

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

MINING PERMIT APPLICATION FOR COAL, PSUEDOCOAL AND TORBANITE/OIL SHALE WITH AN AREA EXTENT OF APPROXIMATELY 5 HECTARES ON A PORTION OF PORTION 2 OF THE FARM MORGENSTER 204 IS, ERMELO MAGISTERIAL DISTRICT MPUMALANGA PROVINCE

DMRE Ref: MP 30/5/1/1/3/13231 MP

Competent Authority:

Department of Minerals and Resources



Regional office

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Environmental Assessment Practitioner:



Prepared for:

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Draft Report: ngwadiM.L@gmail.com 2022



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT and ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

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FILE REFERENCE NUMBER SAMRAD:

MP 30/5/1/1/3/13231 MP

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 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 EIA 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 taken into account 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 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 provide 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 paced 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 of the proposed activity and how the activity complies with and responds to the 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) undertake an impact and risk assessment process inclusive of cumulative impacts focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
 - i. the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - ii. the degree to which these impacts:
 - aa) can be reversed;
 - bb) may cause irreplaceable loss of resources; and
 - cc) can be managed, avoided or mitigated.
- e) rank the site sensitivities and possible impacts the activity and technology alternatives will have on the sites and location identified through the life of the activity to:
 - i. identify and motivate a preferred site, activity and technology alternative;
 - ii. identify suitable measures to manage, avoid or mitigate identified impacts; and
 - iii. identify residual risks that need to be managed and monitored.

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LIST OF ABBREVIATIONS

ACRONYM	DESCRIPTION
CARA	Conservation of Agriculture Resources Act, 1983
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Report
EMF	Environmental Management Framework
DEA	Department of Environmental Affairs
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
I&APs	Interested and Affected Parties
IWULA	Integrated Water Use License Application
MPRDA	Minerals and Petroleum Resources Development Act, 2002
NEMA	National Environmental Management Act, 1998
NWA	National Water Act, 1998
NHRA	National Heritage Resources Act, 1999
PPP	Public Participation Process
SEA	Socio-Economic Assessment
SAHRA	South African Heritage Resource Agency
SDF	Spatial Development Framework
LIHRA	Limpopo Heritage Resource Agency
EA	Environmental Authorization

GLOSSARY OF TERMS

Aeromagnetic Survey	Surveys flown by helicopter or fixed wing aircraft to measure the magnetic susceptibility of rocks at or near the earth's surface.
Alien species	A plant or animal species introduced from elsewhere: neither endemic nor indigenous.
Alternatives	A possible course of action, in place of another, that would meet the same purpose and need (of proposal). Alternatives can refer to any of the following but are not limited hereto: alternative sites for development, alternative site layouts, alternative designs, alternative processes and materials. In Integrated Environmental Management the so-called "no go" alternative refers to the option of not allowing the development and may also require investigation in certain circumstances.
Ambient	The conditions surrounding an organism or area.
Achaean	The oldest rocks of the Precambrian era, older than about 2 500 Ma.
Assessment	The process of collecting, organising, analysing, interpreting and communicating data that is relevant to some decision.
Basement	The igneous and metamorphic crust of the earth, underlying sedimentary deposits.
Biodiversity	Measure of the number and relative abundance of biological species. The variety among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.
Climate	A measure of the long-term averages, i.e., normal, of key atmospheric variables such as temperature, precipitation and wind.
Dip and dip direction	The dip direction is the azimuth of the direction of the dip as projected to the horizontal, which is 90° off the strike angle.
Ecology	The study of the interrelationships between organisms and their environments.
Effluent	Effluent is an out flowing of water from a man-made structure such as a process plant or tailings facility.
Environment	The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group; these circumstances include biophysical, social, economic, historical, cultural and political aspects.
Environmental impact	A change resulting from the effect of an activity on the environment, whether desirable or undesirable. Impacts may be the direct consequence of an organisation's activities or may be indirectly caused by them.
Environmental Impact	An Environmental Impact Assessment (EIA) refers to the process of

Assessment	identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the environment. The EIA includes an evaluation of alternatives, as well as recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures for enhancing the positive aspects of the proposal, and environmental management and monitoring measures.
Environmental Management Plan	A legally binding working document, which stipulates environmental and socio- economic mitigation measures which must be implemented by several responsible parties throughout the duration of the proposed project.
Fault	A fracture or fracture zone, along which displacement of opposing sides has occurred
Groundwater	Water which occurs below the surface of the Earth, where it occupies spaces in soils or geologic strata.
Industry	The use of land or a building for a factory, distributing depot, wholesale, storage, warehouse for the storage of wholesale merchandise, carting and transport services, laboratories, workshop and vehicle workshop and may also include offices which are normally associated with or which are reasonably essential for the main use as well as the sale of goods wholly or partially manufactured, processed or packed on property.
Integrated environmental management IEM	Provides an integrated approach for environmental assessment, management, and decision-making and to promote sustainable development and the equitable use of resources. Principles underlying IEM provide for a democratic, participatory, holistic, sustainable, equitable and accountable approach.
Interested and affected parties	Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public.
Intrusion Liquid	Rock (magma) which forms below the surface of earth and slowly cools into a solid rock mass.
Key issue	An issue raised during the Scoping process which has not received an adequate response and which requires further investigation before it can be resolved.
Layered complex	A body of igneous rock which exhibits vertical layering or differences in composition and texture and shows evidence of fractional crystallisation. Ideally, the stratigraphic sequence of an ultramafic intrusive complex consists of ultramafic peridotites and pyroxenites toward the base with more mafic norites gabbros and anorthosites in the upper layers.

Listed activities	Development actions which are likely to result in significant environmental impacts as identified by the Minister of Environmental Affairs and Tourism in terms of Section 21 of the Environment Conservation Act.
Mitigation	To cause to become less harsh or hostile.
Negative	A change which reduces the quality of the environment (for example, by reducing Impact species diversity and the reproductive capacity of the ecosystem, by damaging health, or by causing nuisance).
Positive impact	A change which improves the quality of life of affected people or the quality of the environment.
Property	Any piece of land indicated on a diagram or general plan approved by the Surveyor- General intended for registration as a separate unit in terms of the Deeds Registries Act and shall include an erf, a site and a farm portion as well as the buildings erected thereon.
Public Participation Process	A process of involving the public in order to identify needs, address concerns, choose options, plan and monitor in terms of a proposed project, programme or development.
Relevant authority	The environmental authority on national, provincial or local level entrusted in terms of the Constitution and in terms of the designation of powers in Notice No. R. 1184 of 5 September 1997 with the responsibility for granting approval to a proposal or allocating resources.
Study area	Refers to the entire study area encompassing all the alternative routes as indicated on the study area map.
Surrounding Owner	The registered owners of the properties directly bordering the property or across the road / street and also such owners that the Local Authority may specify.

Principles of the Environmental Management Plan

This EMP is compiled using the following concepts and implementation requirements so that the higher principles of sustainable development are realised:

- **Continuous improvement.** The project proponent (or implementing organisation) must commit to review and to continually improve environmental management, with the objective of improving overall environmental performance.
- **Broad level of commitment.** A broad level of commitment is required from all levels of management as well as the workforce in order for the development and implementation of this EMP to be successful and effective.
- **Flexible and responsive.** The implementation of the EMP must respond to new and changing circumstances, i.e. rapid short-term responses to problems or incidents. The EMP is a dynamic “living” document and thus regular planned review and revision of the EMP must be carried out.
- **Integration across operations.** This EMP must integrate across existing line functions and

operational units such as health, safety and environmental departments in a company/project. This is done to change the redundant mindset of seeing environmental management as a single domain unit.

- **Legislation.** It is understood that any development project during its construction phase is a dynamic activity within a dynamic environment. The Developer, Engineer, Contractor and sub-contractor must therefore be aware that certain activities conducted during construction may require further licensing or environmental approval, e.g. river or stream diversions, bulk fuel storage, waste disposal, etc. The Contractor must consult the ER and ECO on a regular basis in this regard.

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. Contact Person and correspondence address

a) Details of the Environmental Assessment Practitioner (EAP)

The applicant has appointed Sigana Enviro & Construction (Pty) Ltd as an independent EAP to conduct a BAR and EMPr that is required to support the application for a mining permit. Sigana Enviro & Construction (Pty) Ltd has no vested interest in the proposed project and hereby declares its independence, as required by the EIA Regulations. Any queries regarding this BAR and EMPr may be directed to the following EAPs at Sigana Enviro & Construction (Pty) Ltd:

b) Expertise of the EAP

MR Livhuwani Sigwadi

Profession Mining & Environmental Consultant

Position in firm Principal Consultant

Qualification BSc (Hons) Environmental Management (University of Venda, Acquired in 2012)

Contact details: 076 6529 062. E: sigwadiM.L@gmail.com

Areas of Expertise: Environmental Management (incl. compliance monitoring & auditing), Mining and Geology (incl. resource estimation and grade control), Geohydrology, Environmental Law, Waste Management, Water Management (incl. water licence auditing), ISO 14001, & Project Management.

Key Responsibilities: As entitled by the policies of Sigana Enviro & Construction (Pty) Ltd, Mr Livhuwani Sigwadi (i.e. Principal Consultant) duties involve taking full responsibility to ensure quality control on all projects as well as managing in house team of consultants. Liaise with Clients and competent authorities. Conduct mineral exploration, due diligence on geological reports, input on mine plans, environmental impacts assessment, public participation activities, environmental compliance audit (i.e. environmental control officer, dust monitoring, waste management procedures), compilation of social labour plans, water use licence audit (incl. groundwater monitoring, design of mine water management system), borehole certification, pump tests, mine feasibility studies and compile sound and reader friendly reports/plans. Lodge permits/licence applications in terms of the Republic of South Africa laws such as NEMA (i.e. Environmental Authorizations), MPRDA (i.e. Prospecting Rights, Mining Permits, and Mining Rights).

c) The qualifications of the EAP (with evidence)

Please refer to Appendix for the Curriculum Vitae of EAP.

INTRODUCTION

Sigana Enviro & Construction (Pty) Ltd has been appointed to do Basic Assessment Report and Environmental Management Programme Report by **MD Survey and Technical Services Pty Ltd** for a Mining Permit in terms of section 27 of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002). The proposed mine project situated in the magisterial district of Ermelo within Chief Albert Luthuli Local Municipality. The Municipality is located on the eastern escarpment of Mpumalanga Province. The Municipality spans an area of approximately 5,560 km², and according to Stats SA 2016 Community Survey, is home to some 187,630 people, which have increased. The Municipality consists of a diverse society that faces various social, economic, environmental and governance challenges. The rural community faces challenges such as lack of access to services like water, good roads, proper sanitation and access to job opportunities. The urban community, on the other hand experiences challenges such as skyrocketing prices for services which cannot be dove-tailed to fit the income levels.

The primary objective of the Mpumalanga Economic Growth and Development Path (MEGDP) is to foster economic growth that creates jobs, reduce poverty and inequality in the province. The following are the main economic sectors (all of which occur in the Gert Sibande District) that have been identified as pivotal in spurring economic growth and employment creation which are Agriculture and forestry, Mining, Tourism and cultural industries, and Green economy.

The nearest town or village from the proposed project is Hendrina which is Approximately 9.8 km North West of the proposed mining permit. Hendrina is a semi-urban to rural town incorporating the residential villages and the township. N11 run adjacent to the proposed towards Hendrina town from Ermelo Western side the proposed project which is approximately 5.17 Km. the proposed project is approximately 59.32 km South East of Middelburg. The project site covers an area of about 5 hectares (ha) in extent and access to the site is via a gravel road connect to the N11 tar road.

The project site covers an area of about 5 hectares (ha) in extent and access to the site is via a gravel road connect to the N11 tar road. The proposed area is characterised by outcrop rock and the operation will have following support infrastructure:

- ✓ Mobile office complex
- ✓ Portable water tank
- ✓ Ablution facility
- ✓ Workshop
- ✓ Bulldozer
- ✓ Hydraulic Excavators
- ✓ Dump Trucks
- ✓ Motor Grader
- ✓ Water Browser for dust suppression

- ✓ Weight-bridge
- ✓ Security gate (boom gate) and fence
- ✓ General waste bins

The extent of the area applied covers approximately 5 hectares. The project area is represented in the Figure 1 and **Figure 2** below. The life of mine (LoM) is estimated at 2 (two) years with Run of Mine (RoM).

Location of the overall activity

Farm name	Portion of Portion 2 of the Farm Morgenster 204 IS		
Application area (ha)	5 ha		
Magisterial district	Carolina		
Distance and direction from nearest town	Town	Distance (km)	Direction
	Carolina	33.07	South West
	Ermelo	34.24	North
	Hendrina	9.8	South east
21-digit Surveyor General Code for each farm portion	TOIS00000000020400002		

Locality map

(Show nearest town, scale not smaller than 1:250000)

The Municipality is located on the eastern escarpment of Mpumalanga Province. The Municipality spans an area of approximately 5,560 km², and according to Stats SA 2016 Community Survey, is home to some 187,630 people, which have increased. The Municipality consists of a diverse society that faces various social, economic, environmental and governance challenges. The rural community faces challenges such as lack of access to services like water, good roads, proper sanitation and access to job opportunities. The urban community, on the other hand experiences challenges such as skyrocketing prices for services which cannot be dove-tailed to fit the income levels.

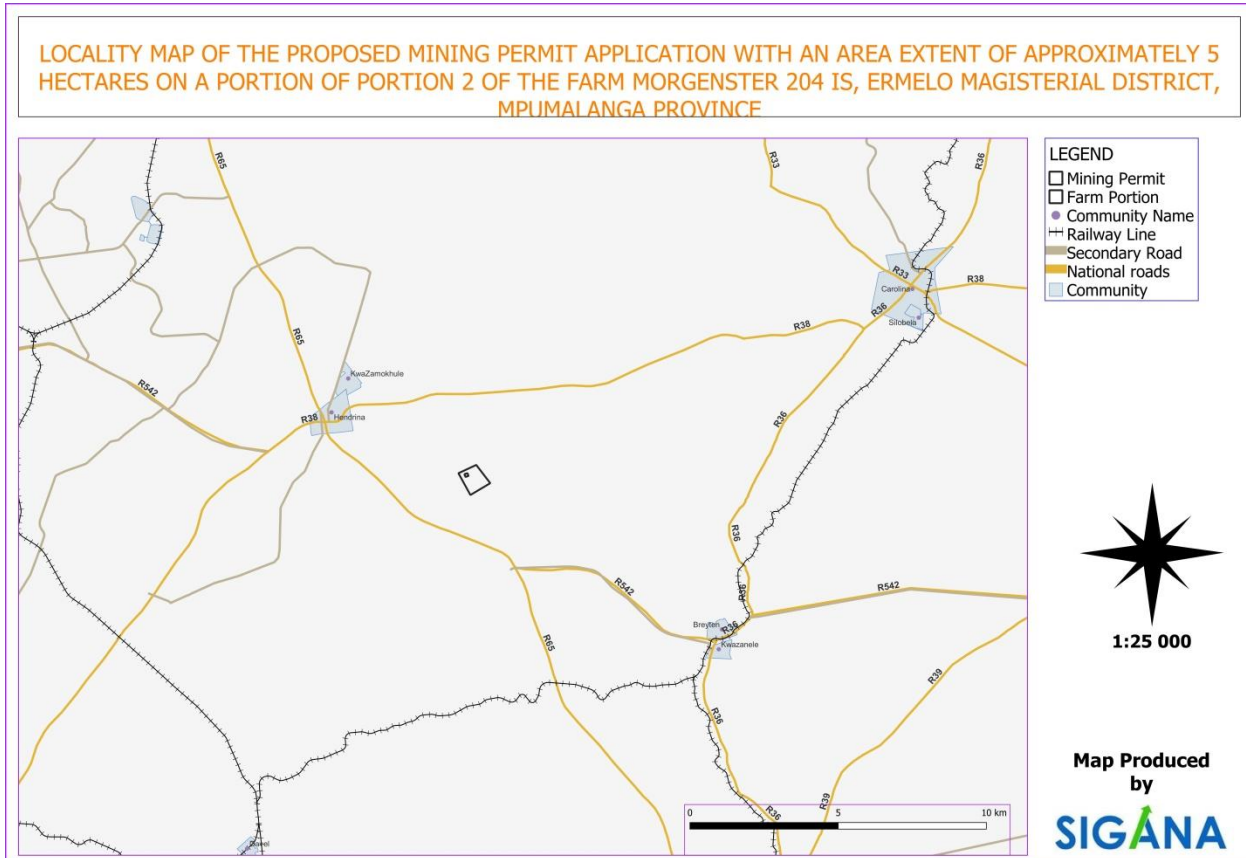


Figure 1: Locality map of the proposed project

The project area is within Portion of Portion 2 of the Farm Morgenster 204 IS, where a gravel road to the proposed site is adjacent to the national road (N11) runs from Ermelo to Hendrina. N11 runs adjacent to the proposed towards Hendrina town from Ermelo Western side the proposed project which is approximately 5.17 Km. The proposed site is dominated by both mining and agricultural activities where they do both livestock and cultivation. No community seen during site assessment in the farm but only farm house dwellers were seen during site assessment. The project site covers an area of about 5 hectares (ha) in extent and access to the site is via a gravel road connect to the N11 tar road, the affected farm is currently used for agricultural activities and other activities around.

Hendrina, Breyten and Carolina comprises of the following land uses: agriculture, mining, industrial, recreational, eco-tourism, nature reserves, conservancies, game farms, open spaces, and settlements. Most prominent of these are mining and agricultural lands with ownership largely being private.

Agriculture: Extensive farming and subsistence activities exist alongside each other as the area consists of both small holdings as well as large farms. Agricultural activities include the production of maize, sorghum, beans, vegetables, lucerne, and fodder. Other farm produce from this area includes beef, milk and processed dairy products.

Industrial: The principal mining activities are for Mineral which is carried out by various mining companies. Mining is the one of the most generating economy in Carolina under Chief Albert Luthuli municipality.

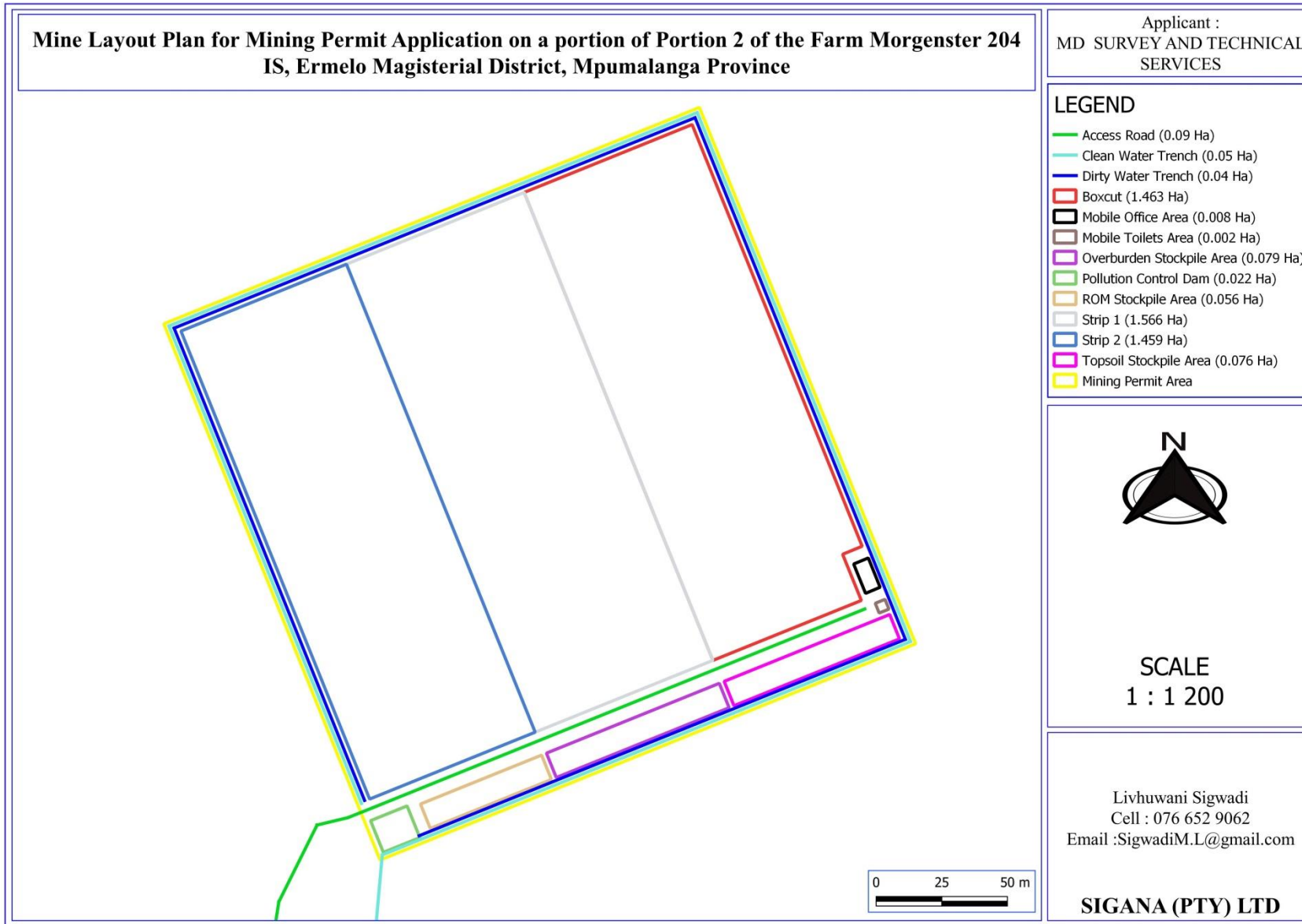
The project area is largely comprised of open spaces which are currently utilized for agricultural activities. It is clearly shown on the map attached below on **Figure 2** that the proposed mining permit is located in the area that is characterised by outcrops rock. No streams transverse the farm, have seen during site assessment and GIS team also confirmed on hydrological map.



Figure 2: The exact location of the proposed mining pit

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) of all the aforesaid main and listed activities, and infrastructure to be placed on site.

