must be put in place to ensure a quick response to flood events and minimal damage.

The procedure for flooding is as follows:

- During operations, DWS's flood warning system must be reviewed annually.
- The use of emergency pumps must occur if the water floods the proposed mine.
- Mine management must be made aware of any such event so they can take appropriate action to ensure minimal production losses.
- The Pollution Control Dam should have a 0.8m freeboard and an overflow or outlet to ensure that no damage occurs to the facilities.
- All contaminated water must be contained on site, as far as possible and discharges to the environment must only occur if absolutely necessary in an extreme flood event.

## 6 Manner in which risk will be dealt with to avoid pollution or environmental degradation.

### 6.1 Training (educational needs)

The Safety, Health and Environment (SHE) Officer must ensure that:

- New employees attend environmental awareness programmes through inductions.
- Mine management conducts bi-annual workshops.
- Documented training and competency
- Training records be maintained.
- Training includes proper management of waste streams, labelling, containers and emergency procedures outlined.
- Hazardous waste handlers and their supervisors/managers must complete training or on-the-job instruction relevant to their duties to include hazardous waste management procedures and contingency plan implementation.
- Training of all personnel must be completed before duties are assigned and training in terms of

handling of hazardous waste must be repeated annually and as and when required.

## **6.2 Outsourced specialist skills**

A training department will be established on site during operations. All inductions and workshops will be hosted by this department. This department, in conjunction with the SHE Officer, is responsible for ensuring job-specific training for personnel performing tasks, which can cause significant environmental (e.g. receipt of bulk hazardous chemicals/fuel, hazardous materials handling, responding to emergency situations etc.). The General Mine Manager (GM) with the assistance of the SHE Officer must identify relevant personnel and training courses. Short courses such as First aid training, Level 1 and 2; Fire Fighting Level; safety representative training; etc. should be mandatory and sourced from the training providers,

## **6.3 Review and updating of training manual and course layout.**

Before implementing the emergency and response plans and other environmental standard operating procedure, the SHE Coordinator and GM/Supervisors will designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.

All training manual and courses must be reviewed with all employees at the following times:

- Initially when the plan is developed,
- Whenever the employee's responsibilities or designated action under the plan change, and whenever the plan or mining processes has changed.
- At least annually employee meetings are to be held to train employees of the contents of the EP&RP and revise the plan as appropriate.
- Drills will be conducted, and full participation encouraged.
- All training must be documented in writing and copies sent to GM.

Effectiveness of the environmental management training will be done by management through task observations and during internal and external audits. All training material for presentation to personnel and contractors will be reviewed annually to ensure consistency with organisational requirements and best practice guidelines. In addition to this, annual monitoring reports, audit results and all incident reports will be reviewed; any shortcomings and non-compliance will be highlighted, and management measures incorporated or improved upon within the training material.

## 6.4 Records

The mine will keep records such as waste, water, electricity usage etc. Record of incoming and outgoing waste must be kept, and these must include:

- Types and categories of incoming and outgoing waste
- Quantities of each waste type and category
- Transporter details
- Safe disposal certificate must always be returned and filed at waste disposal site.
- Training records for all employees working on the hazardous waste facility.
- All records must be computerised or legible paper trails and cross-referenced, waste tracking easily accessed.
- Records must be kept in a database on site for 3 years or more.

Records from the implementation of this EAP will be kept and controlled in accordance with the SHE Management System Control of Records Procedure of the mine, which is required to be implemented so as to provide evidence of conformity and effective operation of the relevant requirements of the SHE management system.

## 6.5 Environmental awareness notice boards

The following basic environmental education material will be posted on a monthly basis on accessible notice boards on mine premises, one topic will be selected each month:

## WHAT IS THE ENVIRONMENT?

- Soil
- Water
- Plants
- People
- Animals
- Air we breathe
- Buildings, cars and houses



## WHY MUST WE LOOK AFTER THE ENVIRONMENT?

- It affects us all as well as future generations
- We have a right to a healthy environment
- A contract has been signed
- Disciplinary action (e.g. construction could stop or fines issued)

### ANIMALS

- Do not injure or kill any animals on the site
- Ask your supervisor or Contract's Manager to remove animals found on site



### TREES AND FLOWERS

- Do not damage or cut down any trees or plants without permission
- Do not pick flowers



### SMOKING AND FIRE

- Put cigarette butts in a rubbish bin
- Do not smoke near gas, paints or petrol
- Do not light any fires without permission
- Know the positions of fire fighting equipment
- Report all fires
- Do not burn rubbish or vegetation without permission



### PETROL, OIL AND DIESEL

- Work with petrol, oil & diesel in marked areas
- Report any petrol, oil & diesel leaks or spills to your supervisor
- Use a drip tray under vehicles & machinery
- Empty drip trays after rain & throw away where instructed



### DUST

- Try to avoid producing dust -
- Use water to make ground & soil wet



### NOISE

- Do not make loud noises around the site, especially near schools and homes
- Report or repair noisy vehicles



### TRUCKS AND DRIVING

- Always keep to the speed limit
- Drivers - check & report leaks and vehicles that belch smoke
- Ensure loads are secure & do not spill



### RUBBISH

- Do not litter - put all rubbish (especially cement bags) into the bins provided
- Report full bins to your supervisor
- The responsible person should empty bins regularly



### EATING

- Only eat in demarcated eating areas
- Never eat near a river or stream
- Put packaging & leftover food into rubbish bins



### TOILETS

- Use the toilets provided
- Report full or leaking toilets



### HOW DO WE LOOK AFTER THE ENVIRONMENT?

- Report problems to your supervisor/ foreman
- Team work
- Follow the rules in the EMP



### WORKING AREAS

Workers & equipment must stay inside the site boundaries at all times



### PROBLEMS - WHAT TO DO!

- Report any breaks, floods, fires, leaks and injuries to your supervisor
- Ask questions!