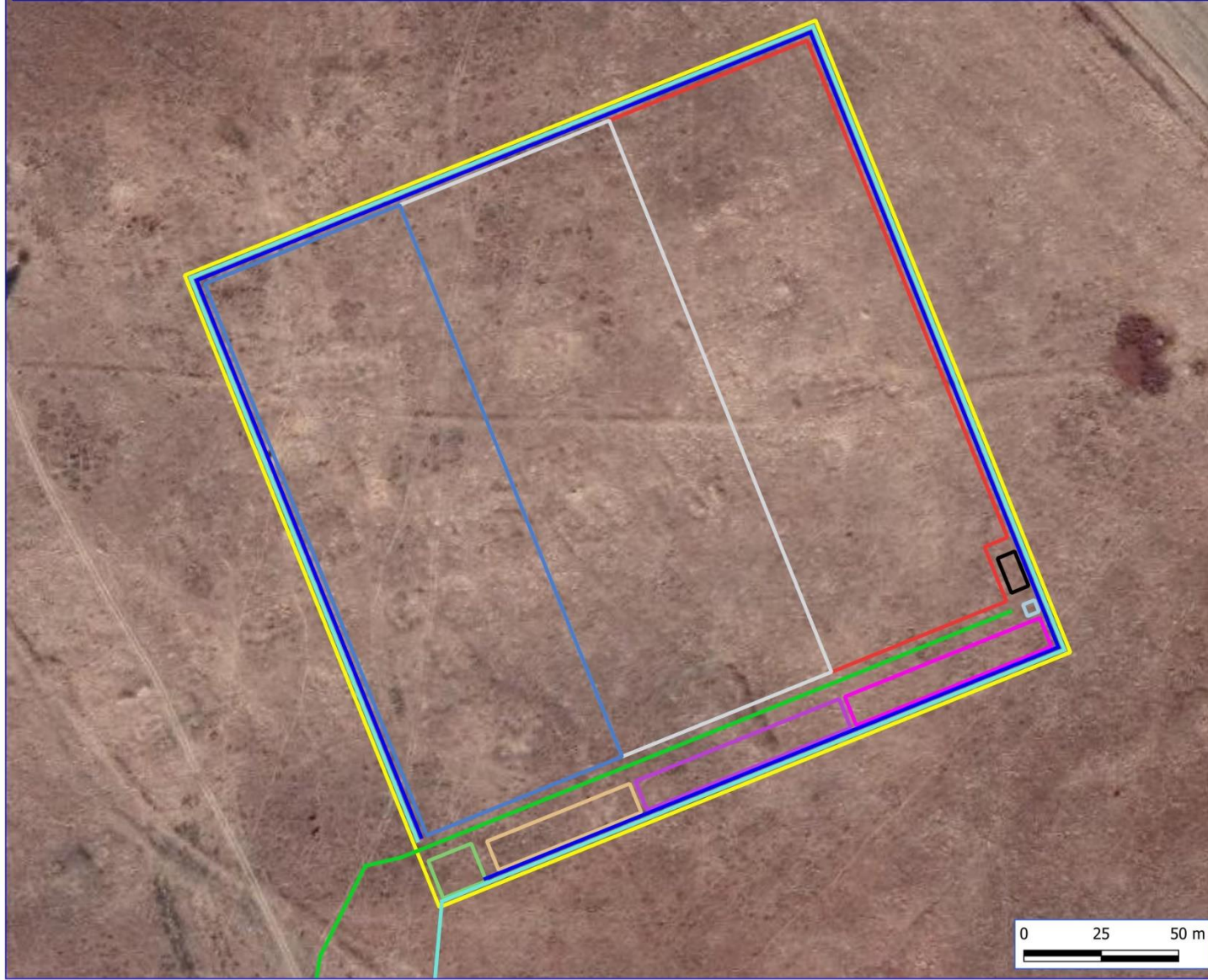


Mine Layout Plan for Mining Permit Application on a portion of Portion 2 of the Farm Morgenster 204 IS, Ermelo Magisterial District, Mpumalanga Province

Applicant :
MD SURVEY AND TECHNICAL
SERVICES

LEGEND

- Access Road (0.09 Ha)
- Clean Water Trench (0.05 Ha)
- Dirty Water Trench (0.04 Ha)
- Boxcut (1.463 Ha)
- Mobile Office Area (0.008 Ha)
- Mobile Toilets Area (0.002 Ha)
- Overburden Stockpile Area (0.079 Ha)
- Pollution Control Dam (0.022 Ha)
- ROM Stockpile Area (0.056 Ha)
- Strip 1 (1.566 Ha)
- Strip 2 (1.459 Ha)
- Topsoil Stockpile Area (0.076 Ha)
- Mining Permit Area



SCALE
1 : 1 200

Livhuwani Sigwadi
Cell : 076 652 9062
Email : SigwadiM.L@gmail.com

SIGANA (PTY) LTD

Figure 3: Infrastructure Plans

Scope of the proposed overall activity

The mining method proposed involves extraction of Coal, Psuedocoal and Torbanite/Oil Shale from the land that has not previously disturbed by mining activities, only agricultural activities are being practiced, primarily livestock grazing and cultivation. Mining activities will be undertaken over a period of two (2) years. This project will entail an open cast method of excavation. The mine design will be developed according to the dimension of the mineral applied deposit within the project area, but overall mining activities will be limited to an area of 5 Ha as per mining permit requirements. The top soil will be stockpiled elsewhere on site preferably next to the permit 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. The loosened material will then be loaded onto trucks by excavators. A haul road will be situated at the side of the pit, forming a ramp up which trucks can drive, carrying ore and waste rock. Waste rock will be piled up at the surface, near the edge of the open pit (waste dump). The waste dump will be tiered and stepped, to minimize degradation. All the activities will be guided by the project's EMP such that the project does not impact the environment negatively. The Coal, Psuedocoal and Torbanite/Oil Shale will then be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the mining site.

The excavator and front-end loader that will be used on site will be stored in a small workshop to be developed on site. Only support equipment and infrastructure required to conduct mining will be on site. The excavations will be sloped after mining and covered with the topsoil (concurrent rehabilitation) to ensure establishment of vegetation on site after mining. The proposed land will be used for domestic animals grazing after mine rehabilitation.

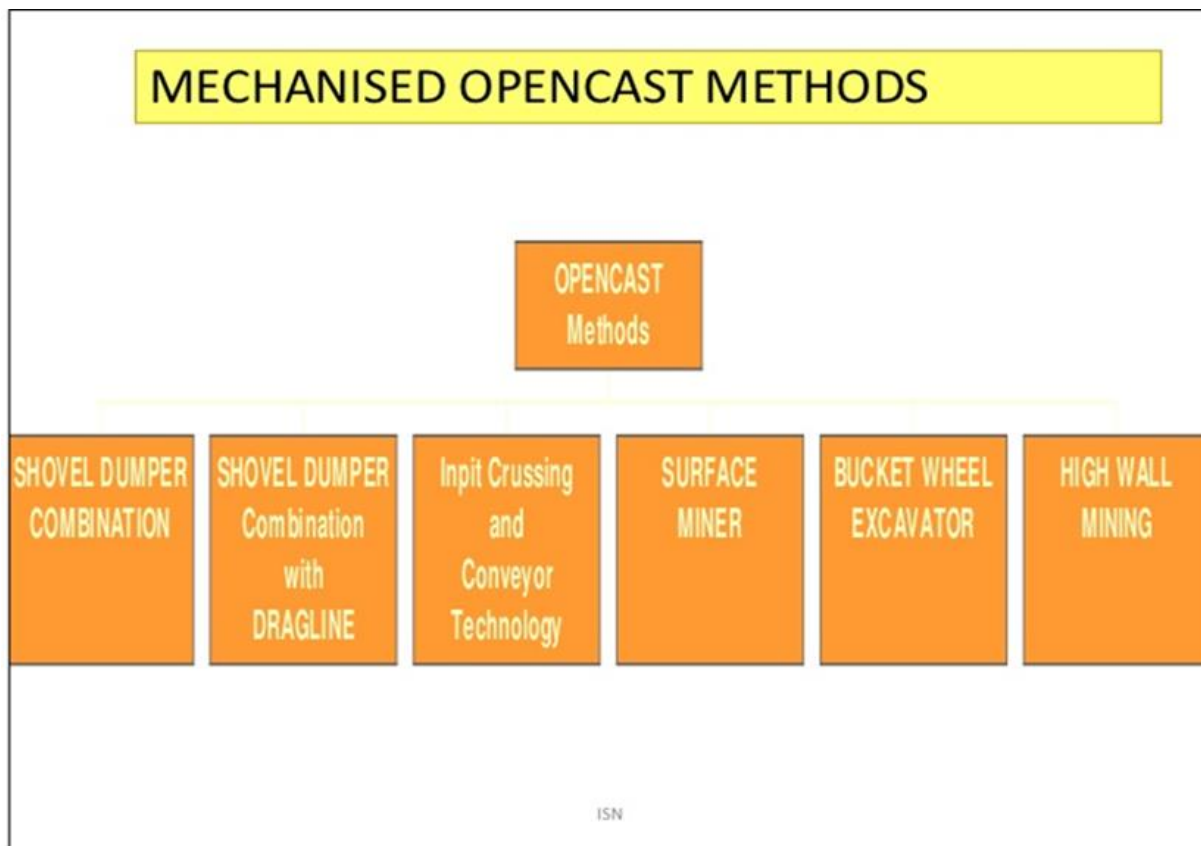


Figure 4: Schematic representation of opencast mining technique operation

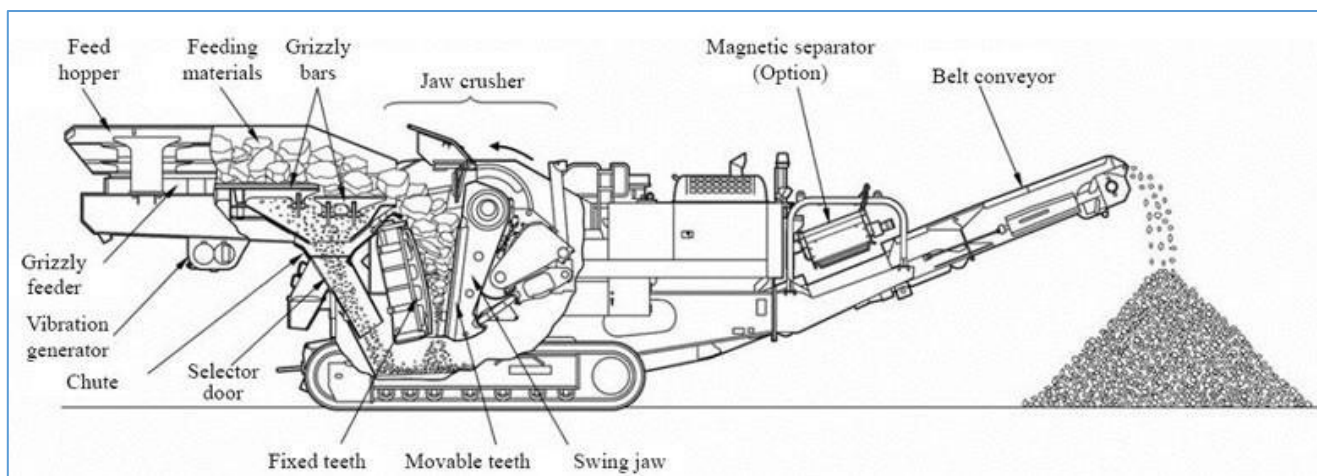


Figure 5: Typical mobile crusher

Listed and specified activities

NAME OF ACTIVITY (E.g. For prospecting drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	AERIAL EXTENT OF THE ACTIVITY (Ha or m²)	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 327, 325 & 324)
Mining Permit Application	5 ha	X	GNR 327 Activity 21
Access road	0.09 ha	X	Not listed
ROM stockpile area	0.056 ha	X	Not listed
Dirty water trench	0.04 ha	X	Not listed
Clean Water trench	0.05 ha	X	Not listed
Pollution Control Dam	0.022 ha	X	Not listed
Mobile offices	0.008 ha	X	Not listed
Mobile Toilets and sanitation	0.004 ha	X	Not listed
Overburden Stockpile area	0.079	X	Not Listed
Excavating	4.48 ha	X	Not listed
Strip 1	1.566 Ha	X	Activity 21
Strip 2	1.459 Ha	X	Activity 21
Box cut construction	1.463 ha	X	Activity 21
Drilling and blasting	4.48 ha	X	Activity 21
Mineral extraction	4.48 ha	X	Activity 21
Mobile Crushing Plant	0.05 ha	X	Not listed
Load and haul	4.48 ha	X	Activity 21
Rehabilitation	5 ha	X	Not listed

Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to be /mined and for a linear activity, 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 situation 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 are 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 mineral from a pit to be established within the proposed area upon the granting authorisation. The pit at the site will be worked by cutting a rock or blasting into small size to fit into crushing machine. The mining method will include blasting (electronic method of blasting should be considered) to loosen the hard rock (overburden) when necessary. The material will be loaded with excavators and hauled to the mobile crushing and screening plants that will be established within the boundaries of the mining or anywhere considering the space of proposed area as its only 5ha. The minerals will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the mining site, 5 ha. All these proposed activities must consider NEMA principles that intended to define the relationship that NEMA seeks to establish between people and their environment. These principles include:

- ✓ The need to balance environmental rights with socio-economic rights
- ✓ Placing people and their needs at the forefront of concern
- ✓ Development must be sustainable, environmentally and socioeconomically
- ✓ Negative impacts, e.g. pollution, waste etc., to be avoided, minimised or remedied
- ✓ The 'polluter pays' principle applies to environmental impacts and their costs
- ✓ Environmental management needs to be integrated and participatory
- ✓ Environmental justice and equitability must be observed
- ✓ People should be informed and empowered by environmental information
- ✓ Conflicts of interest must be resolved by negotiation

- ✓ Sensitive ecosystems, such as wetlands, require special measures



Figure 6: Typical illustration of open cast mining

Site infrastructure includes the following:

- Excavating
- Weigh bridge
- Blasting
- Chemical mobile toilet
- Mobile office
- Loading
- Hauling
- Crushing and screening

Product stockpiling and transporting

Rehabilitation

Security and Access Control

A permanent security house and boom gates will be constructed at the mine entrance. The structures will be a mobile house.

Water Supply

Process water supply for the operation will be sourced from existing boreholes on-site and water service providers and will be carted onto the site in a tanker. A 2000 litre water cart will be adequate for the size of this operation. The water will be used for dust suppression of access roads. Dust suppression will be conducted as and when necessary.

Potable Water Supply

Potable water required for the proposed mining operation is approximately 40 litres per day (ℓ/day). The water will be used for drinking purposes and will be sourced from local water vendors within Witbank. The water will be supplied in cooled water dispensers.

Ablution

Ablution facility at the mine will utilize a package sewage treatment plant. All raw sewage from these mobile toilets will be disposed of into the nearest wastewater treatment works within the Magisterial District of Witbank.

Mine Office Complex

Mine office complex will be established on site and will include the following:

- ✓ Vehicles and equipment area
- ✓ Ablution facility (chemical mobile toilet)
- ✓ Mobile office (mobile container)

Accommodation

No accommodation for workers will be provided on site. Employment will be sourced from nearby community which is a walking distance from the site.

Blasting

Blasting will be done for loosening outcrop rock to access to loosen the rock. Blasting operations will be conducted by a Blasters employed by a Subcontractor. Rock will be broken by drilling blast holes and blasting with commercial explosives. While the contractor in charge is responsible for providing the explosive and accessories for firing the blasts, most of the explosives are supplied by an explosive's contractor as a specialized down-the-hole service. Electronic Blasting may only take place from Monday to Saturday, between 07H00 and 17H30.

1.1.1 Site establishment/construction phase

During site establishment, the applicant must demarcate the site boundaries to ensure that no any trespassing to the site and clear the topsoil and overburden from the extension area to open it for drilling and blasting. Upon stripping, the topsoil and overburden will be stockpiled along the boundaries of the quarry pit for use during the rehabilitation phase. The area that covered by topsoil will be stripping and stockpile in an area that 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 bunch alongside the boundary of the mine pit where it will not be driven over, contaminated, flooded or moved during the operational phase. The material used to construct a 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.

The applicant will introduce the mining equipment to the area during the site establishment phase. The equipment to be used on site will include:

- ❖ Weigh bridge
- ❖ Mobile crusher plant
- ❖ Chemical toilet
- ❖ Drilling equipment
- ❖ Excavating equipment
- ❖ Earth moving equipment

Mine Life Cycle

A mine life cycle diagram below how the mining process starts where a vegetation cover is removed and exposes topsoil. Topsoil will be removed and transported to topsoil stockpile area for rehabilitation. The removal of vegetation and topsoil exposes hard overburden. Exposed hard rock (Overburden) will be drilled and blasted and loose rock will be removed to overburden stockpile area for rehabilitation and this exposes ore body. Ore body will be drilled, blasted, loaded and hauled to the ROM stockpile area and then mobile processing plant. As mining progresses,

overburden material from overburden stockpile will be returned back on the mined-out area and compacted. Then, topsoil is spread over the compacted area and area sloped, contours will be installed and re-vegetated. The area will be inspected and vegetation maintained for up to 3 years after mining ceases in area for mine closure process.

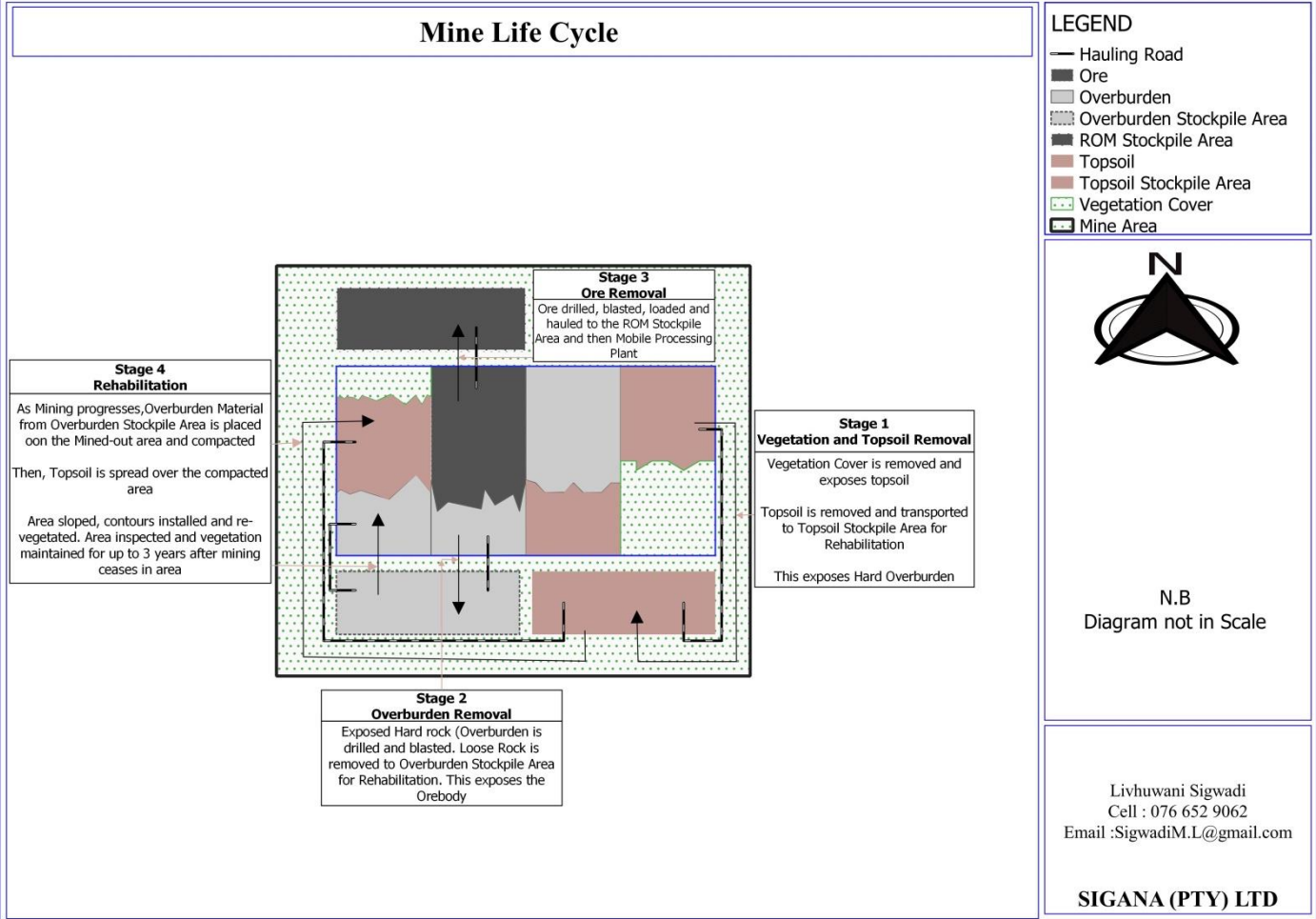


Figure 7: Diagram illustrate mine cycle of the project

1.1.2 Operational phase

The mining process includes drilling to set charges, detonation, loading and short haul, and stockpiling. Mining will be conducted by blasting from the rock face of the pit face. Blasting is anticipated to occur weekly. The noise caused by blasting will be instantaneous and of short duration. The applicant must ensure that all surrounding residents/farmers are informed of each blasting event. After a blast, the larger Ore will be broken into smaller pieces by hydraulic hammer for easily loading to the truck. The manageable pieces will be transported by tipper or dumper trucks to the crusher plant. The Ore is run through the crushers to produce the end product in various mineral grades, depending on the market.

The mining activities will consist of the following:

Excavating

Blasting

Loading

Hauling

Crushing and screening

Product stockpiling and transporting

The machinery used in the operation will be serviced off site to avoid soil contamination. Only emergency repairs will be conducted on site with regular equipment maintenance. Fuelling of tracked vehicles must be done at the mining site for logistical reasons. A chemical toilet will be established on site to be used by the employees. The existing farm road will be used to access the mining area.

Access and haul roads construction

A site will be accessed by using gravel road that connect N11 road to the proposed site on Portion of Portion 2 of the Farm Morgenster 204 IS, where it passes in between other farms. A gravel road to the Portion of Portion 2 of the Farm Morgenster 204 IS will be only used by the client if they get permission from the farm owners since is going to have negative impacts during operation. Mineral transporting trucks will also use the road to enter and exit mine premises. Several temporary roads will be constructed to access the RoM stockpile area. The constructed roads will measure 108 x 10m and water carts with added dust suppression will be used to suppress the dust on the roads.

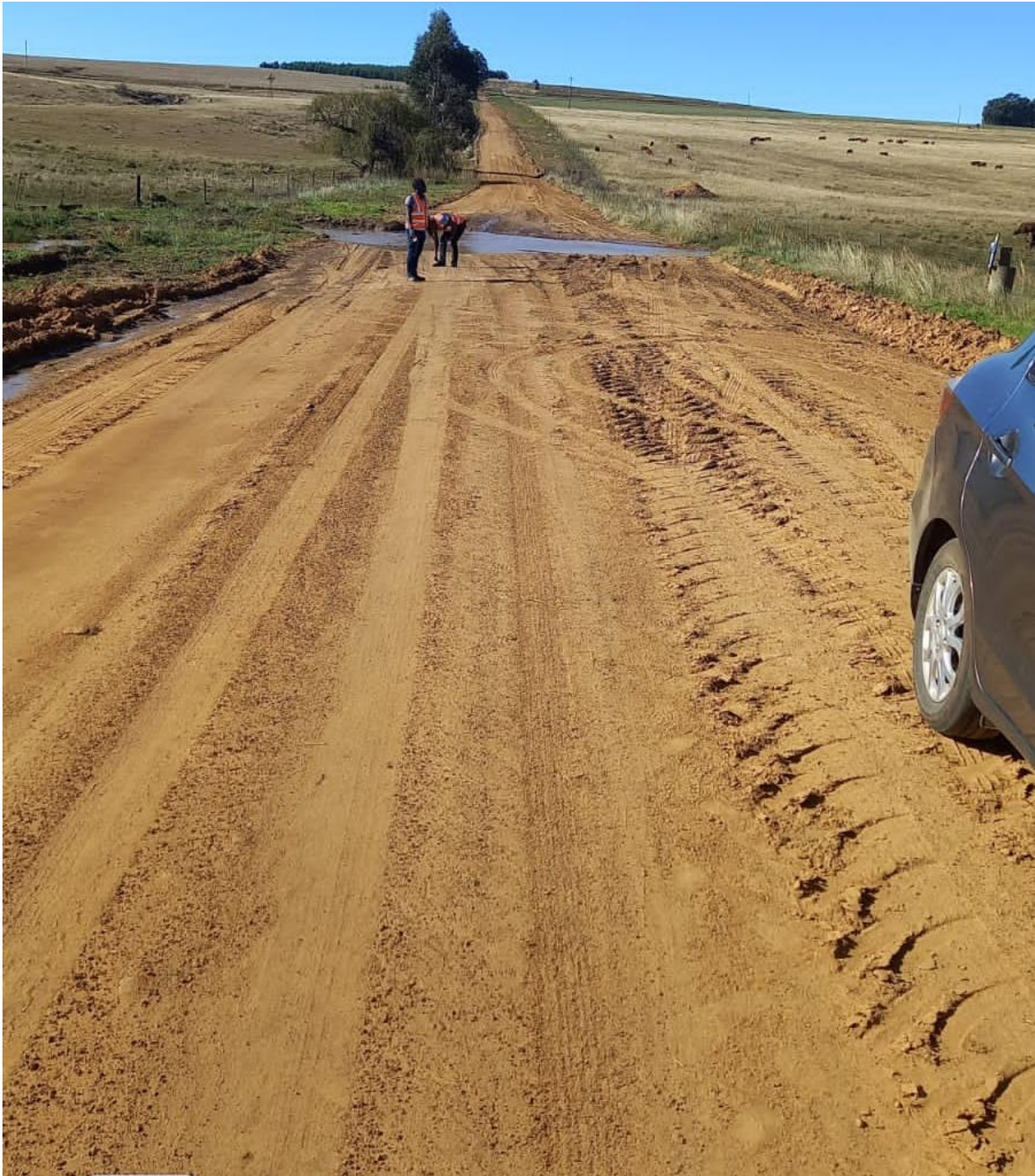


Figure 8: Gravel road adjacent to N11 road to site

Mobile offices, toilets and sanitation

The septic tank system will ensure a type of sewage removal vehicle can remove and dispose of sewage at an appropriate treatment facility. Mobile toilets will also be used were necessary and laundry will be also be provided to the workers. Water for drinking will be purchased and brought to the site by tanks.

A temporary shaded site office will not be erected at the sites. No electricity will be generated on-site. Meals will be provided to the staff and workers as no heating and/or cold storage facilities will be available. A shaded eating area will be provided.



Figure 9: An example of a temporal mobile offices, toilets and sanitation

1.1.3 Storage of dangerous goods

During the operation of the proposed activities, limited quantities of diesel fuel, oil and lubricants will be stored on site and a diesel stand will be prepared according to waste management standard with a diesel link container below. Only diesel will be stored in a significant quantity in the site since will be used every day by the big earth moving machines. A maximum amount of 250 m³ will be stored in above-ground storage tanks.

Clean and dirty water management

The clean and dirty water separation on the mine has been discussed under relevant sections. Where applicable, the geo-hydrological investigation will feed into these designs as the anticipated pollution will be modelled. Trenching around the mining boundaries should be constructed for clean and dirty water separation. The objective of the surface water monitoring system is to ensure that the water management system performs in accordance with specifications, to act as a pollution early warning system, to check compliance with license requirements and for

reporting purposes. The objectives of these systems will be achieved if there is no impact on the in-stream and downstream fitness for use criteria.

Mining operations have the potential to impact upon the baseline water quality of an area in the following ways:

- Bulk earthworks during construction will strip vegetation and expose topsoil and subsoils to erosion by storm water thereby increasing levels of suspended solids within local watercourses and water features;
- Stockpiles or waste material dumps will expose various chemical elements to storm water, mobilising elements into local watercourses and water features;
- Storage and usage of process specific chemicals and vehicular related pollutants which, if not properly managed properly, may be washed by storm water into local watercourses and water features; and
- Discharge of polluted or improperly treated storm water, process water and sewage water into local watercourses or water features.

An impact upon the baseline water quality caused by mineral processing operations may impact upon the local aquatic ecosystems, and/or local human populations who use the water for drinking, washing, irrigating or livestock watering.

In addition to the above, if not managed correctly, stormwater may pose a risk of flooding to a proposed development.

The aim of this conceptual stormwater management plan is to mitigate the above impacts by fulfilling the requirements of the National Water Act (Act 36 of 1998) and more particularly GN 704.

The following definitions from GN 704 are appropriate to the classification of catchments and design of stormwater management measures at the project area:

- **Clean water system:** includes any dam, other forms of impoundment, canal, works, pipeline and any other structure or facility constructed for the retention or conveyance of unpolluted (clean) water;
- **Dam:** includes any settling dam, slurry dam, evaporation dam, catchment or barrier dam and any other form of impoundment used for the storage of unpolluted water or water containing waste (i.e. dirty water);
- **Dirty area:** means any area at a mine or activity which causes, has caused or is likely to cause pollution of a water resource;
- **Dirty water system:** this includes any dirty water diversion bunds, channels, pipelines, dirty water dams or other forms of impoundment, and any other structure or facility constructed

for the retention or conveyance of water containing waste (i.e. dirty water); and

- **Activity:** means any mining related process on the mine including the operation of washing plants, mineral processing facilities, mineral refineries and extraction plants; the operation and the use of mineral loading and off-loading zones, transport facilities and mineral storage yards, whether situated at the mine or not; in which any substance is stockpiled, stored, accumulated, dumped, disposed of or transported.

During the Construction and Operational Phases of the mine project, rivers, pans and dams should be sampled on a monthly basis. Monitoring during the Decommissioning Phase will be based on the Operational Phase monitoring, adapted to suit the final works to be implemented during this phase. However, in terms of surface water this will be primarily downstream of the area as for the Operational Phase.

Monitoring during the Post Closure Phase will be undertaken only where required to prove the sustainability of the site. In terms of surface water, this relates primarily to managing the surface topography (monitoring for settlements), and water quality and levels within the mined-out area.

Any infrastructure (PCDs) that will remain on site, post closure, will continue to be included in the surface water monitoring programme and should be monitored in terms of water quality and water levels on a monthly basis.

Water Quantity Monitoring

For efficient management of water on the site, a good understanding of the site water balance will be required. To achieve this, the following monitoring will be needed:

- Rainfall – to be measured daily on site.
- Flows – including the following, to be measured weekly:
- Mine water can pumped from the opencast workings.

Waste management

Waste will be generated from project start to decommissioning. It is proposed that the waste generated on site is managed by reducing, reusing and recycling as far as possible. A certified and approved external contractor will be responsible for the removal and disposal of the waste at a registered landfill. The overall aim of the project is to limit the project's carbon footprint. This will include the use of environmentally-friendly products as far as possible, including building rubble reclamation during the construction phase.

The following will apply to temporary waste storage at the source:

The employer will provide adequate and appropriate containers for temporary waste storage.

Adequate containers must be available to store different types of waste separately.

Waste collection at source will be collected daily.

Waste must be kept in a way that prevents it from falling while in storage or during transport.

Waste must be protected from scavengers.

Do not dispose of (burn, bury or treat) waste on site.

Collection of waste must be scheduled, and the site/ location manager must be notified beforehand of collection times and type of waste to be collected.

Implement dust suppression measures, such as wetting of access routes and accumulated controller waste.

Mine closure and rehabilitation

South Africa's legislation unambiguously places the responsibility of mitigating environmental damage as a result of mining operations on mining companies. The liability exists throughout the life of the mine, and beyond in terms of residual impacts. It includes commitments for remediation and/or rehabilitation.

As per Annexure 4 of the GNR 1147 regulations, "The minimum content of a final rehabilitation, decommissioning and mine closure plan", the objective of the final rehabilitation, decommissioning and mine closure plan, which must be measurable and auditable, is to identify a post-mining land use that is feasible. Internationally and in the South African context, the broad rehabilitation objectives include, explained below:

- ❖ Restoration of previous land capability and land use
- ❖ No net loss of biodiversity
- ❖ What the affected community wants, the affected community gets.
- ❖ Waste will be removed as it is created
- ❖ Excavation will be planned so that topography restoration is less complicated
- ❖ Topsoil can be re-used at shorter interval
- ❖ Site rehabilitation will ensure that the land more valuable and attractive for resale
- ❖ Concurrent rehabilitation will commence with the completion of each box. The material salvaged out of screening (discard) will be used as backfill. Rehabilitation of the site will be done in accordance with a rehabilitation plan

Rehabilitation objectives need to be tailored to the project at hand and be aligned with the Environmental Management Programme (EMPr) and Mine Closure Plan. And thus, the overall rehabilitation objectives for the project are as follows:

- Re-establishment of the pre-mining land capability to allow for a suitable post mining land use
- Maintain and minimise impacts to the functioning wetlands and water bodies within the area
- Implement progressive rehabilitation measures where possible
- Prevent soil, surface water and groundwater contamination
- Comply with the relevant local and national regulatory requirements; and
- Maintain and monitor the rehabilitated areas



Figure 10: Example of rehabilitated land

Baseline environment to be considered during Rehabilitation process

- ✓ Soils and Land Capability
- ✓ Soils Forms
- ✓ Land Capability and Land Use
- ✓ Fauna and Flora
- ✓ Conservation and sensitivity status
- ✓ Surface and Ground Water

South African's constitution does not contain specific provisions for rehabilitation, does enshrine the right of every citizen to an environment that is not harmful to health or wellbeing (Section 24).

The inclusion of environmental rights as part of fundamental human rights ensures that environmental considerations are recognised and respected during the administrative and legal processes implemented during the closure and rehabilitation of mined land.

The Bill of Rights, which is an aspect of the Constitution, also provides for rights pertaining to administrative justice, capacity or standing to institute legal proceedings and access to information. These all become relevant within the context of protection and management of the environment during all stages of the mine's life cycle.

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
<p>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.</p>		<p>E.g. In terms of the National Water Act (NWA)a Water Use License has/has not been applied for.</p>
<p>Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) and the MPRDA Amendment Act, Act 49 of 2008</p>	<p>DMRE</p>	<p>The conditions and requirements attached to the granting of the mining permit will apply to the mining activities.</p>
<p>Constitution of South Africa, specifically everyone has the right to:</p> <ul style="list-style-type: none"> • an environment that is not harmful to their health or wellbeing <p>have the environment protected, for the benefit of present and future</p>	<p>Republic of South Africa</p>	<p>The mining activities will only proceed after effective consultation.</p>

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		
Environmental Impact Assessment (EIA) regulations	DMRE	This Basic Assessment Report (BAR) is being undertaken in terms of the EIA. Regulations are in place to determine any possible impacts on the environment and propose sufficient mitigation to prevent environmental damage.
National Environmental Management Act, Act 107 of 1998 (as amended) (NEMA)	DMRE	This BAR is being undertaken in terms of the NEMA (No. 107 of 1998), as amended, to determine environmental impact and propose sufficient mitigation to prevent environmental damage. The appropriate environmental authorisation will be obtained before proceeding with any mining activities. No mining activity will be conducted in a sensitive environment. Measures will be implemented to prevent pollution during mining activities. Once mining is complete, the area will be rehabilitated as close as reasonably possible to its pre-mining state.
National Water Act, 1998 (Act 36 of 1998). Best Practice Guidelines: Series A, G, & H	(S 21) Water use & mine water management	Best practice guidelines will be followed for water management, water characterisation, 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	N/A
National Heritage Resources Act, 25	Management	No mining activities will take place within 500 m of any identified heritage resource,

of 1999 (NHRA)	measures	such as a grave. No graves have been identified on the site in question.
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 bylaws management and the development of the mine environmental and other legislative management.

Listed activities triggered/other relevant legislation

In terms of the 2014 Environmental Impact Assessment (EIA) Regulations enacted in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended), the proposed Mineral Mine will involve activities that fall within the ambits of Government Notice (GN) 983 (08 December 2014). The proposed project will require authorisation from the Department of Mineral Resources and Energy (DMRE) through the Basic Assessment Process outlined in GNR 982.

A Basic Assessment Process (BAR) is an effective planning and decision-making tool, which allows for the identification of potential environmental consequences of a proposed project, and its management through the planning process. The process will involve consultation with interested and affected parties (I &APs) and submit a Basic Assessment and Environmental Management Plan Report to the DMRE.

The project triggers the following listed activities in EIA Regulations (as amended) (GNR 327, Listing Notice 1), **Activity 21** and **Activity 27** which therefore necessitate the undertaking of Basic Assessment Process. These activities are listed under Regulations Listing Notice 1 Government Notice (GN) 517, Listing Notice 2 GN 517 and Listing Notice GN 517 (dated 11 June 2021) of the NEMA, required to exercise prospecting right. Table 2 below, listed activities triggered by proposed activity.

Activity	Mining permit area (5 ha)	Activity 21: Listing Notice 1 (7 April 2017)
Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the MPRDA 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks directly related to the extraction of mineral resource, including activities for which an exemption has been issued in terms of section 106 of the MPRDA (2002).		E.g. In terms of the NWA, a Water Use License has/has not been applied for
The clearance of an area of 1 ha or more, but less than 20 ha, of indigenous vegetation, except where such clearance of indigenous vegetation is required for: (i) The undertaking of a linear activity. (ii) Maintenance purposes undertaken in accordance with a maintenance management plan.	Mining permit area (5 ha)	Activity 27: Listing Notice 1 (7 April 2017)
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Mining activities	The potential impact on important flora and fauna conservation in the study area, and the management thereof is addressed in this BAR.
Chief Albert Luthuli Municipality (2017-2022 Integrated Development Plan – Draft)	Needs, desirability, socio-economic needs	See consultation table and comment forms
National Environmental Management Air Quality Act (Act No. 39 of 2004, Government Gazette No. 27318) (NEMAQA) National Ambient Air Quality (GN 1210: 2009) Mine Health and Safety Act, Act 29 of 1996 National Dust Control Regulations (GN 275: 2017)	Air quality & dust control	Standards for particulates and dust used in the Impact Assessment will regulate the concentration of a substance that can be tolerated without environmental deterioration. Exposure to dust and toxic particles (i.e. Mineral dust) will be managed.
ISO 14001:2015: Principle of Sustainable development	Environmental management system	Development of an integrated environmental management system and measures for responding to environmental

Activity	Mining permit area (5 ha)	Activity 21: Listing Notice 1 (7 April 2017)
		conditions (PDCA model).
Activity	Mining permit area (5 ha)	Activity 22: Listing Notice 1 (7 April 2017)
The decommissioning of any activity requiring – (i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	Mining activities	Mining permit where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure; but excluding the decommissioning of an activity relating to the secondary processing.

Need and desirability of the proposed activities

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

The project site was selected based on the presence of a mineable resource. The project plan and site layout are based on limiting the project area footprint and avoiding environmentally and socially sensitive areas where possible, while still considering engineering feasibility and financial considerations. The proposed project will benefit society and the surrounding communities directly and indirectly by generating additional employment at the proposed operation and through the extraction and beneficiation of mineral resources. Direct economic benefits will be derived from wages, taxes and profits. Indirect economic benefits will be derived from the procurement of goods and services and the spending power of employees.

Employment will allow employees to gain mine construction and operation skills. The proposed development will ensure local economic development through the implementation of projects identified in the Social and Labour Plan.

The mining sector has provided more employment opportunities for the citizens in general. The provincial citizens of the Mpumalanga Province especial local communities will be awarded more employment opportunities. Should the proposed mining operation be authorized, the following economic development activities will result: Job creation, Development of skills, Potential for business opportunities, Establishment of bursaries and scholarships, Stimulate economic activities in the local vicinity.

The land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed being the relevant environmental authority. Mining is an integral part of its rationale to make use of the abundant natural resources in the area to create strong, resilient, and prosperous municipality.

It was proven during consultation that the community/area need the activity and the associated land use concerned and this refers to the strategic as well as local level. Mining needs many different skills and the local community members need to be employed before considering nearby towns. It is fortunate that this application is for mining permit where local economic can be gained from it, but it is an important to note that mining permit is for short period of time maximum of 5 years.

Mining production in South Africa rose 0.1% year-on-year in January of 2022, after a downwardly revised 15% fall in the previous month and largely missing market estimates of a 3.45% growth. Higher output levels from manganese ore (19.6%), gold (7%) and diamonds (16.3%) were offset by a decline in iron ore (-13.4%). On a seasonally adjusted monthly basis, mining production increased 5.4%, following an upwardly revised 5.5% decline in the prior month (Source: Statistics South Africa).

Motivation of the overall preferred site, activities and technology alternatives

Preferred site

The proposed project is located in an open space which is used by local livestock and was confirmed during site assessment and it is clearly that a proposed land is always used by local livestock. Therefore current activities will be disturbed for only 2 years after mining closure current activities will continue as before. The proposed site is located in an area where there is mining relating activities; it was noticed during site assessment that there is an operating sand towards the river, therefore the applicant is only relied on the geological studies done for the area. Mining activities will be done in an authorised applied 5 ha to avoid more damages to the natural activities. Therefore, any activities that will be done in the proposed land that will not be included on the authorised applied activities it will regard as illegal activities.

The project area is largely comprised of open spaces which are currently utilized for grazing

activities. One stream has been seen during site assessment and GIS team also confirmed by the hydrological map.

The impacts on the environment have been evaluated as part of this assessment (basic assessment) of the project. Low to moderate impacts are expected in terms of air quality, noise and visual character. It is the role of the independent environmental practitioner to assess the impact of the development project on the environment, assess the benefit / disadvantage of the project to the people of South Africa and to provide clear mitigation measures and recommendations under which conditions such a project could be a sound development project in the best interest of South Africa (including the economy, the environment and its people). The environmental impacts and economical gains need to be carefully weighed in order to assess whether the proposed project can contribute to a better South Africa for all.



Figure 11: Illustration of the current land view

Preferred activities

The preferred activities for the proposed project are extracting mineral through opencast mining method which will include stripping, excavation, blasting hauling and transportation. The LoM is currently intended to exist for two years; therefore temporary structures will be erected on site for the operation. The site was selected as it contains good quality coal located in a convenient position in close proximity to transport routes.

Technology alternatives

There are no technological alternatives to the proposed mining activities. Opencast mining and with preferred activities will be used during the LoM. The layout of this report and technology of mining project has been determined by the shape, position and orientation of the mineral resource.

Process followed to reach the proposed preferred alternatives on 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, 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

The proposed mining operation will be conducted within a non-perennial watercourse however, in the selection of the mining area consideration were made to only conduct mining activities within non-perennial watercourses in order to avoid or disturb water supply to adjacent land owners or other activities.

Alternative considered

The alternatives considered was to find properties where the applicant is the property owner. In other words, to operate on land owned by the applicant. The applicant intends to acquire or purchase the property.

Alternative to Processing

When the applicant was asked to consider processing there were two options for consideration, a large scale expansive mining operation or a small mine with a small footprint. The alternatives that informed the final decision were:

- ✓ Do not establish a wash-plant on the site and process the Mineral off-site.

- ✓ Only mining machineries should be on site during operation.
- ✓ Use a small fleet so that the impact on roads is smaller.

Activity to be undertaken

Opencast mining method.

The proposed Mineral pit triggers amongst others GN R. 324/GN R. 325/GN R. 327, GNR 983 Listing Notice 1 Activities 21, 22 and 27:

The application relates to a mining permit as stipulated in Section 27 of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002) and the MPRDA Amendment Act, Act 49 of 2008. Mining permit is basically an official and legal document issued by the Department of Mineral Resources allowing an applicant to extract an ore body within an area of 5 Ha. An ore is a material that occurs naturally and that contains a mineral(s) that can be extracted for a profit.

- Activity 21: The project requires a mining permit in terms of the MPRDA
- Activity 27: Prior to the commencement of the mining activities, an area of approximately 5 ha covered with vegetation will have to be cleared
- Activity 22: Upon closure of the site a closure permit in terms of the MPRDA will be required
- Activity 4: The development of a road wider than 4 metres

Section 24 of the NEMA requires that activities, which may impact the environment, be authorised by a relevant authority before commencement. These activities are listed under Regulations Listing Notice 1 Government Notice (GN) 517, Listing Notice 2 GN 517 and Listing Notice GN 517 (dated 11 June 2021) of the NEMA.

Activity design or layout

For this project, opencast mining is proposed. The conventional truck and shovel method will be used in conjunction with single-direction roll-over techniques. Sustainable development applied to mining works includes the rehabilitation of the mining area to as close as reasonably possible to its pre-mining state. The primary procedure that will be implemented during the mining process includes:

- Digging trenches around the mining area
- Building an outside perimeter berm
- Building a PCD
- Connecting trenches to the dam
- Building a flat ramp for water bowser
- Building and constructing an accumulation sump

Electronic Blasting, stripping and stockpiling overburden
Excavating the initial strip for the box cut
Excavating the RoM
Loading and hauling
Backfilling rehabilitation concurrently as mining progresses

Technology to be used in the activity

The opencast mining method will be considered to maximise Coal, Psuedocoal and Torbanite/Oil Shale extraction and use from the area. Truck and shovel operations will be used. Haul trucks will be used to haul the Mineral on haul roads to be constructed in the area. These mining methods are standard practise for opencast mining.

Operational aspects of the activity

The mining programme will be implemented as soon as the permit is granted by the DMRE and the landowner. Interested and affected parties will be notified of the mining programme to ensure a cooperative and satisfactory working relationship. Blasting operations will be strictly controlled in terms of explosive charge size to minimise noise and air blast, as well as explosion ignition. Electronic Blasting may only take place from Monday to Saturday, between 07H00 and 17H30.

The option of not implementing the activity

Should the proposed mining operation not be authorised, it is anticipated that there will be no enough granite production, which can lead to a shortage in Coal, Psuedocoal and Torbanite/Oil Shale supply to the development project for electricity generation purposes. This, in turn, will have a negative impact on the community and local economy, as they rely on Coal, Psuedocoal and Torbanite/Oil Shale for electricity generation.

No “go” Alternative or No to mine the site

The alternative of not establishing this project was considered by the applicant. There will be no impact on the noise levels and the dust generation will be limited to the land occupiers frequenting the property.

The business would need to look at opportunities to find applied minerals elsewhere in Mpumalanga. The land would remain fallow and not economically viable (as it is too small for crop farming or commercial animal husbandry. The national assets (in this case, Coal, Psuedocoal and

Torbanite/Oil Shale.), that will not be made available for economic benefit to the South African people, will remain on the property. The ecological services will not be temporarily altered by mining and the social benefits will not be obtained from the creation of 05-10 employment opportunities for 2 years.

Details of the public participation process

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether they attended public meetings. (Information to be provided to affected parties must include sufficient details of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

The public participation process (PPP), also known as the Stakeholders Engagement Process (SEP) is a fundamental component of the Environmental Impact Regulation (2014). Not only is public participation a statutory requirement in terms of Section 56 of the NEMA, but a process which is designed to lead a joint effort by interested and affected parties to evaluate all aspects and issues of the proposed development, with the ultimate goal of improving the project by minimizing adverse effects and maximizing the benefits of the project. Public participation is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner to assist them to:

- ✓ Be acquainted with the proposed mining permit application;
- ✓ Raise issues of concern and make suggestions for alternatives and enhanced benefits;
- ✓ Contribute local knowledge;
- ✓ To obtain stakeholder views and concerns;
- ✓ Verify and validate that their issues have been captured and considered in the Basic Assessment Report

Regulation 2(4)f under the principles of NEMA further states that: the participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantage persons must be ensured.