### FINES AND PENALTIES

- Spot fines of between K51000 and K525000
- Your company may be fined
- Removal from site
- Construction may be stopped



The operations manager must ensure that they understand the EMPr document, its requirements and commitments before any mining takes place. An Environmental Control Officer must ensure compliance of mining activities to the management programmes described in the EMPr. The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

#### 6.5.1 Site management

- Stay within site boundaries – do not enter adjacent properties.
- Keep tools and material properly stored.
- Smoke only in designated areas
- Use toilets provided – report full or leaking toilets.

#### 6.5.2 Water management and erosion

- Check that rainwater flows around work areas and is not contaminated.
- Report any erosion.
- Check that dirty water is kept from clean water.
- Do not swim in or drink from streams.

#### 6.5.3 Waste management

- Take care of your own waste
- Keep waste separate into labelled containers – report full bins.
- Place waste in containers and always close lid
- Don't burn waste.

- Pick-up any litter laying around.

#### **6.5.4 Hazardous waste management (petrol, oil, diesel, grease)**

- Never mix general waste with hazardous waste
- Use only sealed, non-leaking containers.
- Keep all containers closed and store only in approved areas.
- Always put drip trays under vehicles and machinery
- Empty drip trays after rain
- Stop leaks and spills, if safe
- Keep spilled liquids moving away.
- Immediately report the spill to the site manager/supervision
- Locate spill kit/supplies and use to clean-up, if safe
- Place spill clean-up wastes in proper containers.
- Label containers and move to approved storage area.

#### **6.5.5 Discoveries**

- Stop work immediately.
- Notify site manager/supervisor.
- Includes archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures

#### **6.5.6 Air quality**

- Wear protection when working in very dusty areas
- Implement dust control measures:
  - Sweep paved roads
  - Water all roads and work areas
  - Minimise handling of material
  - Obey speed limit and cover trucks

### **6.5.7 Driving and noise**

- Use only approved access roads
- Respect speed limits
- Only use turn-around areas – no crisscrossing through undisturbed areas
- Avoid unnecessary loud noises
- Report or repair noisy vehicles

### **6.5.8 Vegetation and animal life**

- Do not remove any plants or trees without approval of the site manager
- Do not collect fire wood
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site
- Report any animal trapped in the work area
- Do not set snares or raid nests for eggs or young

### **6.5.9 Fire management**

- Do not light any fires on site, unless contained in a drum at demarcated area
- Put cigarette butts in a rubbish bin
- Do not smoke near gas, paints or petrol
- Know the position of firefighting equipment
- Report all fires
- Don't burn waste or vegetation

## **6.6 Specific information required by the Competent Authority**

Among others, confirm that the financial provision will be reviewed annually.

The applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as sufficient to cover the environmental liability at the time and for closure of the mine at that time.

## 7 Conclusion

The proposed development should have significant negative effects on the natural or social environment. The nature and types of negative impacts do not outweigh the potential benefits of this project, as long as the construction phase's short-term localised impacts are adequately mitigated. An EMPr has been compiled and attached to this report in this regard. External monthly monitoring by an independent Environmental Control Officer (ECO) is recommended to ensure that the EMPr and EA conditions are correctly implemented, thereby ensuring the protection of the surrounding environment during construction.

## 8 Undertaking

The EAP herewith confirms:

- the correctness of the information provided in the reports.
- the inclusion of comments and inputs from stakeholders and I&APs
- the inclusion of inputs and recommendations from the specialist reports where relevant
- that the information provided by the EAP to I&APs and any response of the EAP to comments or inputs made by I&APs are correctly reflected herein

---

**Signature of the Environmental Assessment Practitioner**

Singo Consulting (Pty) Limited

---

**Name of company**

---

**Date**

-END-

## Appendix 1: DMRE Letter



Private Bag X7279, Emalaheni, 1035, Tel: 013 653 0500, Fax 013 690 3288, Sateways Centre, First Floor, Mandela Drive, Emalaheni, 1035, Directorate: Mineral Regulation: Mpumalanga Region, Enquiries: V.S. Mayekiso Email Address: [V.S.Mayekiso@dmre.gov.za](mailto:V.S.Mayekiso@dmre.gov.za) Sub-directorate: Mineral Laws, Ref: MP 30/5/1/1/3/13338 MP.