Initial consultation

Upon receiving the acceptance letter, in compliance with the NEMA, Sigana Enviro & Construction (Pty) Ltd commenced with the PPP in May 2022. This was concluded on June 2022, allowing IAPs a 30-day comment period to respond to the proposed application. This project was advertised on Highvelder news and was published on 13 May 2022. The notices of the proposed project were erected along the farm boundary, adjacent land and nearby community.

The following stakeholders and I&AP's were contacted to obtain their comments:

- Department of Mineral Resources and Energy - MP
- Chief Albert Luthuli Local Municipality
- Gert Sibande District Municipality
- Mpumalanga Tourism and Parks
- Department of Water Affairs
- Department of Agriculture, Forestry and Fisheries

On-site notices were placed at the entrance to the proposed mine site, the turn off from the N11 to the adjacent gravel road going to proposed site.

The stakeholders and I&AP's notified about the availability of the Draft Basic Assessment Report for their perusal. A 30 day commenting period will be allowed for the perusal of the document upon which any comments received will be incorporated into the Final Basic Assessment Report to be submitted to DMRE for approval. See attached as appendix C proof that the stakeholders and I&AP's were contacted.

It was notice that the proposed mine project situated in the magisterial district of Ermelo within Chief Albert Luthuli Local Municipality. Through consultation and windeed search it was found that, the affected portion of the farm owned by the private company. Below is the attached windeed result for the proposed project within Portion of Portion 2 of the Farm Morgenster 204 IS.

Coke 300ml
99cents
When you spend R300 or more @ participating stores

PIT STOP

CalStar

SASOL
Retail Energy

Hoëvelder | Highvelder

Sport

May 13, 2022 www.highveldernews.co.za

Douglasdale 2 Ltr R22⁵⁰

Albany 700g Brown R11⁹⁰ White R13⁵⁰

Bread & Milk @ Cost

PIT STOP CalStar SASOL



Jamie-Leigh James verdedig vir al wat sy werd is.
Foto | Wayne van der Walt

JJ vat Goedehoop aan

Wayne van der Walt

Laerskool JJ van der Merwe se rugby- en netbalspanne het op 6 Mei kragte met Laerskool

Goedehoop gemeet. Vir JJ was dit maar 'n moeilike dag op die sportveld, maar sommige spanne het wel hul staal gewys.

Rugby (gasheer se telling eerste):

- Die o. 9A's verloor hul wedstryd 26-17
- Die o. 9B's verloor net-net met 15-5
- Dieselfde lot tref die o. 10A's en hulle buig die knie met 'n 17-12-eindtelling
- Vir die o. 10B's is dit ongelukkig 'n wegholtelling van 29-0
- Die o. 11A's kry teenstand en verloor 36-0
- Die o. 11 B's wen so naelskraap 22-17 hul wedstryd
- Vir die tweede span is dit 'n gunstige uitslag van 40-0
- Die skool se trots, die eerste span, wen 29-0.

Netbal (gasheer se telling eerste):

- Die o. 10A-dogterspan delf die onderspit in hul kragmeting met 'n telling van 4-3
- Die JJ-dogters se o. 10B's verloor ook 2-0
- Die o. 11A-span verloor 5-18
- JJ se o. 11B-span verloor ook 5-6
- Vir die o. 12A-span is dit ook 'n hartseer dag toe hulle 12-19 verloor
- Die o. 12-B's verloor 7-14
- Die o. 13A's kry 'n 9-25-loesing
- Die o. 13B's hou hul koppe hoog en wen 14-10.



Errie presteer by atletiekbyeenkoms

René Joubert

Frané Swart, 'n gr. 12-leerder van Hoërskool Ermelo, het onlangs aan die Suid-Afrikaanse Sportvereniging vir Fisiek Gestremdes deelgeneem.

Sy het in al drie haar items tweede geëindig, ten spyte van die feit dat sy as 18-jarige in die vroue o. 20-afdeling moes deelneem. Haar items is verspring, 100 m en 200 m.

Frané het ook in die 200 m-wedloop haar persoonlike beste tyd aangeteken.

Haar nuwe seisoen vir atletiek begin weer in Augustus.

"Die Erries is trots op Frané en die harde werk wat dit deurentyd verg om sukses te bereik. EHS wens haar alle sterkte toe vir die komende seisoen, maar ook vir haar atletiektokoms," het mnr. Pieter Grobler, die skoolhoof, gesê.

Haar lewe het op 21 Oktober 2011 verander toe 'n klimraam tydens 'n fratsongeluk op haar nek geval en haar bewusteloos gelaat het.

Sy is na Trichardt oorgeplaas waar 'n MRI gedoen is, en die dokters het die skokkende nuus dat

sy 'n parapleeg gaan wees, aan haar ouers oorgedra.

Frané, wat steeds bewusteloos was, is die volgende dag na Muelmed Hospitaal in Pretoria oorgeplaas waar sy in die intensiewesorgeneheid opgeneem is.

"Toe ek wakker word, kon ek net my oë knip en my mond beweeg," het Frané vroeër met Hoëvelder gedeel.

Frané se ouers het geweier om te aanvaar dat hul dogter 'n parapleeg sou wees, en het verskeie gebedsversoeke vir haar uitgestuur.

Ná ses lange weke in die intensiewesorgeneheid is sy na 'n gewone saal verplaas en planne vir haar rehabilitasie is beraam.

Dit het stadig begin, en sy moes van vooraf leer sit, loop en selfs eet, en na weke het sy die eerste beweging in haar vinger opgemerk.

Sy was vasbeslote om weer te kan loop, en het elke dag se rehabilitasie met 'n positiewe gesindheid aangepak.

Vandag gee sy steeds haar beste in alles wat sy aanpak en laat sy haar nie deur enige uitdagings onderkry nie.



Frané Swart behaal 'n tweede plek in verspring.

NOTICE OF ENVIRONMENTAL BASIC ASSESSMENT PROCESS

NOTICE FOR A MINING PERMIT APPLICATION WITH AN AREA EXTENT OF APPROXIMATELY 5 HECTARES ON A PORTION OF PORTION 2 OF THE FARM MORGENSTER 204 IS, ERMELO MAGISTERIAL DISTRICT, MPUMALANGA PROVINCE DMR REF: MP 30/5/1/1/3/13231 MP

Notice is hereby given in terms of Section 27 of the Minerals and Petroleum Resources Development Act (Act 28 of 2002) read together with EIA Regulations (as amended, April 2017) published under Government Notice No. 982, published under National Environmental Management Act (Act 107 of 1998, as amended) for the following proposed activities:

NATURE OF ACTIVITY
The project trigger the following listed activities in EIA Regulations (as amended) (GNR 327, Listing Notice 1), Activity 21 and Activity 27 which therefore necessitate the undertaking of Basic Assessment Process. Sigana Enviro and Construction (Pty) Ltd has been appointed to undertake Basic Assessment Process required for MD Survey and Technical Services Pty Ltd to obtain Environmental Authorization.

INVITATION TO PARTICIPATE
In terms of Regulations 42 & 43 of the EIA published in Government Notice No. 326 of 07 April 2017, you are invited to register, express interest, comment and participate in the Public Participation Process (PPP) respectively within 30-calendar days of publishing of this joint notice. Kindly submit your name (including contact details), matter of interest/concern, in writing to the contact person below. BY NO LATER THAN 11 JUNE 2022.

Project Time Frames:
Project Announcement: May 2022
Stakeholders Notification: 13 May 2022 to 11 June 2022
Draft Report review: 13 June 2022 to 13 July 2022
Final Submission: 14 July 2022

Contact: Mr. Livhuvani Sigwadi (Phone: 076 6529 062) (Email: sigwadim.l@gmail.com)

SIGANA
ENVIRONMENTAL & CONSTRUCTION



Frané Swart in aksie tydens een van haar hardlooptem. Foto's | Andries Kruger

Figure 12: Proof of newspaper advert with a red border

Notification of IAPs

As part of the consultation process, IAPs should notify of the proposed mining activity via various consultations methods. Site notices and a newspaper advertisement in English (see Figure 12 and appendix C for proof of consultation). An email was also sent to the land owner to notify him about the proposed mining permit on his farm. Site notices were placed around the farm boundary as a way for consulting the stakeholders. BID was dropped by Hendrina library since is the nearest library from the site.

HEJURGA PUBLIC LIBRARY
PO BOX 14 HENDRINA 5300
MAIN STREET HENDRINA QUALITY BUILDING
20 MAY 2022

SIGANA
ENVIRO & CONSTRUCTION

BACKGROUND INFORMATION DOCUMENT

FOR THE PROPOSED MINING PERMIT APPLICATION FOR COAL, PSUEDOCOAL AND TORBANITE/OIL SHALE WITH AN AREA EXTENT OF APPROXIMATELY 5 HECTARES ON A PORTION OF PORTION 2 OF THE FARM MORGENSTER 204 IS, ERMELO MAGISTERIAL DISTRICT, MPUMALANGA PROVINCE DMRE REF: MP 30/5/1/1/3/13231 MP

PURPOSE OF THIS DOCUMENT

The purpose of this Background Information Document (BID) is to provide Interested and Affected Parties (I&APs) with background information about the proposed mining permit application and introduce the Environmental Impact Assessment (EIA) process to be followed. It also aims to inform I&APs on how to fully participate in the EIA and encourages response to documents distributed for review and active attendance meetings.

PROJECT DESCRIPTION	LEGISLATIVE REQUIREMENTS
<p>MD Survey and Technical Services Pty Ltd applied for Mining Permit (DMRE REF: MP 30/5/1/1/3/13231 MP) and Environmental Authorization in terms of section 27 of the Mineral and Petroleum Resources Development Act (MPRDA), Act No 28 of 2002, for Coal, Psuedocoal and Torbanite/Oil Shale.</p> <p>MD Survey and Technical Services Pty Ltd appointed Sigana Enviro & Construction (Pty) Ltd as an independent Environmental Assessment Practitioner (EAP), to conduct Environmental Impact Assessment process for the proposed project.</p> <p>Notice is hereby given in terms of the Mineral and Petroleum 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 MD Survey and Technical Services Pty Ltd has applied for a Mining Permit.</p>	<p>In terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) and its promulgated EIA Regulations of 2017 (GNR 982, 983, 984 and 985) the prospecting activities require an Environmental Authorisation.</p> <p>An Environmental Authorisation in terms of Section 24 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) read with Regulation 19 of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) and Section 27 of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), as amended by Section 12 of the MPRDA, 2008 (Act No. 49 of 2008) is required for a Mining Permit.</p>
<h4>PROJECT LOCATION</h4> <p>The Mining Permit area is located on Portion of Portion 2 of the Farm Morgenster 204 IS, situated under the Magisterial District of Ermelo in Mpumalanga Province. Project area is located approximately 9.8 km South East of Hendrina, 33.07 km South West of Carolina, 59.32 km South East of Middelburg and 41.05 km North of Carolina.</p>	<h4>WHAT IS ENVIRONMENTAL IMPACT ASSESSMENT?</h4> <p>An Environmental Impact Assessment (EIA) is a planning and decision-making tool that is used to identify the environmental consequences of a proposed project, before the development takes place. The purpose of the EIA is to describe the potential consequences of the proposed development in environmental, economic and social terms. Public issues and concerns must therefore be identified timeously so that these can be recorded and responded to in the EIA. All comments received in writing are included in the submission to the competent authority for their consideration.</p>

Figure 13: BID submitted by Hendrina community library

Press and site notification

An advert was placed in the Highvelder news was published on 13 May 2022, advert was about the notification and invitation of the community and other stakeholders to comment regarding the proposed mining permit project.

Direct letter to the landowner

A winded search was run to identify landowner of the affected on Portion by the proposed project. It was found that the affected land is a private land owned by MR KP Landman under local municipality of Chief Albert Luthuli and consultation letters was emailed to attorney (PWG). An affected landowner revert back to EAP through email since they saw a notification on the Highvelder news as advertised, then communication was undertaken by attorney (PWG) representing MR KP Landman. See communication and way forward of the proposed project as summarised on Table 1 below.

Summary of issues raised by IAPs and some of the comment raised are for the previous projects as this project is in the same property with the previous projects

(Complete the table summarising comments and issues raised, and reaction to those responses)



Table 1: Summary of issues raised by IAPs

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
Affected parties				
Landowner/s				
PWG PROKUREURS / ATTORNEYS Chevron Tel: 017 811 3377 / 017 811 3312 Fax: 017 811 4443 Tautestraat 20 / 20 Taute Street, Ermelo, 2351	X 13 May 2022	PWG PROKUREURS / ATTORNEYS registered their client by the name MR. KP Landman as the rightful landowner. We also confirm that KP Landman will not issue any comment or concern unless proper consultation conducted. For us to comment of this proposed project will need the following document: ✓ The correspondence documents between DMRE	A respond done on 14 May 2022 This is confirmation of receipt of the letter received on 13/05/2022. This email also includes the attached BID and DMRE acceptance letter for the proposed project. The attached BID described how EIA and PPP will be conducted Kindly note that PPP of the proposed project commenced on the 13 May 2022, therefore draft BAR will be available for the	Error! Reference source not found. for full consultation with a landowner

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
	18 May 2022	<ul style="list-style-type: none"> ✓ The application form B annexure as referred by MPRDA regulation 5 ✓ Draft EMPr ✓ Proof of published notices including meetings ✓ Proof of any grant of mining or prospecting right <p>They wanted an EAP to confirm if the EIA was conducted for Prospecting Right</p> <p>We are more than willing to consult with you but our client never been consulted before.</p> <p>We find it very strange you are</p>	<p>stakeholders including landowner to comment on the 13 June 2022 to 13 July 2022.</p> <p>Since you are representing landowner whom affected most by the proposed project please lets arrange a table meeting to discuss more about the proposed project.</p> <p>Sigana Enviro and Construction response via email 6 June 2022. Kindly note that Sigana Enviro and Construction appointed to conduct EIA for Mining Permit Application and we don't have any information about EIA conducted before for Prospecting Right Application.</p> <p>Sigana Enviro & Construction will wait for</p>	

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
	08 June 2022	appointed to conduct EIA for mining permit if no prospecting has been done We will deal with all the matter during consultation with our office	outcomes after meeting with your client and other environmental expects. Draft BAR will be delivered to your office once is ready.	
Adjacent Landowners				
Sorgsaam Boerdery Neil Volschenk E: sorgsaam@gmail.com	x 16 May 2022	I would like to register as a interested and affected party in the application for a mining permit for Morgenster 204 IS, Portion 2. Reference MP/30/5/1/1/3/13231 MP I'm directly on the neighboring farm, Morgenster 204 IS, Portion 3. I will strongly object to any mining application as this is not a sustainable activity for the future generations, unlike farming. This is also on the upper catchment of the Klein-Olifants river.	Kindly note that your comments are for importance for this proposed project since you are adjacent land owner. All adjacent landowners should be consulted and given a space to raise their concern and other issues. Please note that you are registered as I&AP of this project and feel free to raise any issues relating to this project. See the attached BID for project background information and timeline of the project.	

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
			Remember to complete the attached comment form and send back to me.	
Gawie Volschenk E: gawie.estancia@gmail.com	X 25 May 2022	I would like to register as a interested and affected party in the application for a mining permit for Morgenster 204 IS, Portion 2. Reference MP/30/5/1/1/3/13231 MP. I'm directly on the neighboring farm, Morgenster 204 IS, Portion 3.	Kindly note that your comments are for importance for this proposed project since you are adjacent land owner. All adjacent landowners should be consulted and given a space to raise their concern and other issues. Please note that you are registered as I&AP of this project and feel free to raise any issues relating to this project. See the attached BID for project background information and timeline of the project. Remember to complete the attached comment form and send back to me.	
Local Municipal Officials				
Chief Albert Luthuli Local	X		A consultation email was sent to Chief	See Appendix B

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
Municipality			Albert Luthuli Local Municipality to the environmental section. Still waiting for response.	for full consultation
Municipal Councilor	X			
	X			
Organs of state (Responsible for infrastructure that may be affected: Roads Department, Eskom, Telkom, DWA)				
 E: Yuza.Chabalala@transnet.net	X		A consultation email was sent to Transnet. Still waiting for response.	See Appendix B for full consultation
 T Tshifularo Land and Rights Negotiations Land Development Eskom Distribution MOU	X		A consultation email was sent to Eskom and still waiting for response.	See Appendix B and Appendix C for full consultation

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
Tell 013 693 2562 Fax 086 605 3668				
 Mpumalanga TOURISM AND PARKS AGENCY 'Phumla Nkosi' Phumla.Nkosi@mtpa.co.za	X		A consultation email was sent to Mpumalanga Tourism and Parks Agency and still waiting for response.	
 SANRAL SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD Barkhuizenr@nra.co.za	X		A consultation email was sent to SANRAL. Still waiting for response.	
 agriculture, forestry & fisheries Department: Agriculture, Forestry and Fisheries REPUBLIC OF SOUTH AFRICA Rhulani Chivalala Dept. of Agriculture, Forestry & Fisheries	X		A consultation email was sent to Department of Agriculture, Forestry & Fisheries. Still waiting for response.	

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
013 754 0729 RhulaniC@daff.gov.za				
Ms Marinda Booth Gert Sibande District Municipality Municipal Managers Secretary Tel: 017 801 7008 Email: marinda@gsibande.gov.za	X		A consultation email was sent to Gert Sibande District Municipality. Still waiting for response.	See Appendix B for full consultation
Department of Water Affairs Tlagadi Isaac Saene E: Tlagadil@dwa.gov.za	X		A consultation email was sent to Department of Water Affairs. Still waiting for response.	See Appendix B for full consultation
Department of Labour Isaac Lidwaba isaac.lidwaba@labour.gov.za	X		A consultation email was sent to Department of Labour. Still waiting for response.	See Appendix B for full consultation
Department of Rural Development Yusi.Khoza@drdlr.gov.za Themba.Mkhonto@drdlr.gov.za	X		An enquiry email was sent to Department of Rural development. Still waiting for response.	See Appendix B for full consultation
Department of Environmental Affairs Ramavhona T	X		A consultation email was sent to Department of Environmental Affairs. Still	See Appendix B for full

I&APs List the names of persons consulted in this column. Mark with an X where those who must be consulted were in fact consulted.	Date comments received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference In this report where issues and/or responses were incorporated
TRamavhona@environment.gov.za			waiting for response.	consultation
SAHRA Nokukhanya Khumalo Tel: 021 462 4502 Email: nkhumalo@sahra.org.za	X		Online consultation was done on the SAHRIS website	See Appendix B for full consultation
Communities				
Interested and affected parties				
	X			
Other competent authorities affected				

The environmental attributes associated with the alternatives

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

Baseline environment

Type of environment affected by the proposed activity.

(Current geological, physical, biological, socio-economic, and cultural character.)

Climate

The project area consists of summer rainfall with dry winters. Effectively three seasons, namely a cool dry season from May to mid-August, a hot dry season from mid-August to about October and a hot wet season from about November to April. Mean Annual Precipitation (MAP) is about 678.98 mm. Frost fairly infrequent. Average daily maximum temperatures are 32°C in January and 22°C in July.

Average daily minimum for the area ranges from 18°C in January to 4°C in July, whilst extremes can reach 8°C and -7°C respectively. Mean monthly maximum and minimum temperatures is about 35.3 °C and – 3.1°C for November and June, respectively (Mucina and Rutherford, 2006).

The study area is situated in the Mpumalanga Highveld Region, which is a summer rainfall region. The climate is temperate with warm summers and cold, dry winters. Precipitation usually occurs in summer, as mist, rain and hail. Convictional thunderstorms are common and the source of most precipitation. Hail can be expected to occur about six days per year. The average annual rainfall is between 624 mm and 713 mm with 85 % of this falling in the high rainfall months (October-March).

Climate, topography, soil and other biotic factors are considered as potentially restrictive factors in plant growth. Climate is considered the most restrictive, as vegetation is directly or indirectly dependent on climatic factors (radiation, temperature and precipitation) for the availability of minerals, growth and reproduction. Although the united effect of these factors exerts influence on vegetation, each may vary on macro, meso and micro-scale. Though the climate change impacts are still being studied, the issue of continued rising sea levels are said to have already threatened the long-term ecosystems occurrence and existence.

The prevailing wind direction throughout the year is from the north-west, but storm winds (i.e. high velocity winds) generally blow from the south-east, with the strongest winds occurring in late winter and early spring. Maximum evaporation occurs in summer (October-January), due to high summer temperatures. When mean annual evaporation (approximately 1,700 mm) is compared to rainfall, there is a net monthly deficit throughout the year, which results in an average annual water deficit of 1,010 mm. The annual rain fall of the area in question is between 601-800 mm.

Temperature

The average temperatures in Witbank area is about 15.7°C. The summers are extremely hot with a maximum recorded temperature of 39.8°C. The mean monthly maximum temperature for this area, as recorded over a period of forty-four years, is 26.7°C, and the mean minimum temperature is 0.3°C. Weather conditions during winter months are ideal with bright sunshine during the day. The maximum temperature amplitude is reached during this period. The mean maximum and minimum temperatures were recorded during January and June months respectively

Local rainfall

The climate of the highveld is dry to subtropical and the rainy season coincides with the summer months (September to April). The winters are generally dry, and the driest month is June with an average of 7mm rainfall. Apart from dry winters, severe droughts are sometimes experienced. Although the mean annual rainfall of this area is rather low, varying from 505 mm to 835 mm, the fluctuations in precipitation are enormous. The rather erratic rainfall generally occurs in thunderstorms and heavy downpours, causing run-off. The soils are light-textured, grass and brush-covered and rather shallow, with a fairly poor water retaining capacity. The evaporation due to the heat of the sun in summer is high, reducing the beneficial effect of rain showers. Hailstorms are rare but can be severe. The precipitation for the area was recorded at the Malelane rainfall station (station number: 0556898 7; Latitude: 25°46' South; Longitude: 31°50' East and Altitude: 305 m a.s.l.) over a period of sixty-seven years. The seasonal variance for the period 1938-2005 reveals a mean annual rainfall of 610.1 mm with a maximum and minimum recorded annual rainfall of 949.6 mm and 203.0 mm, respectively. A variance in amplitude of 746.6 mm exists between the recorded extremes.

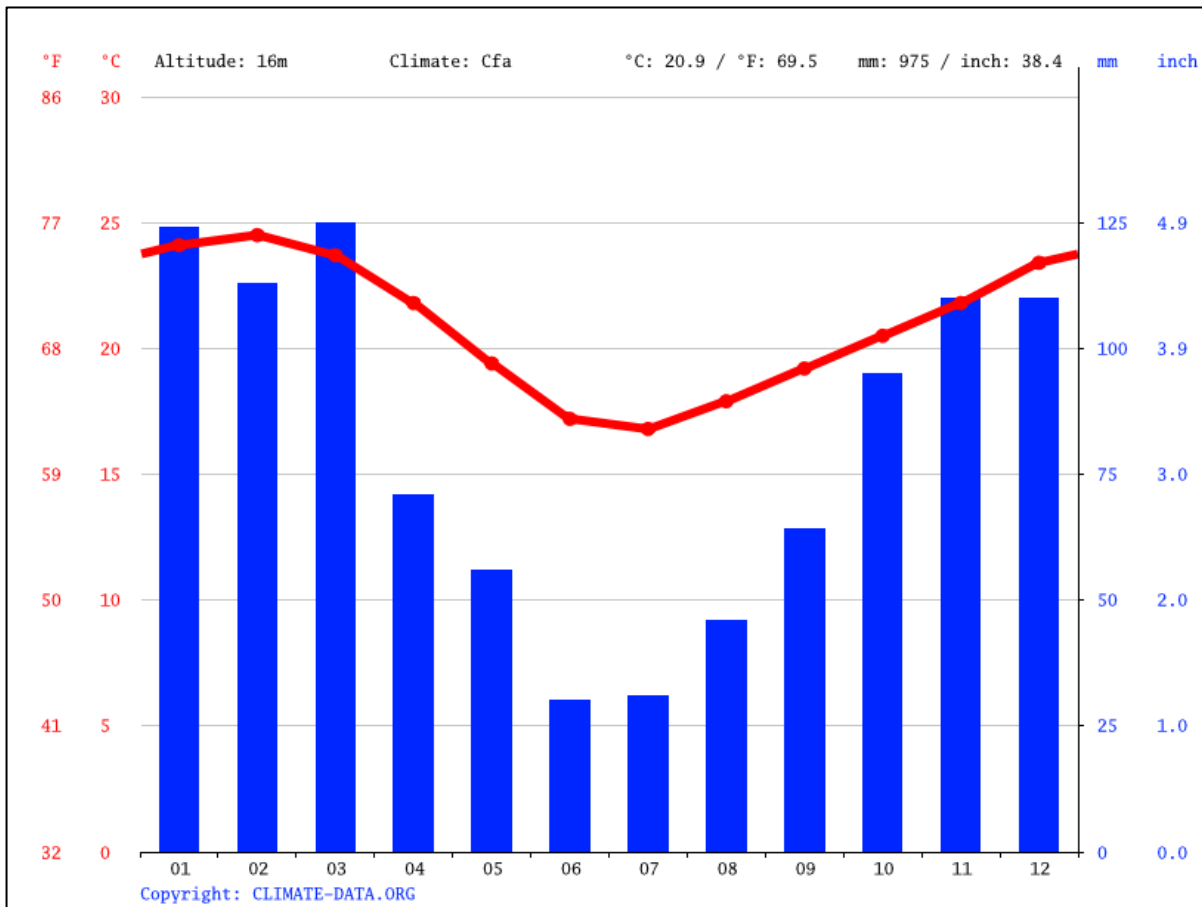


Figure 14: Project Area Climate Graph

Wind

The wind speed and direction recorded at the Friedenheim weather station (station number: 0555866 5; Latitude: 25°26' South; Longitude: 30°59' East; Altitude: 671 m a.s.l.) over a period of thirty years, was computed to determine the prevailing wind direction and average wind velocity. The most prevailing wind direction was found to be northeast, with an average directional frequency of 147 per thousand. The highest monthly average velocity recorded was 4.5 m. s-1. Since the highveld is mostly defined by its high elevations, the dry and cold winters makes it possible for the occurrence of occasional snow and frost.

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Topography and Geography

The mining permit area is situated in a region with generally fleet to high topography, which is typical of the Mpumalanga region. In a contour line resembling that the proposed mining permit is located in the average height of 1725 amsl. As shown on **Figure 15** below that whole of proposed portion is between 1695 amsl and 1725 amsl, where storm water from Northern site flows towards the stream cuts in between the affected farm. Local topology is characterized by the gently undulating highland topography with fairly broad to narrowly incised valleys of headwater drainages. Other areas are also characterized by typical Highveld landscapes in the western and central parts, and more undulating terrain with dense grasses in the proposed area.

TOPOGRAPHY MAP OF THE PROPOSED MINING PERMIT APPLICATION WITH AN AREA EXTENT OF APPROXIMATELY 5 HECTARES ON A PORTION OF PORTION 2 OF THE FARM MORGENSTER 204 IS, ERMELO MAGISTERIAL DISTRICT, MPUMALANGA PROVINCE

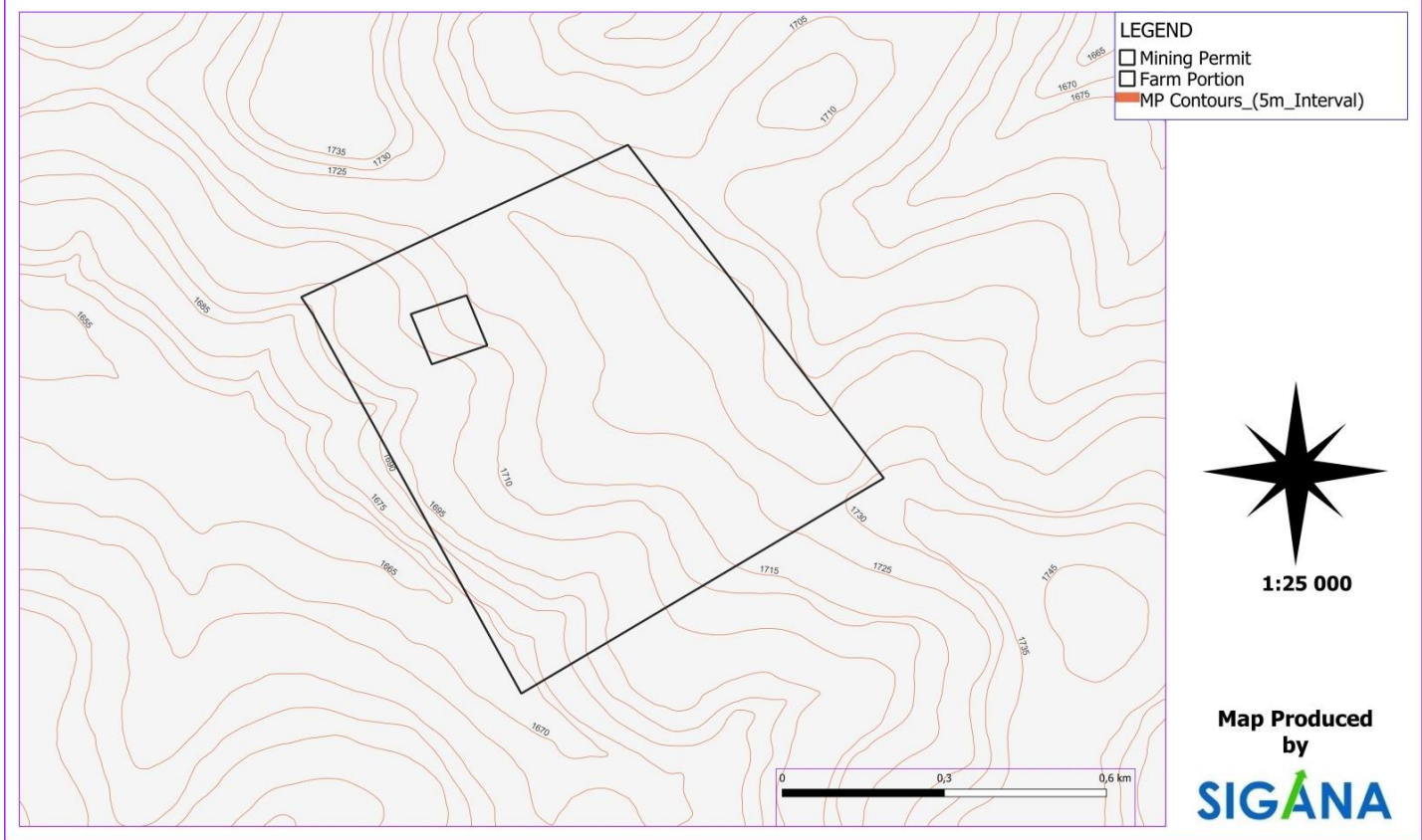


Figure 15: Topography of the region and exact topography of the project permit

Land Uses

Regional Land Uses

The whole Ermelo District comprises of the following land uses: agriculture, mining, industrial, recreational, eco-tourism, nature reserves, conservancies, game farms, open spaces, and settlements. Most prominent of these are mining and agricultural lands with ownership largely being private.

Natural: There are a number of environmentally sensitive areas ranging from highly sensitive areas, such as ridges, dams, watercourses, grasslands and wetlands, to non-sensitive areas which have been impacted on by agricultural activity and human settlement amongst others. In most areas the environmentally sensitive areas are being highly impacted and are currently are not statutorily protected.

Agriculture: Extensive farming and subsistence activities exist alongside each other as the area consists of both small holdings as well as large farms. Agricultural activities include the production of

maize, sorghum, beans, vegetables, lucerne, and fodder. Other farm produce from this area includes beef, milk and processed dairy products.

Industrial: The principal Mineral mining activity is carried out by various mining companies. Other industries include steel production and other processing plants around Mpumalanga province. Mineral is the most mined mineral in Witbank. Mining is the most generating economy in Witbank under Emalahleni municipality.

Urban/rural ratio: Approximately 95% of the region is rural and the land is utilized for agricultural, mining and industrial activities. The urban areas are strictly confined to the town centres.

Recreational and Conservation: The surrounding environment is known for its rich history, biodiversity and sensitive environments.

Project area

The project area is largely comprised of open spaces which are currently utilized for agricultural activities. It is clearly shown on the map attached below on **Figure 16** that the proposed mining permit is located in the area that is characterised by flat area where both stock farming and cultivation farming are practiced. There is stream that transverse the farm seen during site assessment and GIS team also confirmed on hydrological map. Stream seen during site assessment is located outside the mining permit and it does not affected directly, since it cuts outside the proposed mining permit and GIS team also confirmed by the hydrological map.



Figure 16: Land use view of the area

Hydrological

Government Notice 704 (Government Gazette 20118 of June 1999) (hereafter referred to as GN 704), was established to provide regulations on the use of water for mining and related activities aimed at the protection of water resources. Whilst the proposed ferrochrome smelter is not a mine, it is a related activity; more specifically it is a mineral processing facility, as listed under GN 704. Therefore, the proposed infrastructure is designed in accordance with GN 704, and the following design principles are applicable:

- **Condition 4** which defines the area in which, mine workings or associated structures may be located, with reference to a watercourse and associated flooding. Any residue deposit, dam, reservoir together with any associated structure or any other facility should be situated outside the 1:100-year flood-line. Any underground or opencast mining, prospecting or any other operation or activity should be situated or undertaken outside of the 1:50 year flood-line. Where the flood-line is less than 100 metres away from the watercourse, then a minimum watercourse buffer distance of 100 metres is required for infrastructure and activities.
- **Condition 5** which indicates that no residue or substance which causes or is likely to cause pollution of a water resource may be used in the construction of any dams, impoundments or embankments or any other infrastructure which may cause pollution of a water resource.
- **Condition 6** which describes the capacity requirements of clean and dirty water systems. Clean and dirty water systems must be kept separate and must be designed, constructed, maintained and operated to ensure conveyance of flows of a 1:50 year recurrence event. Clean and dirty water systems should not spill into each other more frequently than once in 50 years. Any dirty water dams should have a minimum freeboard of 0.8m above full supply level.
- **Condition 7** which describes the measures which must be taken to protect water resources. All dirty water or substances which may cause pollution should be prevented from entering a water resource (by spillage, seepage, erosion etc) and ensure that water used in any process is recycled as far as practicable.
- **Condition 10** which describes the requirements for operations involving extraction of material from the channel of a watercourse. Measures should be taken to prevent impacts on the stability of the watercourse, prevent scour and erosion resulting from operations, prevent damage to in-stream habitat through erosion, sedimentation, alteration of vegetation and flow characteristics, construct treatment facilities to treat water before returning it to the watercourse, and implement control measures to prevent pollution by oil, grease, fuel and chemicals.

The study area falls within the Water Management Area 4 (WMA4), Olifants. The Olifants River is the most significant River in WMA4. The Olifants upper reaches are dominated by mining, agricultural and conservation activities. The towns of Witbank and Middelburg are in the upper Olifants. MAR for the Upper Olifants Component is 466 million m³/a. A catchment or water shed is derived from the topographical landscape. It is sectioned by a water divide, a high land separating two or more water systems. A quaternary catchment is the land and water surface area that contributes to the discharge at the system outlet. The study area falls within the Nkomati Water Management as confirmed by hydrological map below at **Figure 17**.

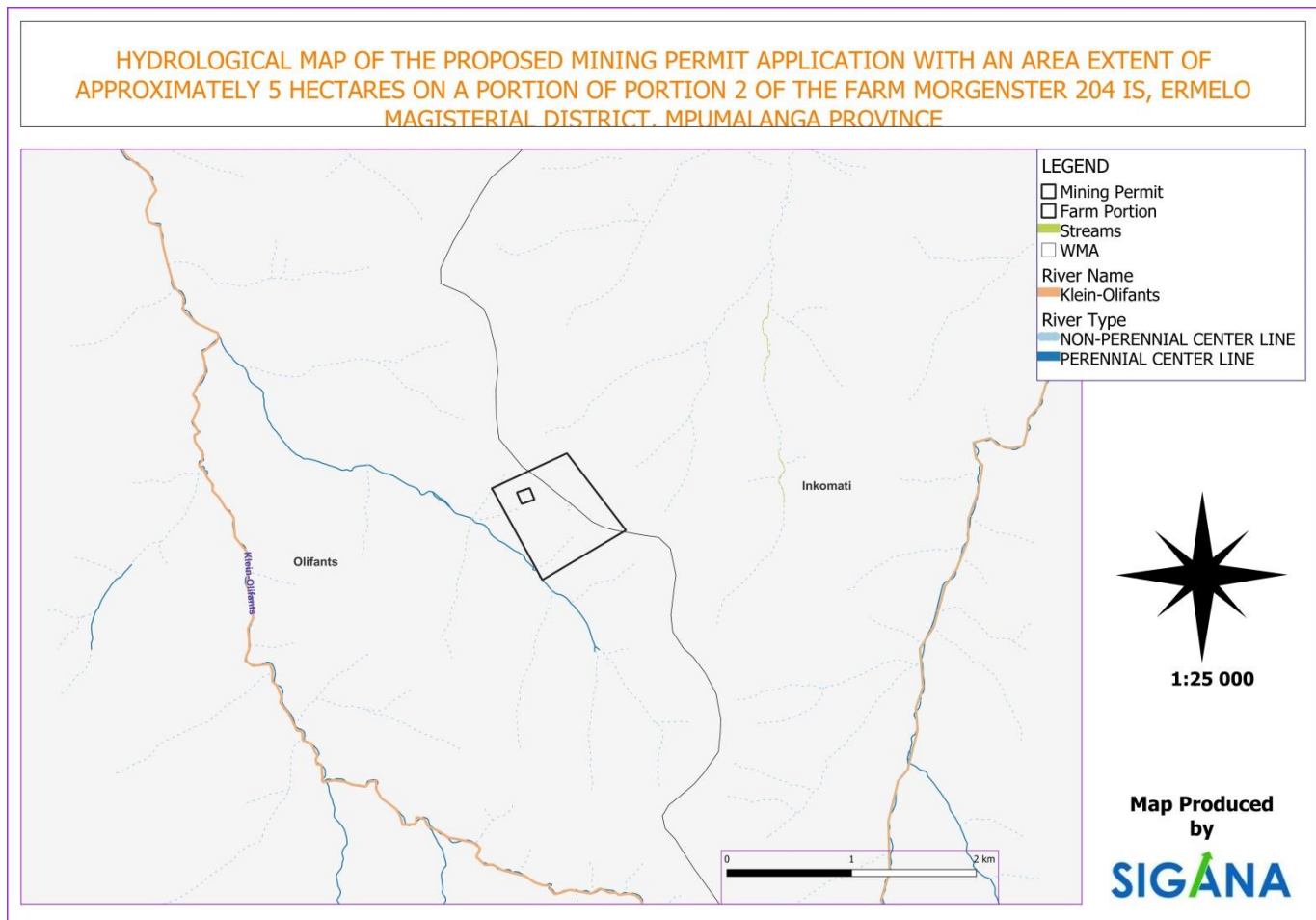


Figure 17: Hydrological map of the proposed site

Few wetlands was also identified during site assessment within the farm which currently provide cattle with food, due to current activities which cause pressure on the wetlands its condition are modified. The study area falls within the B12A Quaternary Catchments as confirmed by hydrological map below at Figure 18. It was also confirmed by the map below at Figure 18 that portion of portion 2 of the proposed farm falls within both B12A and X11A Quaternary Catchments.

QUANTINARY CATCHMENT MAP OF THE PROPOSED MINING PERMIT APPLICATION WITH AN AREA EXTENT OF APPROXIMATELY 5 HECTARES ON A PORTION OF PORTION 2 OF THE FARM MORGENSTER 204 IS, ERMELO MAGISTERIAL DISTRICT, MPUMALANGA PROVINCE

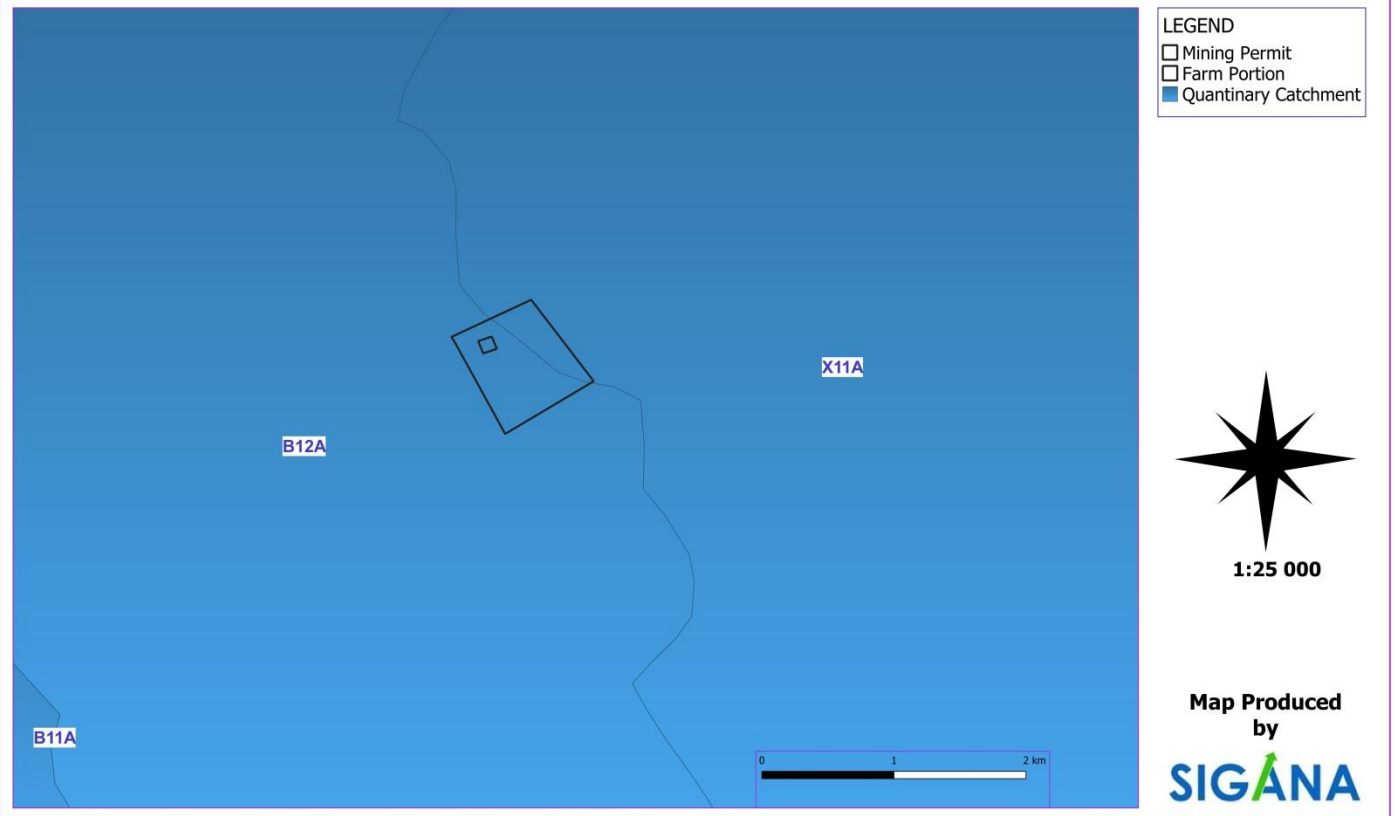


Figure 18: Quaternary Catchment Map

River systems

It was noticed during site assessment that, there is stream located on the eastern side of the project and it is currently used by local cattle for water. Klein Olifants Stream is a body of running water moving to a lower level in a channel on land. Klein Olifants River origin near Hendrina joins the Olifants River downstream of the Middelburg Dam.



Figure 19: Stream that seen during site assessment

It is believed that storm water flow channel will be access roads due to lack of vegetation and it will also collect on site within the patches of uneven surfaces. It also confirmed by the GIS specialist on the map attached as **Figure 17** that there is stream transverse outside the proposed permit.

Those few wetlands was also identified during site assessment within the farm which currently provide cattle with food, due to current activities which cause pressure on the wetlands its condition are modified. It is also confirmed by the map below on **Figure 20** that proposed project is affecting channelled valley bottom wetland. A channelled valley-bottom wetland is a wetland which a mostly found in flat wetland area located along a valley floor with a river channel running through it. The channelled valley-bottom wetland lies in northern side of portion where permit located, except seep wetland which is scattered around farm portion of the permit area. However, careful management needed during site establishment and during mining operation.