**BY: Email/Fax**

The Director/s  
**Siphosizwe Construction CC**  
P/Bag X7297  
Highveld Mall  
Witbank  
1035

Email: [kenneth@singoconsulting.co.za](mailto:kenneth@singoconsulting.co.za)

**ACCEPTANCE OF AN APPLICATION FOR MINING PERMIT IN TERMS OF SECTION 27 OF THE MINERAL AND PETROLEUM DEVELOPMENT ACT, 2002 (ACT 28 OF 2002) [HEREIN AFTER REFERRED TO AS THE ACT] AS AMENDED BY SECTION 23 OF THE MINERALS AND PETROLEUM RESOURCES DEVELOPMENT AMENDMENT ACT, 2008 (ACT 49 OF 2008) [HEREINAFTER REFERRED TO AS THE AMENDMENT ACT].**

1. Please be informed that your application for a mining permit to mine Coal on Portion of portion 139 of the farm Blesboklaagte 296 JS, Magisterial District of Witbank, is hereby accepted in terms of Section 27 and 9(1) (b) of the Act.
2. Further be informed that there are applications received prior to yours under file reference number 17111PR, 17180PR, 12954MP and should ANY become successful yours will automatically falls away.
3. Furthermore, note that acceptance of your application does not grant you the right to commence with mining operations. Your application will be evaluated/ processed and a recommendation will be made on either to issue or refuse your application. Any person operating without an issued mining permit will be in contravention of Section 5(4) of the MPRDA and would be guilty of an offence in terms of the relevant Act.

13338 MP- Acceptance

4. Should you wish to continue with the application **irrespective of the risk associated with Section 9(1)(b) of the Act**. Please take notice that in terms of Section 27(5) of the Act as amended by Section 23(e)(a) and Section 23(e)(b) of the Amendment Act, you are required to:-

4.1. To consult in the prescribed manner with the landowner, lawful occupier and any interested and affected parties and the Land Restitution Commission including and to include the result of such consultation in the relevant environmental reports to be submitted and uploaded on the SAMRAD system.

5. **Please take note that failure to adhere to the timeframe stipulated above and to submit any documentation required in terms of this notice will result into non-compliance with the provision of the Act and the Amendment Act and will result in your application being processed for refusal.**

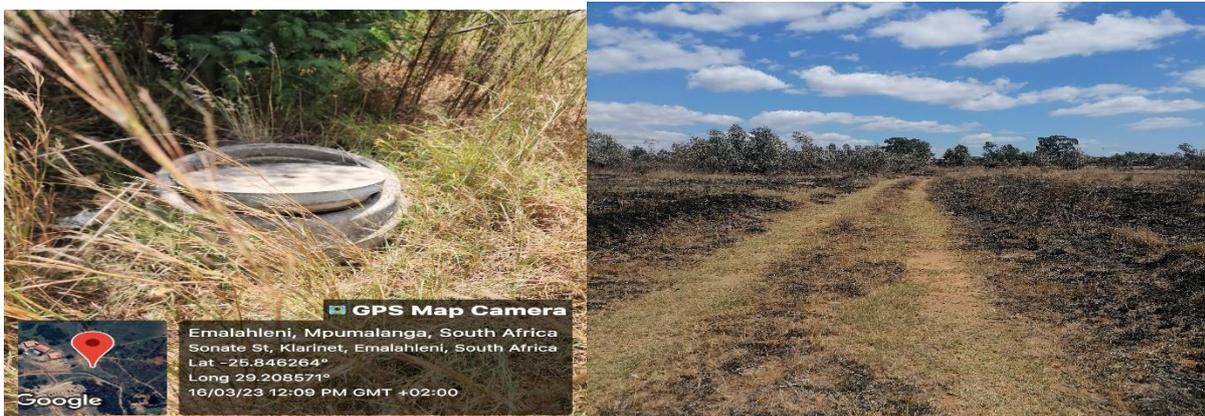
Yours Faithfully:

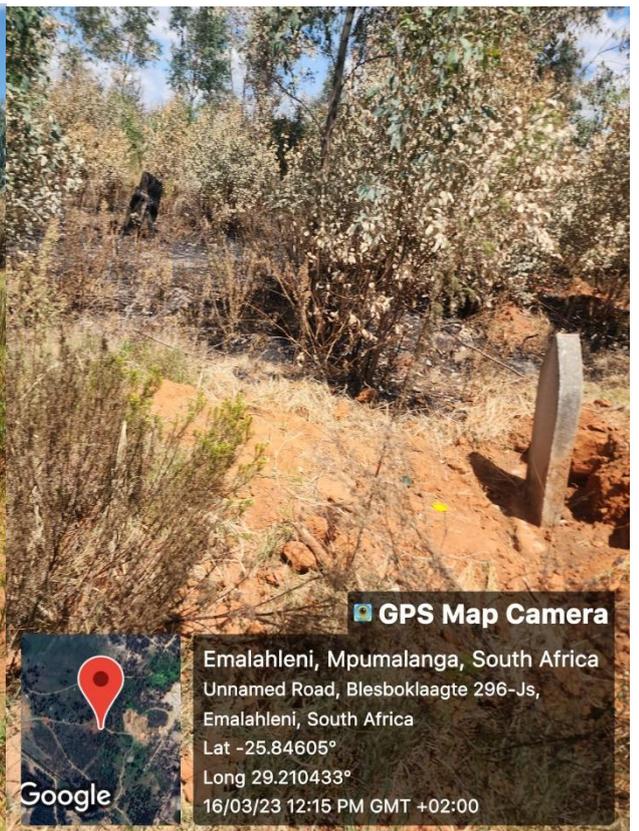
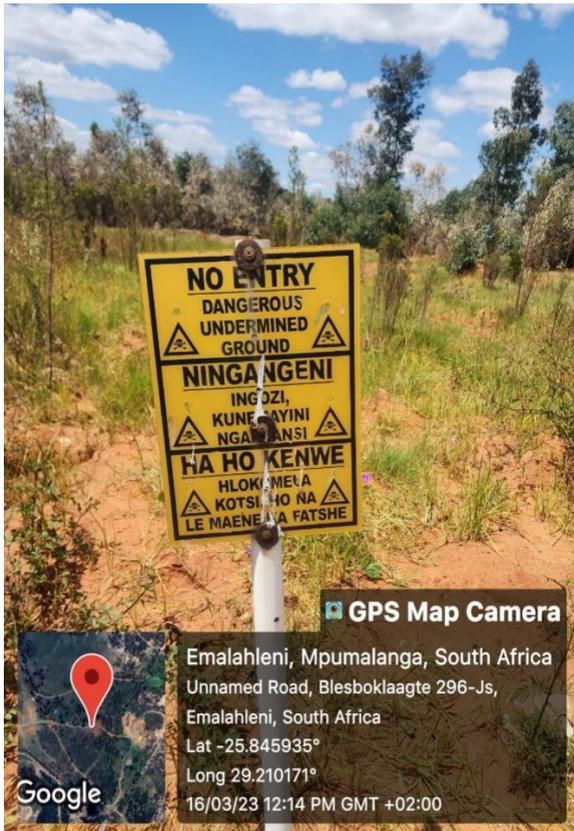
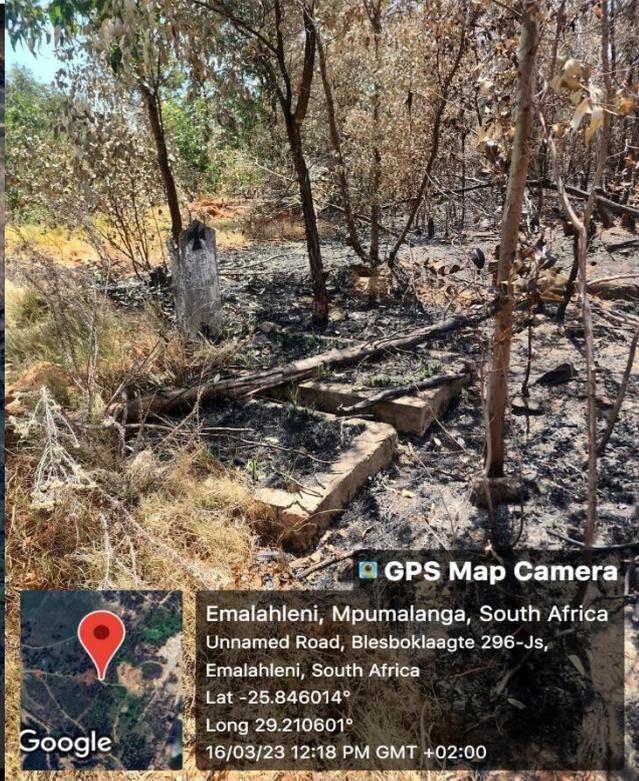
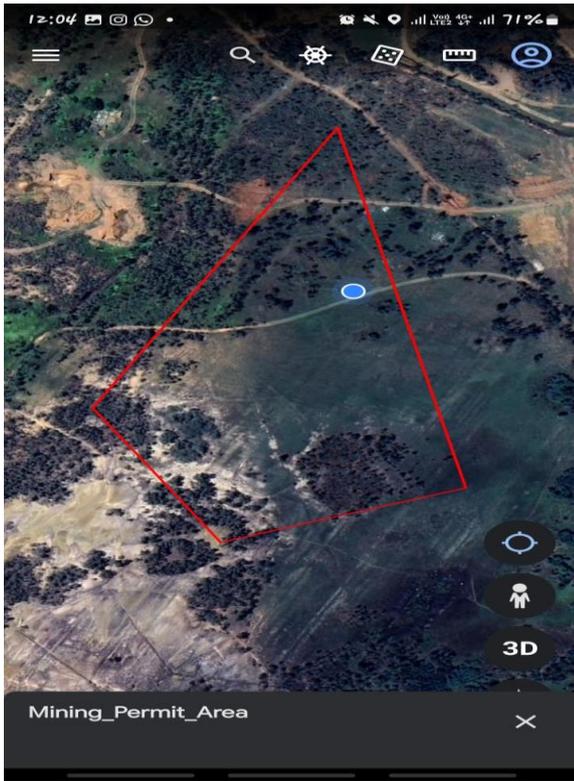
  
REGIONAL MANAGER  
MPUMALANGA REGION  
DATE: 14/02/2023

13338 MP- Acceptance



Appendix 3: Site Pictures.





Appendix 4: proof of consultation



DELAY IN RELEASE OF BASIC ASSESSMENT REPORTS AND ENVIRONMENTAL MANAGEMENT PROGRAMME

 Thilivhali, Ndou <thilivhali@singoconsulting.co.za>

  Reply  Reply All  Forward 

Tue 2023/04/11 13:53

**Subject:** LAND CLAIM ENQUIRY ON PORTION OF PORTIION 139 OF FARM BLESBOKLAAGTE 296 JS, UNDER THE MAGESTRIAL DISTRICT OF eMALAHLENI

Good day,

Compliments of the new season and we trust this email finds you in good health.

You are kindly receiving this email as an enquiry for any possible land claim on portion of portion 139 of the Farm Blesboklaagte 296 JS, under the Magisterial District of eMalahleni, Mpumalanga Province, **(DMRE REF.: MP 30/5/1/1/3/13338 MP)**.