WETLANDS MAP OF THE PROPOSED MINING PERMIT APPLICATION WITH AN AREA EXTENT OF APPROXIMATELY 5 HECTARES ON A PORTION OF PORTION 2 OF THE FARM MORGENSTER 204 IS, ERMELO MAGISTERIAL DISTRICT, MPUMALANGA PROVINCE

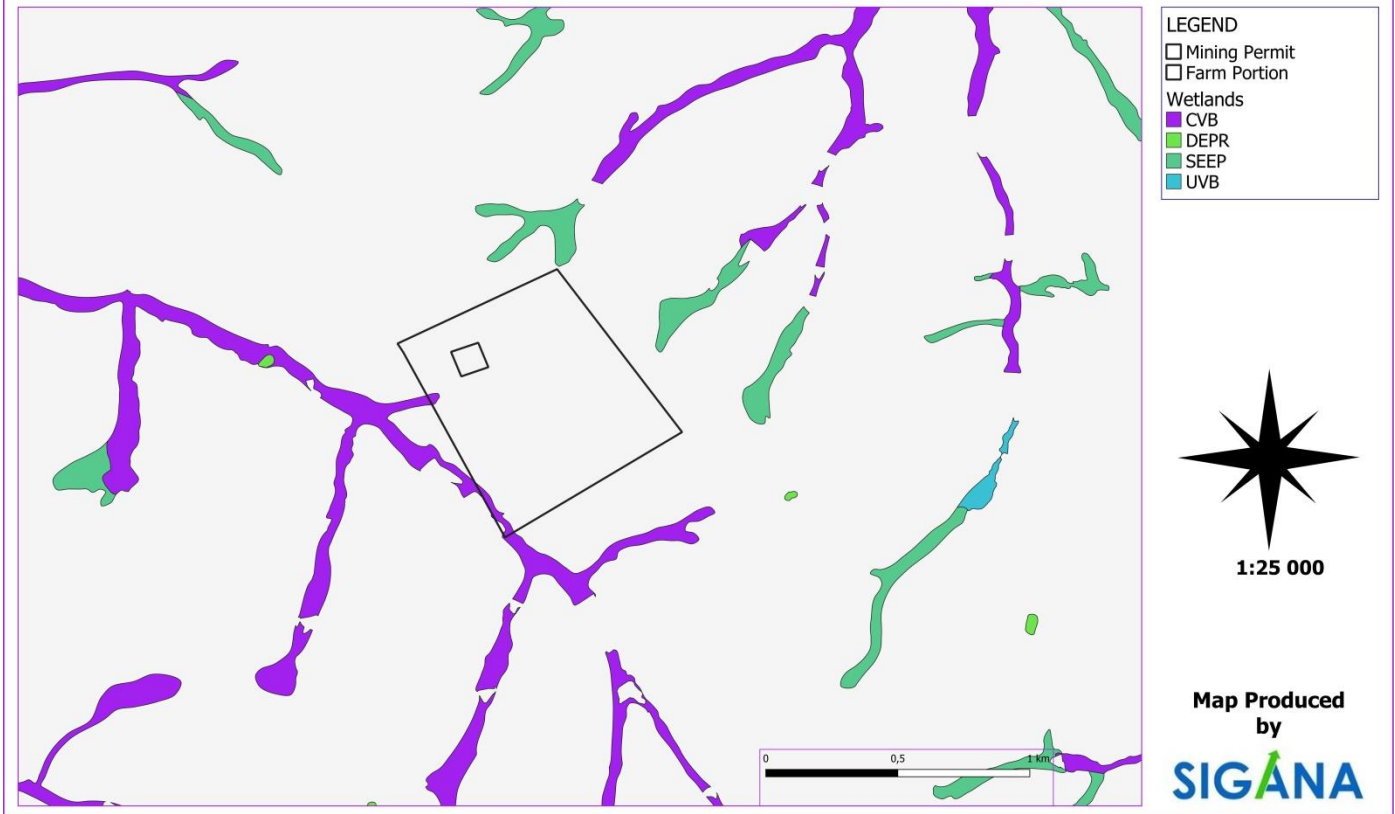


Figure 20: Wetland type within the proposed project

The following recommendations should be considered for this particular proposed mining project:

- Monitoring of the surface water quality shall be carried out regularly during the project's construction and operating phases;
- The project's development process will be undertaken during the dry months to mitigate pollutant runoff;
- An independent ECO is to be appointed during construction. The mine's internal Environmental officers will be conversant with best practices in accordance with rehabilitation during decommissioning and an audit is to be performed before and after rehabilitation.
- Where mining infrastructure is required across natural watercourses, new storm water infrastructure such as pipes and culverts could replace the hydraulic function currently being offered by natural watercourses. Its system should be built for both the hydraulic and environmental efficiency. A thorough assessment of the appropriateness of the new stormwater infrastructure must be carried out at the preliminary design stage.
- The site layout and project infrastructure should be reviewed in the context of the baseline hydrology and a series of mitigation measures that will be developed for the project to minimise impacts and ensure compliance with GN 704.

- It is expected that the proposed mining activities will have a significant impact on the water resources mostly due to the fact that the activities are located in water locked area where most of streams transverses within the affected portion.

Groundwater

Aquifer description

Two aquifers occur in the area:

Shallow Weathered Aquifer – Unconfined: The upper aquifer forms due to the vertical infiltration of recharging rainfall through the weathered material being retarded by the lower permeability of the underlying competent rock material.

In places where the contact is near surface the groundwater can flow daylight on surface as seepage into the surface water bodies, these aquifers has the potential to flow as non-perennial streams and/ or pans.

Deeper Fractured Aquifer – Confined: A percentage of the water in the upper aquifer will recharge the lower aquifer. Direct recharge from rainfall can occur where the fractured, competent rock outcrops. In areas where the stream bases of the non-perennial rivers are located directly on top of the competent rock the aquifer can be directly recharged from the surface stream. The competent rock is subjected to fracturing associated with tectonic movements that took place during intrusion of dolerite dykes and sills into the older Karoo aged sandstone and shale. Groundwater flows in the lower aquifer are associated with the secondary fracturing in the competent rock and as such will be along discrete pathways associated with the fractures. Faults and fractures in the sandstone and shale can be a significant source of groundwater depending on whether the fractures have been filled with secondary mineralisation. The Mineral seams themselves can further be sources of groundwater as these deposits are also subjected to fracturing.

The recorded water level data shows that the fractured rock aquifer has an average thickness of approximately 38.7 m and can range between 6.4 and 105.6 m in thickness.

Aquifer classification

The general regional aquifer is classified using the Parsons Classification System as a minor aquifer, but of high importance to the residents as it has the potential to be a major source of water.

Groundwater levels

The depth to groundwater level in general ranges between surface and around 19.1 m below surface. Plotting the groundwater level elevation against topographical elevation for the upper weathered material aquifer yielded a 98.8 % correlation, while a similar plot for the fractured rock

aquifer yield a 99.0 % correlation. From this it is concluded that the groundwater levels for both aquifers generally mimic topography.

Based on the slight hydraulic disconnect between the upper weathered and underlying fractured rock aquifers it can be said that the depth to groundwater level in the upper weathered material aquifer ranges between surface and 6.56 mbgl with an average of 3.7 mbgl. The underlying fractured rock aquifer shows depth to groundwater level measurements ranging between 8.6 and 19.2 mbgl, with an average of 13.5 mbgl.

Best practice guidelines will be used for mine water management, mine water characterisation, mine water resource protection, mine water treatment, development of mine water management model (Best Practice Guidelines: Series A, G, & H).

Biodiversity

Grassland Biome

Approximately 72% of the province falls under the Grassland Biome (SOER, 2009). The grasslands in the north-western and north-eastern areas of the province are identified as priority conservation areas in the National Biodiversity Strategy and Action Plan (2005). The Grassland Biome covers primarily the high central plateau of South Africa. Its levels of biodiversity are only second to that of the Cape Floristic Region. It includes approximately 3 370 plant species of which one in six is grass and includes bulbous plants.

Grasslands (also known locally as Grassveld) are dominated by a single layer of grass. The amount of cover depends on rainfall and the degree of grazing. Trees are absent, except in a few localized habitats. Geophytes (bulbs) are often abundant. Frost, fire and grazing maintain the grass dominance and prevent the establishment of trees. The proposed project area falls within the Moist Sandy Highveld Grassland which is lies within the whole affected farm.

VEGETATION MAP OF THE PROPOSED MINING PERMIT APPLICATION WITH AN AREA EXTENT OF APPROXIMATELY 5 HECTARES ON A PORTION OF PORTION 2 OF THE FARM MORGENSTER 204 IS, ERMELO MAGISTERIAL DISTRICT MPLIMALANGA PROVINCE

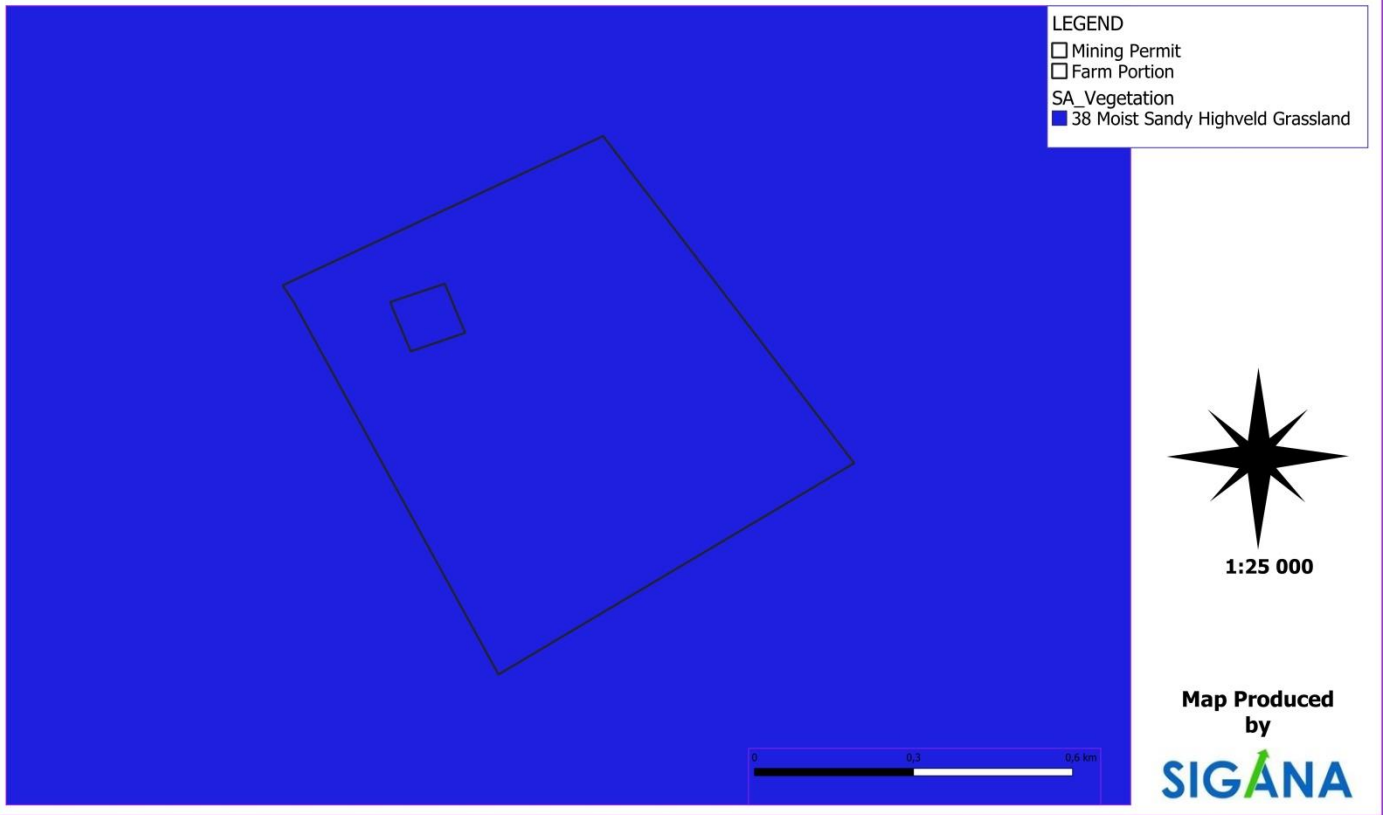


Figure 21: Vegetation around the proposed area

Flora

The application area includes a number of sensitive geographic areas including threatened vegetation types, namely North Eastern Grassland. The National Environmental Management Act: Biodiversity Act (NEMBA) makes provision for a list of threatened ecosystems and activities or processes/activities described as threatening. North Eastern Grassland is listed as vulnerable ecosystems in terms of the NEMBA, and prospecting or mining for minerals has also been listed as a threatening activity/process. As such, any prospecting or mining activity within these vegetation types needs to comply with the requirements of the NEMBA.



Figure 22: Example of grass identified during site assessment

This vegetation unit is described as high variable, with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains (Mucina & Rutherford, 2006). The vegetation is species rich, consisting of wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes (Mucina & Rutherford, 2006). The conservation status of this vegetation unit is Vulnerable in terms of the NEMBA. Note however that Mucina & Rutherford (2006) have categorized this vegetation type as Endangered, illustrating the sensitivity of this vegetation type.

Conservation Status:

This vegetation type is listed as least threatened with approximately 22 % of the 24 % conservation target conserved in nature reserves around Mpumalanga province. Therefore the proposed project is located on the area which categorised as ecological support area due to current activities around the proposed mining permit. There is no protected area within or near proposed mining permit that will be disturbed by the proposed applied activities during operation.

Critical Biodiversity Species

In terms of the National Forests Act 1998 (Act No 84 of 1998) certain tree species can be identified and declared as protected. The Department of Agriculture (now Department of Agriculture, Forestry and Fisheries) developed a list of protected tree species. In terms of Section 15 (1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a license or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Trees are protected for a variety of reasons, and some species require strict protection while others require control over harvesting and utilization. Provincial legislation relevant to biodiversity conservation is comprised of two Provincial Acts, the Mpumalanga Nature Conservation Act (Act 10 of 1998) and the Mpumalanga Tourism and Parks Agency Act (Act 5 of 2005); most recent Act has created the Mpumalanga Tourism and Parks Agency (MTPA) in 2006, with a specific mandate to promote and sustainably manage tourism and nature conservation and provide for the sustainable use of natural resources. Therefore no indigenous tree species observed only moist clay grasses seen around the proposed site and most of the indigenous plant it is suspected that are disturbed by current activities within the farm.

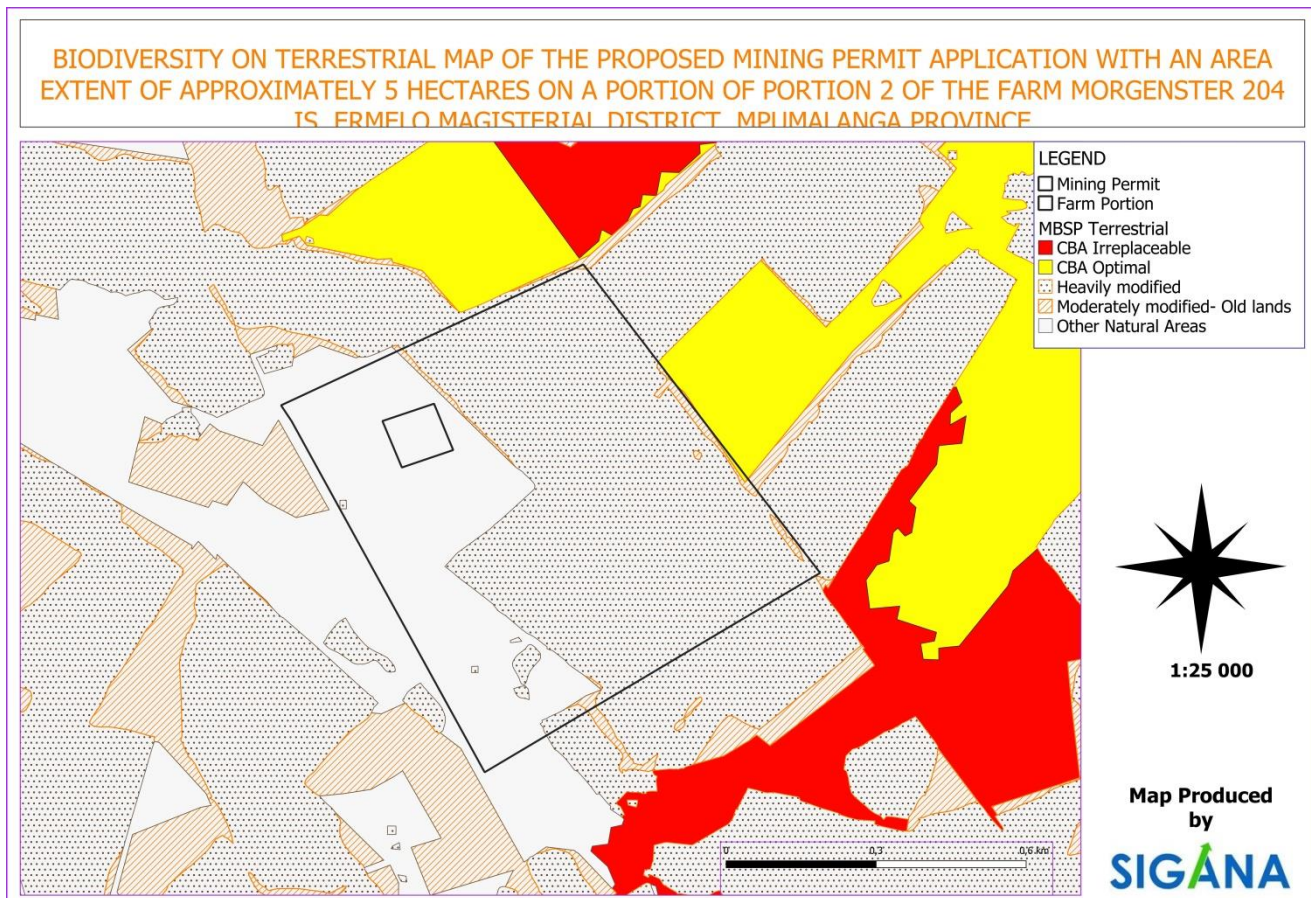


Figure 23: Biodiversity on terrestrial map of the proposed area

As confirmed by GIS specialist on the map above Figure 23, that the proposed project is affecting other natural area and heavily modified area. The whole portion of the proposed area comprised by both heavily modified and other natural area that is strictly environmental protected. Google view and ground truth assessment shows that the affected area is now used for commercial farming for both grazing and cultivation farming. Due to the current land use within and surrounding area, the land of the proposed mining permit derived to be categorised as other natural area and heavily modified area due to current activities. Therefore the proposed area will not affect any of Critical biodiversity, Ecological support, vulnerable ecosystem Protected Areas. A detailed biodiversity study should be conducted to the area before the commencement of mining operations. Below is the sensitivity features generated by environmental screening tool for this proposed project.

Sensitivity	Feature(s)
Medium	Khadia carolinensis
Medium	Sensitive species 1200
Medium	Miraglossum davyi
Medium	Sensitive species 41
Medium	Sensitive species 691

Alien and weeds Plant

Few alien and weeds plants were seen scattered within the site during site assessment of which they need proper management during operation to avoid spreading of these unwanted plant species within the farm. If the plants fall under category 1 that plants are prohibited and must be controlled, If the plants fall under category 2 that plants is a commercially used may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread and If the plants fall under category 3 that plants is for ornamentally used may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading there of, except within the flood line of watercourses and wetlands.



Figure 24: Alien and weeds seen during site assessment

Fauna

The fauna survey assessment focused on habitat availability as well as sightings and indications of animals on site.

It was found that ± 100 birds could occur within the quarter degree grid with 50 being endemic to Southern Africa and ± 20 nationally protected. *Felis silvestris* (African Wild Cat; currently listed provincially as Near Threatened), *Orycteropus afer* (Aardvark; nationally protected and currently listed nationally as Near Threatened) and *Dasymys incomtus* (African Marsh Rat; currently listed nationally as Near Threatened) might be occurred within the site and no protected species were observed during the site investigation. The amphibian species might be occur on site due to the habitat seen during the field survey and those are such as *Xenopus laevis* (Common Platanna; currently listed as Least Concern) and *Pyxicephalus adspersus* (Bull frog; this nationally Protected species recently had its national conservation status re-assessed and was down-listed to Least Concern, however it is still considered Vulnerable by the MTPA). All Flora and Fauna species will be conserved, & all potential impacts on Floral and faunal species will be managed using management framework stipulated on the National Environmental Management: Biodiversity Act (Act No. 10 of 2004). A detailed biodiversity study should be conducted to the area before the commencement of mining operations.

Soil

Soil characteristics in the area are as follows:

Generally moderate to low clay soils (10 – 25%) with low reserves of organic carbon (< 0.5%) and resultant high potential erodibility on the sedimentary derived (in situ) soils, to moderate clay (18 – 35%) contents, that are associated with better than average soil water holding characteristics (80 – 120 mm/m) and moderate land capability potential on the more basic soils and colluvial/alluvial derived materials.

The mining permit disturbed or degraded by erosion as the property is used for grazing and is located in a flat slope where rain water easily penetrate in a saturated level. Soil classification of the area is comprised by Lithosols soil classification which mostly found in mountainous area. Soils in mountains have received little attention in soil science, they are often not sampled and this lack of knowledge is in stark contrast with their overall extent and their importance to provide a livelihood for 12 % of the Earth's population. The classification of mountain soils on the contrary, has become more complex over the years (Velthuisen HT, 1997).

The soil class map below on **Figure 25** shows that the study area is covered by association soil classes 1 to 4 of undifferentiated structureless soil. This type of soil means that water is removed from the soil very rapidly. Soils commonly are coarse textured and have very high permeability or are very shallow. Diagnostic zone is entirely brownish, with few or no grey mottles or grey clay films. Some soils have silt coats in the upper B horizon.



Figure 25: Soil type of the proposed project

Important characteristics of the freely drained structureless soils are:

- Free-draining soil
- Gritty when touching
- Dries out quickly
- May lack nutrients
- Easy to cultivate
- Warms up quickly in spring
- Chemically inert
- Contains Sharp, angular and durable grains

These soils are typically comprised of 80-100% sand, 0-10% Silt and 0-10% clay. These are light and typically very free draining usually holding water very poorly due to very low organic content.

These soils are more likely to be darker in color and the composition of the soil is more distinct. Aggregation reduces the chance of crusting. In the optimal pH range (5.5 to 7.0) clay soils are granular and easily handled, but if the soil pH is either extremely acidic or extremely alkaline, clays appear to become sticky and hard to cultivate. Such soils have a strong capacity to strengthen their structure through climate action. Based on the basic soil classification, clay soils have a high moisture retention capacity as they have a large number of pores that could hold water within them. The soil's capacity to maintain water is closely related to the size of the particles; the water molecules bind the small particles of the clay more tightly. Clay soil is often prone to cracking when it is dry, which can damage the roots of the plants and lead to tears. Strong nutrient retention is one of the positive characteristics of this type of soil.