Kindly review the attached **BID and WinDeed Results** for detailed description of proposed project. This is to ensure that all claimants are properly consulted and are given opportunity to:

- Register as an I&AP and to respond to the environmental compliance process.
- Raise issues of concern and provide suggestions for enhanced benefits.
- Contribute to local knowledge.
- Comment on the Basic Assessment Report (BAR) & Environmental Management Programme report (EMPr); and
- Inform any other person / organization that they may feel should be informed about the project.

Your comments will be highly appreciated as they will assist us in developing a well-informed BAR and EMPr.

Should you need any clarity on the attached document or have any queries with regards to the project, please do not hesitate to contact me using the details provided below.

If you know anyone who might be interested in this project, kindly forward this email to that person.



**Daniyel, Tshinavhe** Environmental Specialist BSc. Environmental Sciences *Operation Hi Teka Hinkwaswo*

 +27 76 356 4443  +27 13 692 0041

 daniyel@singoconsulting.co.za

 +27 86 514 4103

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 Singo Consulting (Pty) Ltd

  Office 870, 5 Balalaika Street, Tasbet Park Ext 2, Witbank, 1040

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Thilivhali, Ndou <thilivhali@singoconsulting.co.za>  
 To: 'Molotom@dws.gov.za'  
 Cc: 'rudzani@singoconsulting.co.za'; 'Dr Kenneth, Singo'; 'bongokuhle@singoconsulting.co.za'



Tue 2023/04/11 14:02

Cc: [kenneth@singoconsulting.co.za](mailto:kenneth@singoconsulting.co.za); [rudzani@singoconsulting.co.za](mailto:rudzani@singoconsulting.co.za)

Subject: INVITATION TO REGISTER & COMMENT ON THE PROPOSED MINING PERMIT APPLICATION FOR COAL WITH DMRE REF: MP 30/5/1/1/3/13338 MP

Good Day

We trust this email finds you in good health.

**Singo Consulting (Pty) Ltd** has been appointed as an independent Environmental Assessment Practitioner by **SIPHOSIZWE CONSTRUCTION CC** to manage the **environmental authorization process** for a Mining Permit Application for **Coal** on portion of Portion 139 of the Farm Blesboklaagte 296 JS, situated in the Magisterial District of eMalahleni in Mpumalanga Province.

- For a brief description of the proposed project, may you kindly find attached a **Background Information Document (BID) and a KML File**. A **Registration and Comment Form** is included at the back of the BID for you to register as an Interested and Affected Party and raise your comments and concerns. Kindly complete this form and send it back to this email so that we can address the comments in the draft **Basic Assessment Report** and **Environmental Management Programme report** that will be shared with you to review for **30 calendar days** commencing on the **03<sup>rd</sup> of April 2023 until the 02<sup>nd</sup> of May 2023**.

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Thilivhali, Ndou <thilivhali@singoconsulting.co.za>

Reply Reply All Forward

Tue 2023/04/11 14:02

subject: FW: INVITATION TO REGISTER & COMMENT ON THE PROPOSED MINING PERMIT APPLICATION FOR COAL WITH DMRE REF: MP 30/5/1/1/3/13338 MP

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Thilivhali, Ndou <thilivhali@singoconsulting.co.za>



Tue 2023/04/11 14:01

**Subject:** INVITATION TO REGISTER & COMMENT ON THE PROPOSED MINING PERMIT APPLICATION FOR COAL WITH DMRE REF: MP 30/5/1/1/3/13338 MP

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Thilivhali, Ndou <thilivhali@singoconsulting.co.za>



Reply

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Tue 2023/04/11 13:57

To

Cc

**Subject:** INVITATION TO REGISTER & COMMENT ON THE PROPOSED MINING PERMIT APPLICATION FOR COAL WITH DMRE REF: MP 30/5/1/1/3/13338 MP

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Tasbet Park Ext 2,  
Witbank, 1040

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Thilivhali, Ndou <thilivhali@singoconsulting.co.za>



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Tue 2023/04/11 13:50

Cc: k

Subject: INVITATION TO REGISTER & COMMENT ON THE PROPOSED MINING PERMIT APPLICATION FOR COAL WITH DMRE REF: MP 30/5/1/1/3/13338 MP

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Thilivhali, Ndou <thilivhali@singoconsulting.co.za>

👍 Reply Reply All Forward ...

Tue 2023/04/11 13:42

From: [Redacted]

To: [Redacted]  
Subject: FW: INVITATION TO REGISTER & COMMENT ON THE PROPOSED MINING PERMIT APPLICATION FOR COAL WITH DMRE REF: MP 30/5/1/1/3/13338 MP

Good Day

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## Appendix 5: Screening report

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS  
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED DEVELOPMENT  
FOOTPRINT ENVIRONMENTAL SENSITIVITY**

**EIA Reference number:** DMRE REF: MP 30/5/1/1/3/13338 MP

**Project name:** portion of Portion 139 of the Blesboklaagte 296 JS

**Project title:** Mining Permit Application

**Date screening report generated:** 22/04/2023 15:33:08

**Applicant:** Siphosizwe Construction CC

**Compiler:** Singo Consulting (Pty) Ltd

**Compiler signature:**



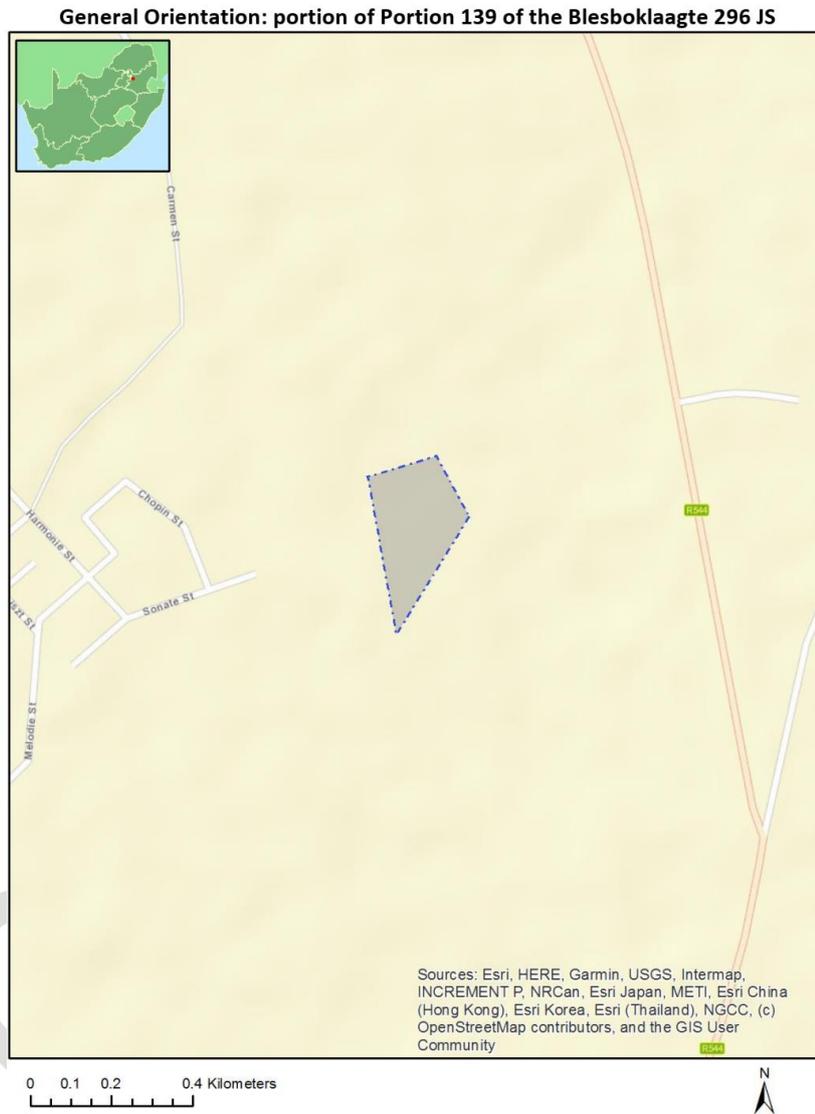
**Application Category:** Mining|Mining Permit

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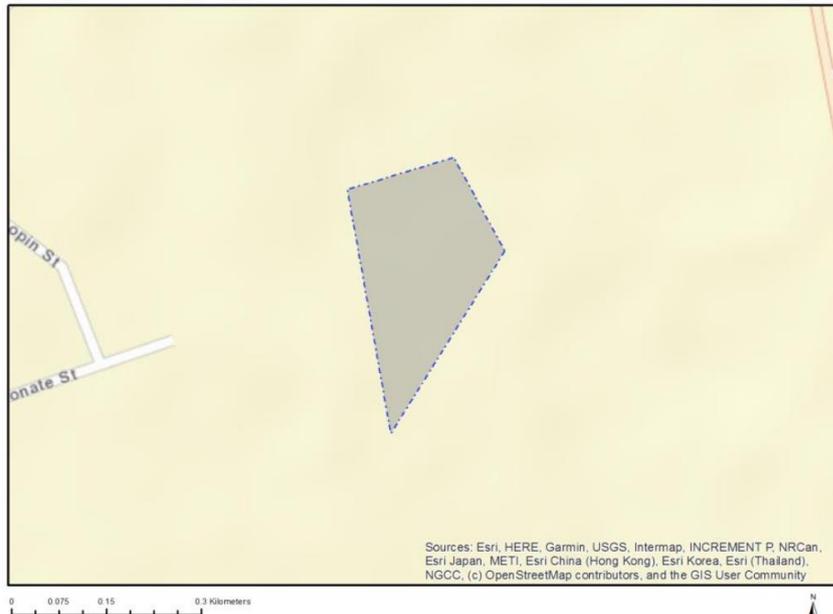
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# Proposed Project Location

## Orientation map 1: General location



## Map of proposed site and relevant area(s)



## Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	BLESBOKLAAGTE -	296	0	25°50'26.89S	29°12'39.66E	Farm
2	BLESBOKLAAGTE -	296	139	25°50'35.69S	29°12'32.49E	Farm Portion

Development footprint<sup>1</sup> vertices:

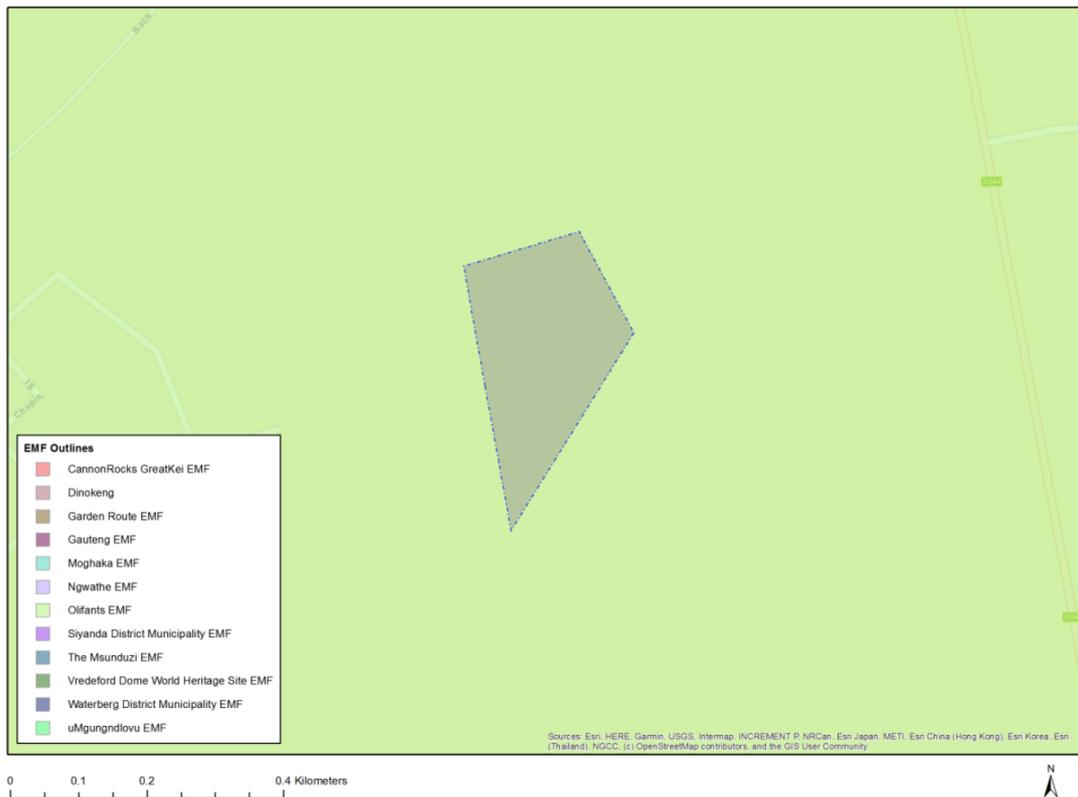
Footprint	Latitude	Longitude
1	25°50'36.21S	29°12'32.92E
1	25°50'34.72S	29°12'38.4E
1	25°50'39.07S	29°12'40.99E
1	25°50'47.57S	29°12'35.16E
1	25°50'36.21S	29°12'32.92E

## Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

<sup>1</sup> “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/2/759	Solar PV	Approved	16.7

### Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Olifants EMF	<a href="https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_4_6,_67,_78,_80,_92,_103,_122,_129.pdf">https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_4_6, 67, 78, 80, 92, 103, 122, 129.pdf</a>

### Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development footprint as well as the most environmental sensitive features on the footprint based on the footprint sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

**Mining | Mining Permit.**

## Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this footprint are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-International corridor	<a href="https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf">https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf</a>
Air Quality-Highveld Priority Area	<a href="https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf">https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf</a>
Renewable energy development zones 9-Emalahleni	<a href="https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_REDZ.pdf">https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_REDZ.pdf</a>

## Proposed Development Area Environmental Sensitivity

The following summary of the development footprint environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

## Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the footprint situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf</a>
2	Archaeological and Cultural Heritage Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>

3	Palaeontology Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20General%20Requirement%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf</a>
4	Terrestrial Biodiversity Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20Terrestrial%20Biodiversity%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Terrestrial Biodiversity Assessment Protocols.pdf</a>
5	Aquatic Biodiversity Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20Aquatic%20Biodiversity%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Aquatic Biodiversity Assessment Protocols.pdf</a>
6	Hydrology Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20General%20Requirement%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf</a>
7	Noise Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20Noise%20Impacts%20Assessment%20Protocol.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Noise Impacts Assessment Protocol.pdf</a>
8	Radioactivity Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20General%20Requirement%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf</a>
9	Traffic Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20General%20Requirement%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf</a>
10	Geotechnical Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20General%20Requirement%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf</a>
11	Socio-Economic Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20General%20Requirement%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf</a>
12	Plant Species Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20Plant%20Species%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Plant Species Assessment Protocols.pdf</a>
13	Animal Species Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted%20Animal%20Species%20Assessment%20Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Animal Species Assessment Protocols.pdf</a>

## Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed footprint for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

### MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

#### Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High

## MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

### Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Hydrictis maculicollis
Medium	Mammalia-Ourebia ourebi ourebi
Medium	Reptilia-Kinixys lobatsiana

## MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

### Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

# MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

### Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

## MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

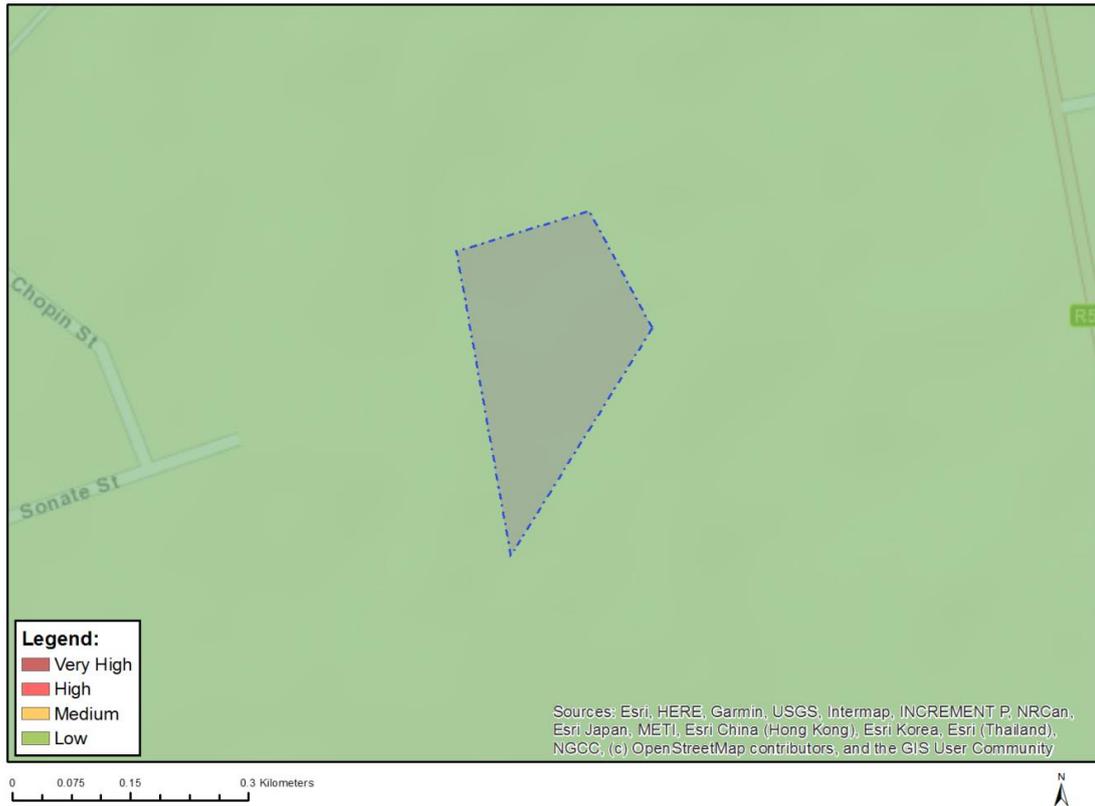


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

### Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
Medium	Within 5 km of an air traffic control or navigation site

## MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

### Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

## MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

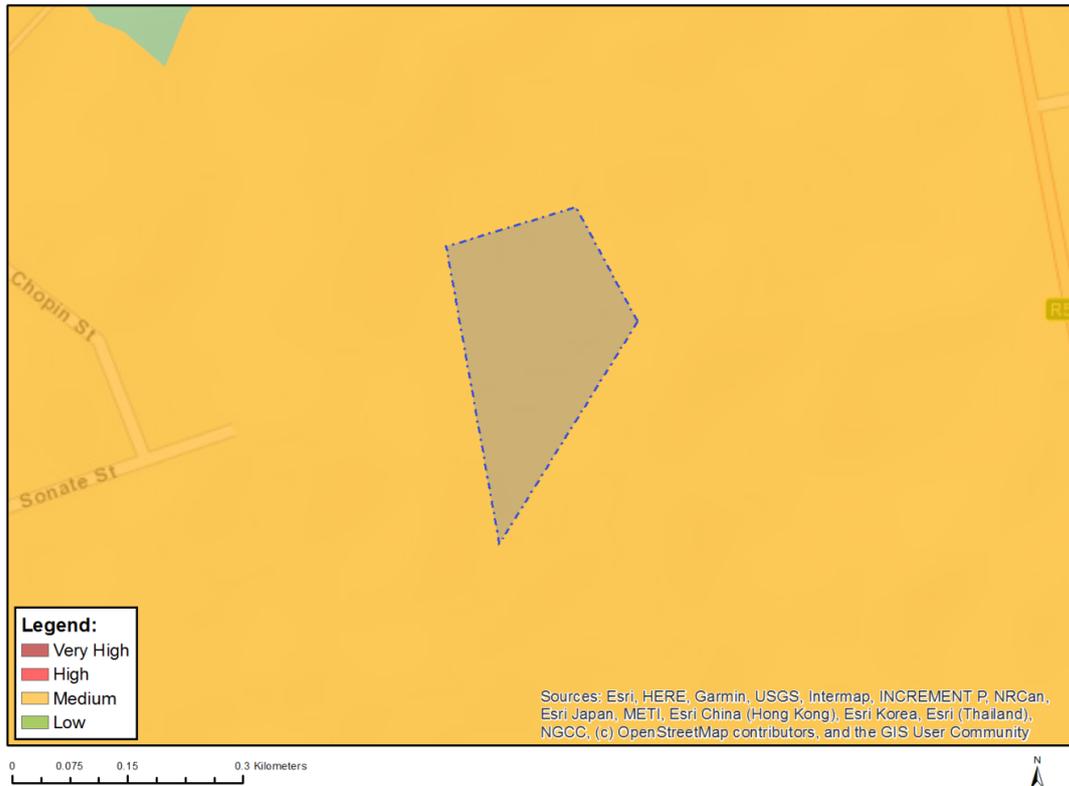


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

### Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

## MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

### Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 601
Medium	Sensitive species 41
Medium	Sensitive species 691
Medium	Pachycarpus suaveolens
Medium	Brachycorythis conica subsp. transvaalensis

## MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

### Sensitivity Features:

Sensitivity	Feature(s)
Very High	Protected Areas Expansion Strategy
Very High	Vulnerable ecosystem

## Appendix 6: Specialist studies