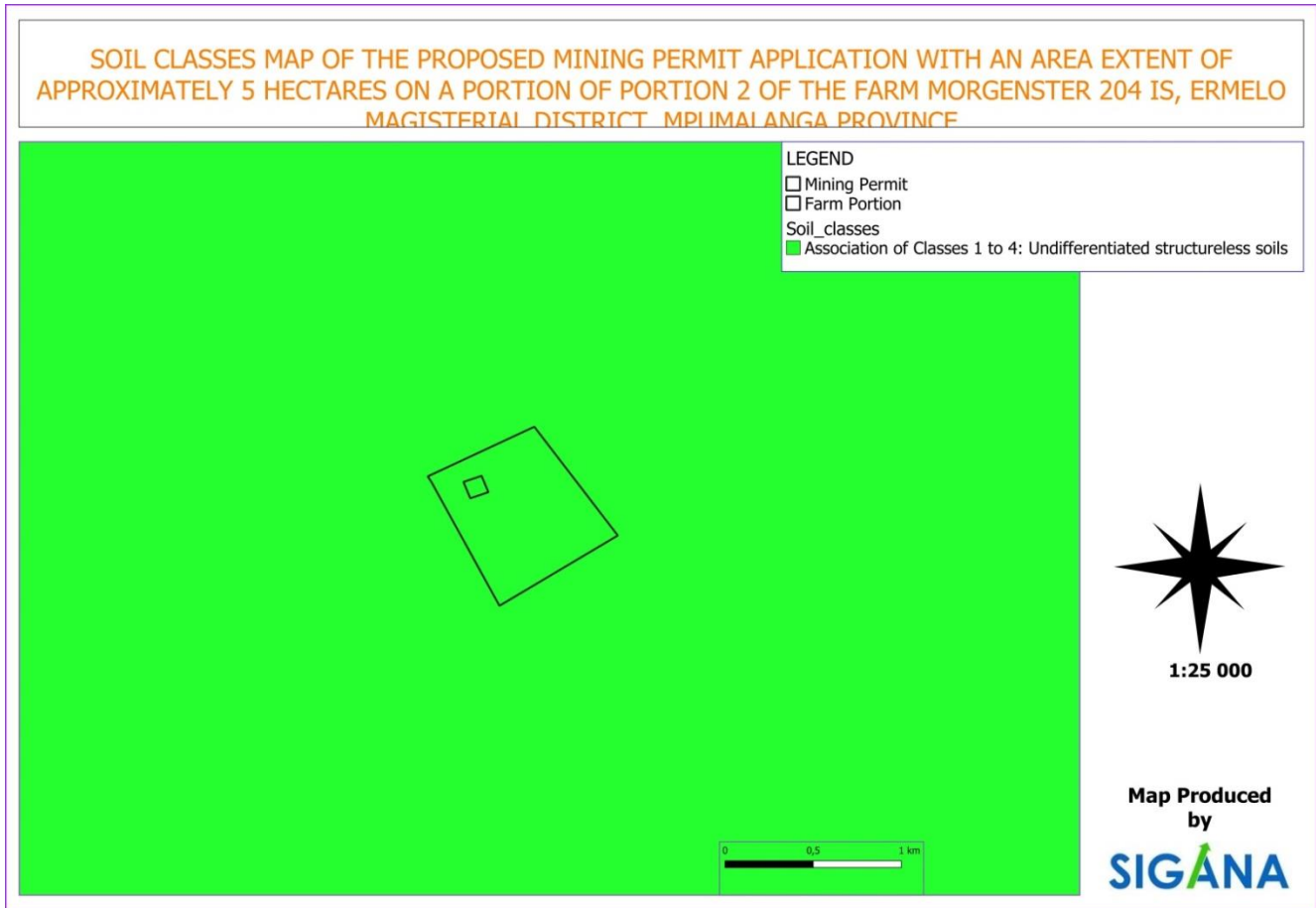


Figure 26: Soil class map in the project area

Table 2: Soil classification and its land capability

Soil Classes	Land Capability
Class 1	Has few limitations that restrict its use; it may be used safely and profitably. Suitable land with negligible limitations and is highly productive requiring only simple management practices.
Class 2	Have some limitations that reduce the choice of plants or require moderate conservation practice. Suitable land with minor limitations which either reduce production or require more than simple management practices to sustain the use.
Class 3	Has a severe limitation that reduces the choice of plants or requires special conservation practices. Suitable land with moderate limitations which is moderately suited to a proposed use but which requires significant inputs to ensure sustainable use.
Class 4	Has a very severe limitation that restricts the choice of plants, require very careful management. Marginal lands with severe limitations which make it doubtful whether the inputs required achieving and maintaining production outweigh the benefits in the long term.

Regional Geology

Karoo Geology

In general, the coal deposits in South Africa are hosted by the Karoo Supergroup, which was deposited in the Gondwana basin that covered parts of Africa, Antarctica, South America and Australia. The basal Stratigraphy of the Karoo Supergroup comprises the Dwyka Group which is a Late Carboniferous to Early Permian (~320Ma) sequence of glacial and periglacial sediments including diamictite, till moraine, conglomerate, sandstone, mudstone and varved shale. The geology of the region comprises the Transvaal Super Group, the Black Reef Quartzite Formation, the Wolkberg group, the Timeball Hill Formation and the Chuniespoort Formation (Matthews et.al.1993).

This is overlain by the Eccca Group which is an Early to Late Permian (~260 Ma) sequence comprising sandstone, siltstone, mudstone and significant coal seams deposited in a terrestrial basin on a gently subsiding shelf platform. In the surrounding Witbank Coalfield areas, the Eccca Group is overlain by the Beaufort Group, which is Early Triassic (~260 to 210 Ma), comprising multi-coloured mudstone and sandstone with only minor coal accumulation, and was deposited in a fluvial environment. The Molteno Formation rests unconformably on the Beaufort Group and comprises Late Triassic (~210 Ma) coarse, immature sandstone with minor argillaceous layers derived from braided streams. This in turn is overlain by the Elliot Formation consisting of red mudstone and sandstone and the Clarens Formation comprising Aeolian sandstone. At the top of the Karoo Supergroup stratigraphy is the Drakensburg Group, which comprises Early to Middle Jurassic (~180 Ma) flood basalts.

Local Geology

The Witbank Coalfield was first exploited in 1895 and became the most significant production area in South Africa supporting many collieries. Six coal seams (numbered 1 through 6 from the base upwards) are contained in a 70-m thick succession comprising dominantly of sandstone with subordinate siltstone, mudstone and shale (Vryheid Formation). The partings between the seams are remarkably constant although seam splitting is common.

The distribution and attitude of the No.1 and No.2 Seams is largely determined by the pre-Karoo topography and all seams are controlled by the present-day erosion surface. Generally, the No.1, 2, 4 and 5 Seams are considered economic based on seam thickness and quality. Intrusive dolerite dykes and sills are ubiquitous and devolatilization of the coal seams can be significant. The area is underlain by thin sequences of sedimentary rocks of the Dwyka Group which represent re-worked glacial tillite. They rest unconformably on an uneven floor of older pre-Karoo rocks composed of granite, gabbro, diabase and felsite.

The basement and Dwyka Group are unconformably overlain by the coal bearing Vryheid Formation of the Eccca Group comprising the six recognised coal seams separated by sedimentary packages consisting mainly of sandstone and thinly laminated siltstone with subordinate mudstone and shale.

The lithological units are variable in thickness but are readily identifiable in all boreholes throughout the area.

The Colliery coal seams are contained within the Vryheid Formation of the Karoo Sequence and are underlain by strata of the Dwyka Group. Due to the presence of palaeohighs, as well as present day erosion, not all the coal seams are developed in all the reserve areas.

The Stratigraphy of the colliery reserve area is typical of the Witbank Coalfield. Four main coal seams are present: they are, numbered in ascending, stratigraphic order, the No.1 Seam, No.2 Seam, No.4 Seam and No.5 Seam. The Landau coal reserves are primarily contained in the No.1, No. 2 and No.4 Seams.

Sediments of shale, siltstone and sandstone overlie and separate the various coal seams. Underlying the lowermost coal seam is a coarse grained diamictite. The overburden thickness and preservation of the coal seams is dependent on the surface topography and the pre-Karoo basement floor. In general, the depth of weathering does not extend deeper than the first couple of metres and the overburden thus comprises hard, competent material. Consequently, the weathering seldom has any significant impact on the slope stability of the high wall or on the quality of the coal seams. The overburden and inter-burden lithologies do vary across the reserve.

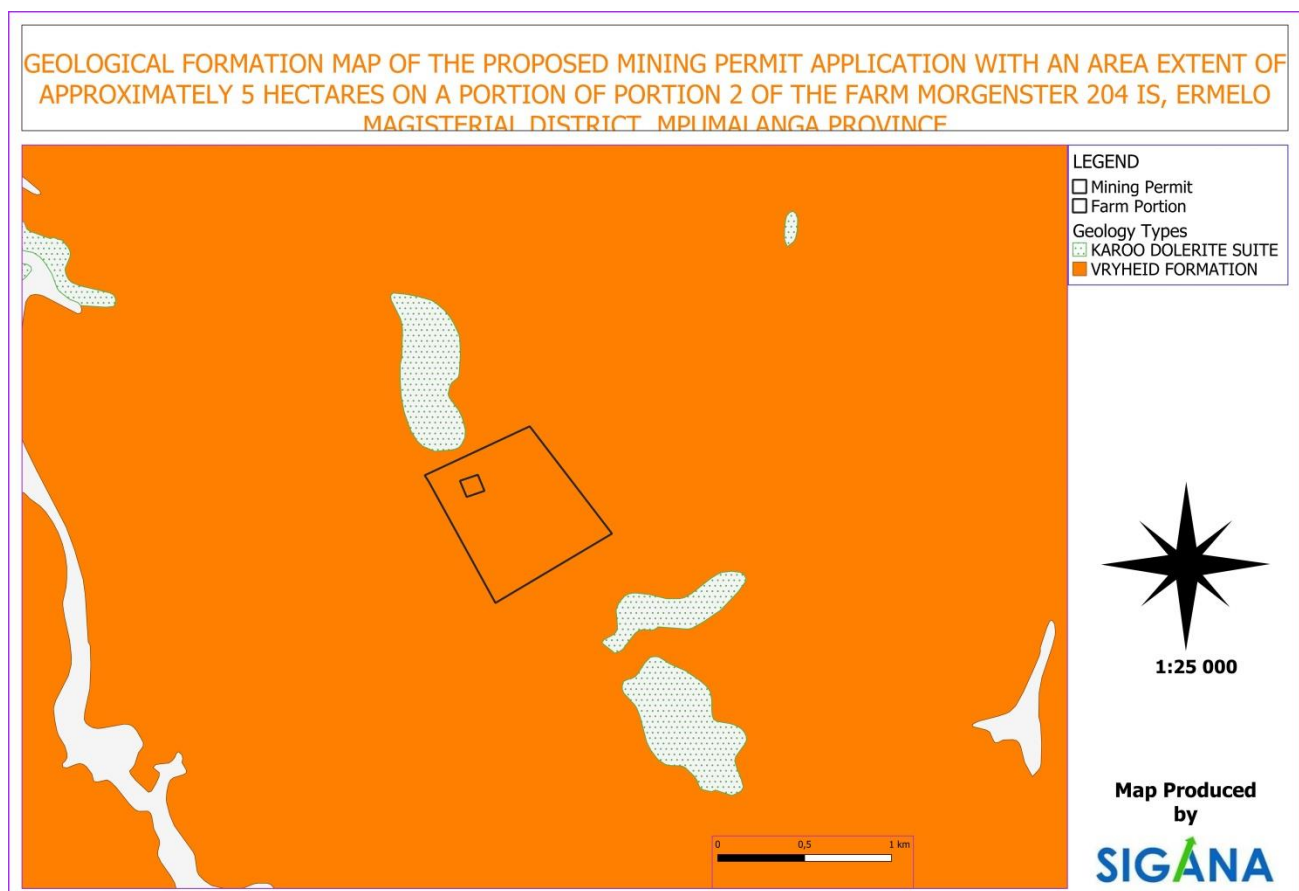


Figure 27: Geology type of the proposed mining permit

In this coal field the maximum displacement of strata by dolerite sills is reported to be 137 m. The Bottom and Top Seams are separated by 0.3m to 15m of coarse-grained, pebbly sandstone which fines upwards to carbonaceous shale (Bell and Spurr 1986b). The Bottom Seam has a thickness of about 1.3m in the north of the coal field, decreasing to 1.07m in the central area and to 0.50m in the south. The coal is predominantly bright. The Top Seam has a thickness of 3.3m in the north, decreasing to less than 0.5m in the central area and then increasing to 1.5m in the south. It contains a smaller proportion of bright coal than the Bottom Seam. The Corby Rock analysis would be more typical of the Coalfield's coal as it is in proximity to the site.

Vryheid Formation:

This formation has been subdivided into three different lithofacies arrangements. They are dominated by fine-grained mudstone, carbonaceous shale with alternating layers of bituminous coal seams, and coarse-grained, bioturbated immature sandstones respectively. The alternating rock types observed in the Vryheid Formation indicate seasonal variations of storms and fairer weather in a pro-delta setting. The carbonaceous shales were formed below the water surface in anoxic conditions and the coal formed from compacted plant matter deposited at the bottom of peat swamps. The Vryheid Formation reaches a maximum of 1030m in Ermelo.

Land capability

Desktop study and actual site assessment confirmed that the area falls under moderate potential arable land of land capability. Arable land (from the Latin: arabilis, "able to be ploughed ") is any land capable of being ploughed and used to grow crops.

The land capability is determined by the physical features of the landscape including the soils present. The land potential or agricultural potential is determined by combining the land capability results and the climate capability for the region. Not all agricultural lands are created equal and not all agricultural land are capable or suitable for producing all agricultural products, regardless of the level of management applied. The main limiting factors in agricultural land are climate and topography. Climate determines the heat energy and moisture inputs required for agricultural production. Topographic limitations mostly restrict the ability to use cultivation equipment. Soils with all their variability are also a key limiting factor. Depending upon their properties and characteristics they may be appropriate for sustaining the production of certain agricultural products, but not others.

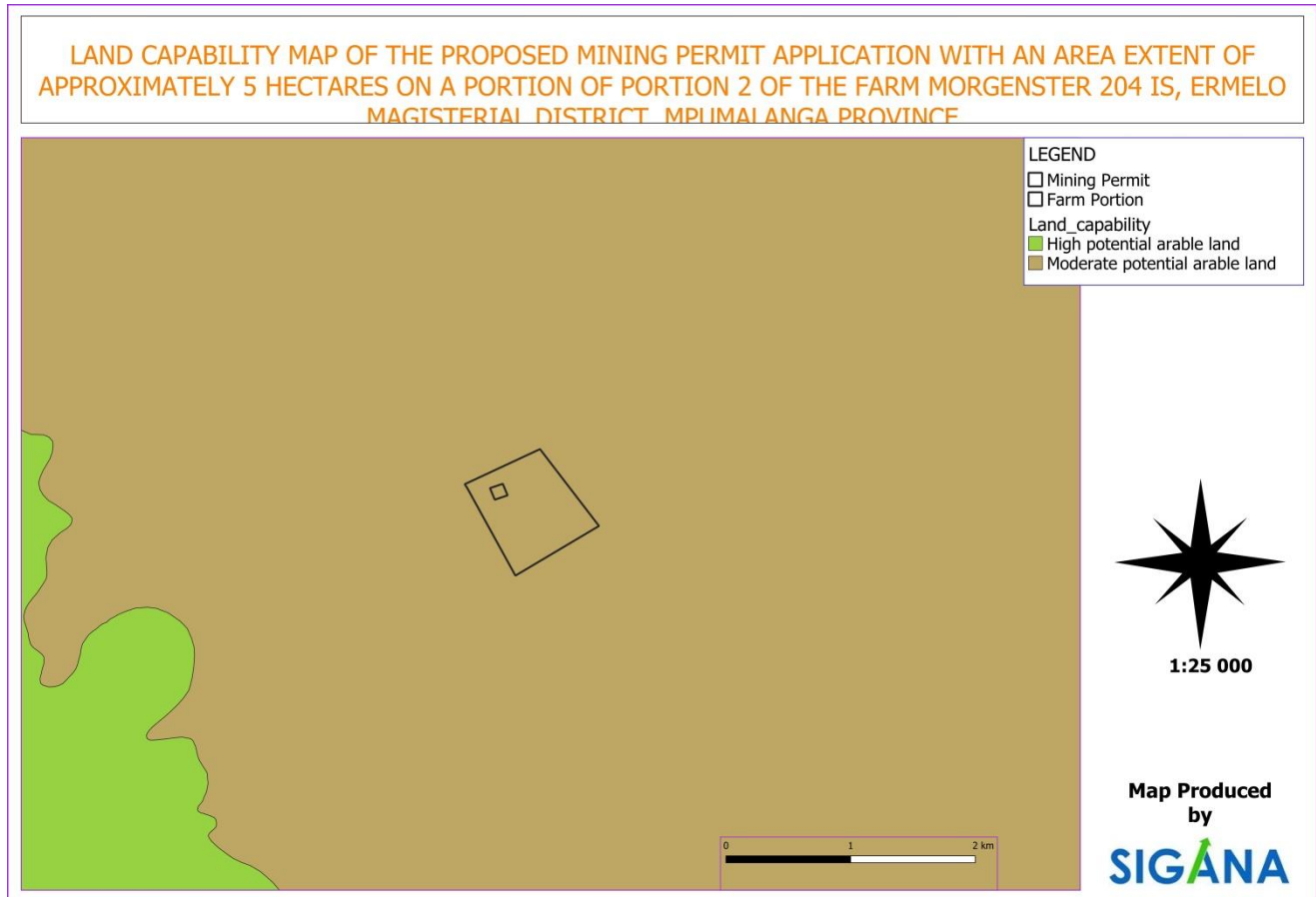


Figure 28: Land capability map of the proposed land

Cultural and heritage environment

No sites of archaeological or cultural interested were identified on site during a site reconnaissance visit. Property owner should be provided with a registration and comment sheet in order to highlighted 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 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). The South African Heritage Resources Agency (SAHRA) will also be notified of such findings.

Description of the current land uses

The project area is largely comprised of open spaces which are currently utilized for agricultural activities. It is clearly shown on the map attached below on **Figure 2** that the proposed mining permit is located in the area that is characterised by commercial farming. No streams transverse the exact mining area, have seen during site assessment and GIS team also confirmed on hydrological map.

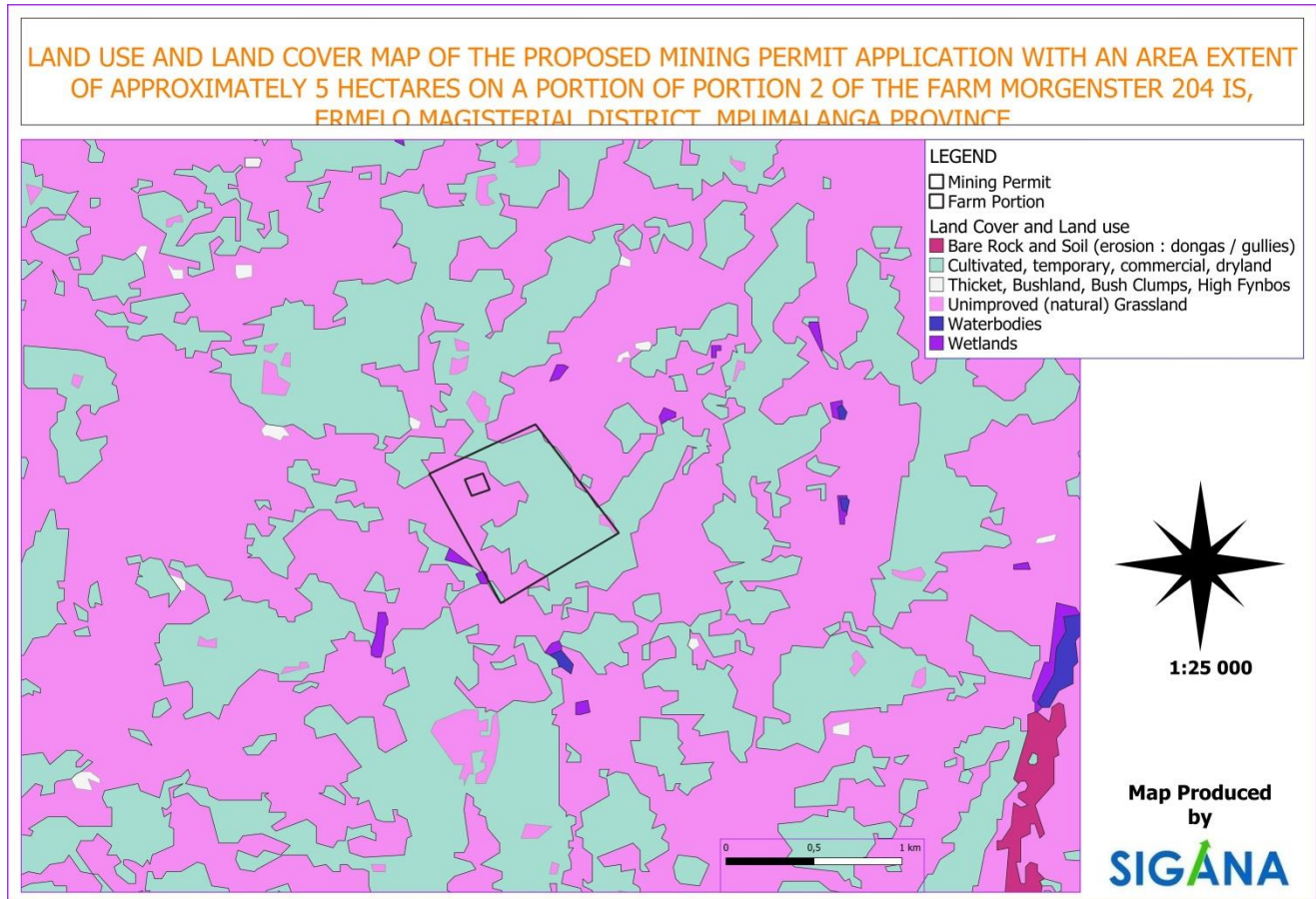


Figure 29: Current land use and land cover of the proposed mining permit

The exact point where mining permit is proposed, characterised by dry land where they currently practicing commercial farming for both livestock and cultivation. Wetlands and other water bodies are not affected by mining permit since scattered outside the proposed portion.

Description of specific environmental features and infrastructure on the site

It was noticed during site assessment that, there is stream located on the eastern side of the project and it is currently used by local cattle for water. Klein Olifants Stream is a body of running water moving to a lower level in a channel on land. Few wetlands was also identified during site assessment within the farm which currently provide cattle with food, due to current activities which cause pressure on the wetlands its condition are modified. The proposed project area falls within the Moist Sandy Highveld Grassland which is lies within the whole affected farm.

Environmental and current land use map

Show all environmental and current land use features. 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.

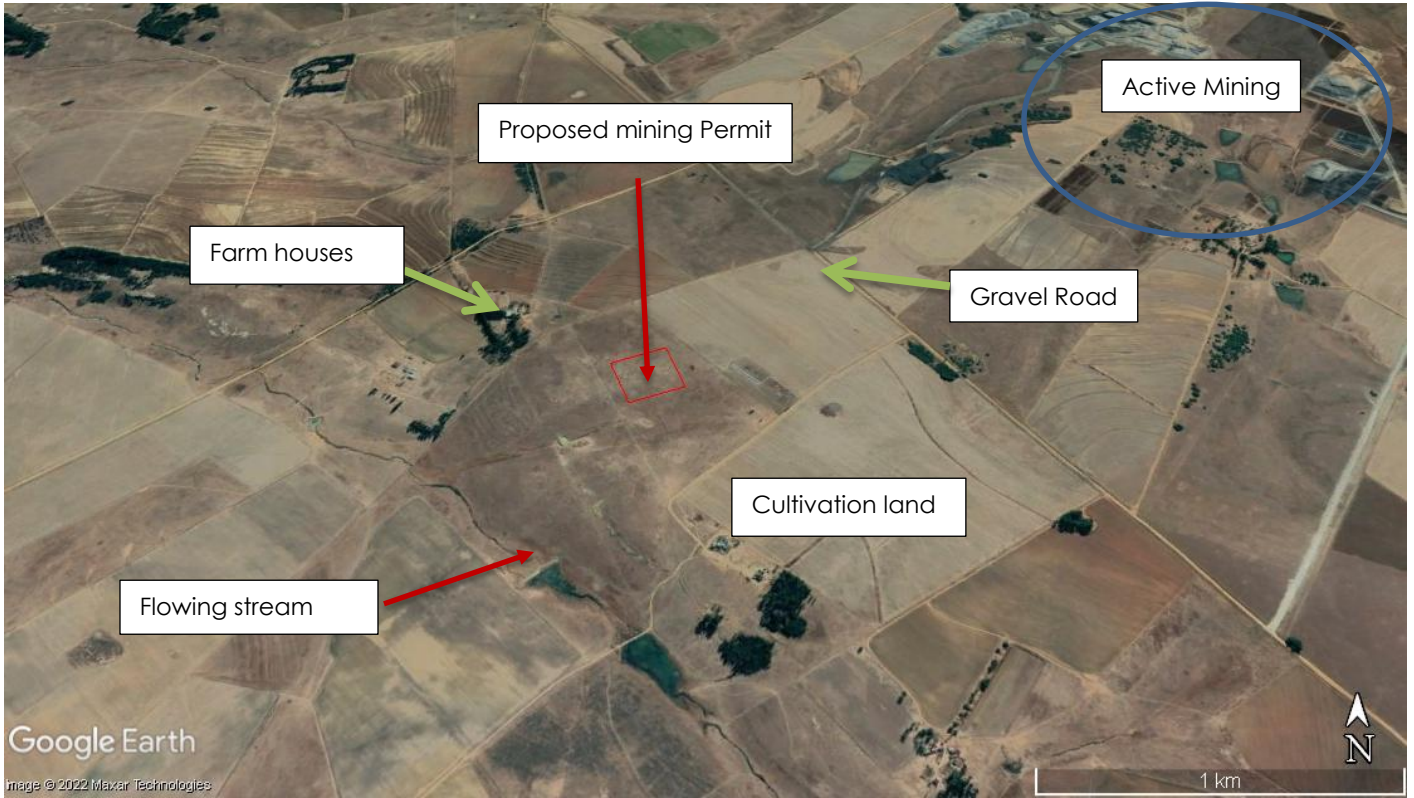


Figure 30: Environmental and current land use map

Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impact.

(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 as explained under 6) Methodology Used in Determining and Ranking the Significance. 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.

The potential environmental and social impacts include:

- ✓ Noise caused by the trucks, excavators and other mine vehicles during mining activities
 - ✓ Stripping and stockpiling of topsoil
 - ✓ Dust generated by the mining operation and vehicles travelling gravel roads
 - ✓ Disturbance of soil from box-cut preparation and compaction
 - ✓ Disturbance of flora and fauna
 - ✓ Disturbance or damage to cultural and heritage resources such as graves or historical features
 - ✓ Potential contamination of soil, surface water and groundwater with hydrocarbons (oil, diesel, grease, etc.)
 - ✓ Friction between local residents/landowners and the mine;
 - ✓ Altering drainage patterns
-

Criteria to consider when determining the significance

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.

Extent: Geographical	
Footprint	The impacted area extends only far as the activity such as footprint occurring within the total site area
Site	The impact could affect the whole or a significant portion of the site
Regional	The impact could affect the area including the neighbouring properties the transport routes and the adjoining towns
National	The impact could have an effect that expands throughout the country
Duration	
Short term	The impact would either disappear with mitigation or will be mitigated through natural process in a period shorter that of the construction phase
Short medium term	The impact will be relevant through to the construction phase
Medium term	The impact will last up to the end of the development phase
Long term	The impact will continue or last for a lifetime of the development but will be mitigated by human action or by natural process thereafter
Permanent	This is the only class of impact which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
Intensity	
Low	The impact alters the affected environment in such a way that the natural process or function are not affected
Medium	The affected environment is altered but functions and processes continue albeit in a modified way
High	Functional or process of the affected environment is disturbed to the extent where it temporarily or permanent ceases
Probability	
Impossible	The possibility of the impact occurring is none due either to the circumstances design or experience.
Possible	The possibility of the impact occurring is very low due to either circumstances

	design or experience.
Likely	There is a possibility that the impact will occur to the extent that provision must therefore be made.
Highly likely	It is most likely that the impact will occur at some stage of the development. Plans must be drawn up before carrying out the activity.
Definite	The impacts will take place regardless of any provision plans, and mitigation actions to contain the effect can be relied on. The chance of this impact occurring is definite.

Criteria of assigning significance to potential impacts

The evaluation of impacts is conducted in terms of the criteria detailed in the tables below. The various environmental impacts and benefits of this project are discussed in terms of impact status, extent, duration, probability, and intensity. Impact significance is regarded as the sum of the impact extent, duration, probability and intensity and a numerical rating system has been applied to evaluate impact significance; therefore an impact magnitude and significance rating is applied to rate each identified impact in terms of its overall magnitude and significance.

In order to adequately assess and evaluate the impacts and benefits associated with the project it was necessary to develop a methodology that would scientifically achieve this and to reduce the subjectivity involved in making such evaluations. To enable informed decision making it is necessary to assess all legal requirements and clearly defined criteria in order to accurately determine the significance of the predicted impact or benefit on the surrounding natural and social environment.

Impact Status

The nature or status of the impact is determined by the conditions of the environment prior to construction and operation. A discussion on the nature of the impact will include a description of what causes the effect, what will be affected and how it will be affected. The nature of the impact can be described as negative, positive or neutral.

Table 3: Status of Impact

RATING	DESCRIPTION	QUANTITATIVE RATING
Positive	A benefit to the receiving environment	P
Neutral	No cost or benefit to the receiving environment	-
Negative	A cost to the receiving environment	N

Impact Extent

The extent of an impact is considered as to whether impacts are either limited in extent or if it affects a wide area or group of people. Impact extent can be site specific (within the boundaries of the development area), local, regional or national and/or international.

Table 4: Extent of Impact

RATING	DESCRIPTION	QUANTITATIVE RATING
Low	Site Specific; Occurs within the site boundary.	1
Medium	Local; Extends beyond the site boundary; Affects the immediate surrounding environment (i.e. up to 5 km from the Project Site boundary).	2
High	Regional; Extends far beyond the site boundary; Widespread effect (i.e. 5 km and more from the Project Site boundary).	3
Very high	National and/or international; Extends far beyond the site boundary; Widespread effect.	4

Impact Duration

The duration of the impact refers to the time scale of the impact or benefit.

Table 5: Duration of Impact

RATING	DESCRIPTION	QUANTITATIVE RATING
Low	Short term; Quickly reversible; Less than the project lifespan; 0 – 5 years.	1
Medium	Medium term; Reversible over time; Approximate lifespan of the project; 5 – 17 years.	2
High	Long term; Permanent; Extends beyond the decommissioning phase; >17 years.	3

Impact Probability

The probability of the impact describes the likelihood of the impact actually occurring.

Table 6: Probability of Impact

RATING	DESCRIPTION	QUANTITATIVE RATING
Improbable	Possibility of the impact materialising is negligible; Chance of occurrence <10%.	1
Probable	Possibility that the impact will materialise is likely; Chance of occurrence 10 – 49.9%.	2
Highly Probable	It is expected that the impact will occur; Chance of occurrence 50 – 90%.	3
Definite	Impact will occur regardless of any prevention measures; Chance of occurrence >90%.	4
Definite And Cumulative	Impact will occur regardless of any prevention measures; Chance of occurrence >90% and is likely to result in cumulative impacts	5

Impact Intensity

The intensity of the impact is determined to quantify the magnitude of the impacts and benefits associated with the proposed project.

Table 7: Intensity of Impact

RATING	DESCRIPTION	QUANTITATIVE RATING
Maximum Benefit	Where natural, cultural and / or social functions or processes are positively affected resulting in the maximum possible and permanent benefit.	+5
Significant Benefit	Where natural, cultural and / or social functions or processes are altered to the extent that it will result in temporary but significant benefit.	+4
Beneficial	Where the affected environment is altered but natural,	+3

	cultural and / or social functions or processes continue, albeit in a modified, beneficial way.	
Minor Benefit	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are only marginally benefited.	+2
Negligible Benefit	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are negligibly benefited.	+1
Neutral	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are not affected.	0
Negligible	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are negligibly affected	-1
Minor	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are only marginally affected.	-2
Average	Where the affected environment is altered but natural, cultural and / or social functions or processes continue, albeit in a modified way.	-3
Severe	Where natural, cultural and / or social functions or processes are altered to the extent that it will temporarily cease.	-4
Very Severe	Where natural, cultural and / or social functions or processes are altered to the extent that it will permanently cease.	-5

Table 8: Impact Magnitude and Significance Rating

IMPACT	RATING	DESCRIPTION	QUANTITATIVE RATING
Positive	High	Of the highest positive order possible within the bounds of impacts that could occur.	+ 12 – 16
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. Other means of achieving this benefit are approximately equal in time, cost and effort.	+ 6 – 11
	Low	Impacts is of a low order and therefore likely to have a limited effect. Alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time- consuming.	+ 1 – 5
No Impact	No Impact	Zero impact.	0
Negative	Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. Social, cultural, and economic activities of communities can continue unchanged.	- 1 – 5
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly possible. Social cultural and economic activities of communities are changed but can be continued (albeit in a different form). Modification of the project design or alternative action may be required.	- 6 – 11
	High	Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time consuming or a combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt.	- 12 - 16

Impacts of the proposed activity (in terms of the initial site layout) and alternatives on the environment and community

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.

Table 9: List of Potential Impacts

Activity	Phase	Potential impacts (unmitigated)
Site preparation Bush clearing, removal of infrastructure, establishing construction area	Construction Operation Decommissioning	Physical destruction and disturbance of biodiversity Air pollution Disturbing noise Visual impacts
Earthworks (for all infrastructure)	Construction Operation Decommissioning	Hazardous excavations Loss of soil resources and land capability Physical destruction and disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Air pollution Disturbing noise Visual impacts
Civil works Building activities, erection of structures, concrete work, steel work, electrical installation, establishing pipelines	Construction Operation Decommissioning	Loss of mineral reserves Hazardous structures/excavations/surface subsidence Loss of soil resources and land capability Pollution of surface water resources Contamination of groundwater Air pollution Disturbing noise Visual impacts
Open-pit mining Mining, load, and hauling	Construction Operation	Loss of mineral resources Hazardous excavations Loss of soil resources and land capability
Activity	Phase	Potential impacts (unmitigated)
		Physical destruction and disturbance of biodiversity Pollution of surface water resources Contamination of groundwater Dewatering impacts Air pollution Disturbing noise Visual impact
Waste rock management Storage, final disposal	Operation Decommissioning Closure (final land form)	Hazardous excavations Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Contamination of groundwater Air pollution Disturbing noise Negative landscape and visual impact

Power supply and use Internal site distribution	Construction Operation Decommissioning	Hazardous excavations Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Visual impacts
Water supply and use Delivery on site, storage of clean water	Construction Operation Decommissioning	Hazardous excavations Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Air pollution Visual impacts
Dirty water management Collection, storage of dirty	Construction Operation	Hazardous excavations Loss of soil resources and land capability
Activity	Phase	Potential impacts (unmitigated)
water for re-use, recycling	Decommissioning	Pollution of surface water resources Contamination of groundwater Disturbing noise
Stormwater management Stormwater channels and berms, collection of dirty water, storage for re-use	Construction Operation Decommissioning	Hazardous excavations Loss of soil resources and land capability Alteration of drainage patterns Pollution of surface water resources Contamination of groundwater Disturbing noise
Transport systems Use of access points, road transport to and from site for employees and supplies, movement within site boundary (haul roads, conveyors, pipelines), taxi areas	Construction Operation Decommissioning	Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Disturbing noise Traffic impacts Visual impacts
Non-mineralized waste management Transportation of waste materials to waste facility	Construction Operation Decommissioning Closure (limited)	Air pollution Disturbing noise Visual impacts
Site / contract management Appointment of workers/contractors, site management (monitoring, inspections, maintenance, security, access control), awareness training, emergency response, implementing and maintaining programmes	Construction Operation Decommissioning Closure	Management of the site plays a significant role in all identified impacts

Storage and maintenance services/ facilities	Construction Operation	Loss of soil resources and land capability Pollution of surface water resources
Activity	Phase	Potential impacts (unmitigated)
Washing vehicles and machinery, storage and handling non-process materials	Decommissioning	Contamination of groundwater Disturbing noise
Site support services Operating offices, parking vehicles	Construction Operation Decommissioning	Loss of soil resources and land capability Disturbance of biodiversity Air pollution Visual impacts
Demolition Dismantling, demolition, removal of equipment	Operation (as part of maintenance) Decommissioning	Hazardous structures/excavations Loss of soil resources and land capability Disturbance of biodiversity Air pollution Disturbing noise Visual impacts
Rehabilitation Replacing soil, slope stabilization, landscaping, re-vegetation, restoration	Construction Operation Decommissioning Closure	Hazardous excavations Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Air pollution Disturbing noise Visual impacts
Maintenance and aftercare Inspection and maintenance of remaining facilities and rehabilitated areas	Closure	Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Air pollution Visual impacts

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 mitigations 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.

Table 10: Management Measures for Impact Mitigation

Potential Impact	Technical and Management Measures
Mineral sterilization	Mine workings will be developed and designed taking cognisance of potential sand reserves Extraction of all possible minerals prior to final disposal
Hazardous structures	Establish and maintain site security measures Control site and facility access Backfill open pits Appropriate design of stockpiles with the potential to fail (and by qualified person) Implement monitoring programme
Loss of soil resources and land capability through pollution	Implement hazardous waste, dirty water and mineralised and non-mineralised waste management procedures Permanent infrastructure designs to take long-term soil prevention, land function and confirmatory monitoring into account
Loss of soil resources and land capability through physical disturbance	Implementation of a soil management plan Limit disturbance of soil to what is necessary Stripping, storing, maintenance and replacement of topsoil in accordance with soil management procedures
Physical	Implement a biodiversity management plan
Potential Impact	Technical and Management Measures
destruction of biodiversity	Restrict project footprint Provide alternative habitat (where appropriate and necessary) Implement a monitoring programme Rehabilitate disturbed areas
General disturbance of biodiversity	Prevention of the killing of animal species and harvesting of plant species Implementation of dust control measures Pollution prevention measures (water, soil etc.) Prevention of the disturbance of ecosystems

Alternation of drainage patterns	<p>Avoid alteration of watercourses as far as practically possible</p> <p>Implement and maintain stormwater controls that meet regulatory requirements</p> <p>Authorise all water uses as defined in the NWA</p> <p>Compliance with relevant license requirements</p>
Surface water pollution	<p>Appropriate design of polluting facilities and pollution prevention facilities (by qualified person)</p> <p>Implement and maintain stormwater controls that meet regulatory requirements</p> <p>Implement site-specific soil management plan</p> <p>Implement a monitoring programme (water use, process water quality, rainfall-related discharge quality)</p> <p>Implement emergency response</p> <p>Authorise all water uses as defined in the NWA</p> <p>Compliance with relevant licence requirements</p>
Groundwater contamination	<p>Appropriate design of polluting facilities (by qualified person)</p> <p>Correct handling of hazardous wastes, mineralised and non-mineralised</p>
Potential Impact	Technical and Management Measures
	<p>wastes</p> <p>Compensation for loss</p> <p>Implementation of a monitoring programme</p> <p>Implement emergency response</p> <p>Authorise all water uses as defined in the NWA</p> <p>Compliance with relevant license requirements</p>
Dewatering	<p>Compensation for loss</p> <p>Implementation of a monitoring programme</p> <p>Authorise all water uses as defined in the NWA</p> <p>Compliance with relevant license requirements</p>
Air pollution	<p>Implementation of air quality management plan</p> <p>Implementation of an air quality monitoring plan</p> <p>Control dust plumes</p> <p>Implementation of an air complaints procedure</p> <p>Maintenance of abatement equipment</p> <p>Implement an emergency response</p>

Noise pollution	<p>Maintenance of equipment and machinery in good working order</p> <p>Equip machinery with silencers</p> <p>Construction of noise attenuation measures</p> <p>Implementation of noise monitoring programme</p> <p>Implementation of a noise complaints procedure</p> <p>Reducing operational hours</p> <p>Educate workers</p>
Visual impacts	<p>Limit the clearing of vegetation</p> <p>Limit the emissions of visual dust plumes</p>
Potential Impact	Technical and Management Measures
	<p>Use of screening berms</p> <p>Concurrent rehabilitation</p> <p>Painting infrastructure to compliment the surrounding environment</p> <p>Implementation of a closure plan</p> <p>Management through care and aftercare</p>
Traffic increases	<p>Implementation of a traffic safety programme</p> <p>Implement speed allaying measures where appropriate, e.g. speed humps where necessary</p> <p>Education and awareness training of workers</p> <p>Enforce strict speed limits on mine access roads</p> <p>Ensure dust is effectively controlled on unpaved roads so as not to reduce visibility</p> <p>Placement of signage to create awareness</p> <p>Maintenance of the transport systems</p> <p>Implementation of traffic complaints procedure</p>
Heritage (and cultural)	<p>Limit project infrastructure, activities and related disturbances as far as practically possible</p> <p>Avoid heritage and cultural resources as far as practically possible</p> <p>Apply for the relevant permits to remove or destroy heritage sites (if applicable)</p> <p>Exhumation and relocation of graves according to legal requirements (if applicable)</p> <p>Mark remaining heritage sites on plan</p>
Potential Impact	Technical and Management Measures
	<p>Inspect sites for encroachment and/or damage</p> <p>Education and awareness training of workers</p> <p>Implement emergency response with respect to the chance find procedure for heritage, cultural and paleontological resources</p>

Economic impact	<p>Hire people from closest communities as far as practically possible</p> <p>Extend the formal bursary and skills development to closest communities</p> <p>Implement a procurement mentorship programme</p> <p>Local procurement of goods and services as far as practically possible</p> <p>Compensation for loss of land use</p> <p>Closure planning will consider skills, economic consideration and the needs of future farming</p>
Inward migration	<p>Good communication in terms of recruitment, procurement and training</p> <p>Number of temporary and permanent new job opportunities and procurement will be made public</p> <p>Employment and procurement opportunities provided to closest communities as far as practically possible</p> <p>No recruitment at the mine</p> <p>Notify unsuccessful job seekers</p> <p>Encourage formal housing of employees and implement contractual requirement for contractors to ensure formal housing for workers, both temporary and permanent</p> <p>Maintain a skills profile for the nearest communities</p> <p>Monitor and prevent the development of informal settlements through the interaction with neighbors, local authorities and law enforcement officials</p>
Potential Impact	Technical and Management Measures
	<p>awareness and training</p> <p>Implement an emergency response</p>
Land uses	<p>Implementation of EMP commitments that focus on environmental and social impacts</p> <p>Take necessary steps to prevent negative impact on surrounding land</p> <p>Compensation for loss</p> <p>Closure planning to incorporate measures to achieve future land use plans</p>

1.1.4 Positive impacts

- The company will conduct all activities at the horizontal distance of 500 m away from the water course and 100 m away from any infrastructure
- Creation of short-term jobs during the construction and operation phases
- The mine will source supplies from local businesses
- Boosting the local economy of Middelburg
- Providing job-specific environmental training to ensure environmental protection

1.1.5 Negative impact

- On groundwater from seepage of stockpiles and mining operations

- Economic impact resulting from a loss of crop production due to mining
- Hydrological modifications and storm water
- Vegetation loss
- Temporary loss of agricultural land for agricultural activities
- Faunal habitat and displacement (the faunal habitat and displacement has already been disturbed by previous mining and the current adjacent mining activities)
- Decrease in air quality in the immediate surroundings of the mine (air quality has already been decreased by existing mining activities in the area)
- Increased traffic volumes because of more heavy vehicles making use of the roads in the immediate area
- Noise and vibration levels and disturbance

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 mitigations 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.

Table 11: Management Measures for Impact Mitigation

Potential Impact	Technical and Management Measures
Mineral sterilization	Mine workings will be developed and designed taking cognisance of potential sand reserves Extraction of all possible minerals prior to final disposal
Hazardous structures	Establish and maintain site security measures Control site and facility access Backfill open pits Appropriate design of stockpiles with the potential to fail (and by qualified person) Implement monitoring programme Implement an emergency response
Loss of soil resources and land capability through pollution	Implement hazardous waste, dirty water and mineralised and non-mineralised waste management procedures Permanent infrastructure designs to take long-term soil prevention, land function and confirmatory monitoring into account
Loss of soil resources and land capability through physical disturbance	Implementation of a soil management plan Limit disturbance of soil to what is necessary Stripping, storing, maintenance and replacement of topsoil in accordance with soil management procedures
Physical	Implement a biodiversity management plan

Potential Impact	Technical and Management Measures
destruction of biodiversity	Restrict project footprint Provide alternative habitat (where appropriate and necessary) Implement a monitoring programme Rehabilitate disturbed areas
General disturbance of biodiversity	Prevention of the killing of animal species and harvesting of plant species Implementation of dust control measures Pollution prevention measures (water, soil etc.) Prevention of the disturbance of ecosystems
Alternation of drainage patterns	Avoid alteration of watercourses as far as practically possible Implement and maintain stormwater controls that meet regulatory requirements Authorise all water uses as defined in the NWA Compliance with relevant license requirements
Surface water pollution	Appropriate design of polluting facilities and pollution prevention facilities (by qualified person) Implement and maintain stormwater controls that meet regulatory requirements Implement site-specific soil management plan Implement a monitoring programme (water use, process water quality, rainfall-related discharge quality) Implement emergency response Authorise all water uses as defined in the NWA Compliance with relevant license requirements
Groundwater contamination	Appropriate design of polluting facilities (by qualified person) Correct handling of hazardous wastes, mineralised and non-mineralised
Potential Impact	Technical and Management Measures
	wastes Compensation for loss Implementation of a monitoring programme Implement emergency response Authorise all water uses as defined in the NWA Compliance with relevant license requirements
Dewatering	Compensation for loss Implementation of a monitoring programme Authorise all water uses as defined in the NWA Compliance with relevant license requirements

Air pollution	<p>Implementation of air quality management plan</p> <p>Implementation of an air quality monitoring plan</p> <p>Control dust plumes</p> <p>Implementation of an air complaints procedure</p> <p>Maintenance of abatement equipment Implement an emergency response</p>
Noise pollution	<p>Maintenance of equipment and machinery in good working order</p> <p>Equip machinery with silencers</p> <p>Construction of noise attenuation measures</p> <p>Implementation of noise monitoring programme</p> <p>Implementation of a noise complaints procedure</p> <p>Reducing operational hours</p> <p>Educate workers</p>
Visual impacts	<p>Limit the clearing of vegetation</p> <p>Limit the emissions of visual dust plumes</p>
Potential Impact	Technical and Management Measures
	<p>Use of screening berms</p> <p>Concurrent rehabilitation</p> <p>Painting infrastructure to compliment the surrounding environment</p> <p>Implementation of a closure plan</p> <p>Management through care and aftercare</p>
Traffic increases	<p>Implementation of a traffic safety programme</p> <p>Implement speed allaying measures where appropriate, e.g. speed humps where necessary</p> <p>Education and awareness training of workers</p> <p>Enforce strict speed limits on mine access roads</p> <p>Ensure dust is effectively controlled on unpaved roads so as not to reduce visibility</p> <p>Placement of signage to create awareness</p> <p>Maintenance of the transport systems</p> <p>Implementation of traffic complaints procedure</p> <p>Implement an emergency response</p>
Heritage (and cultural)	<p>Limit project infrastructure, activities and related disturbances as far as practically possible</p> <p>Avoid heritage and cultural resources as far as practically possible</p> <p>Apply for the relevant permits to remove or destroy heritage sites (if applicable)</p> <p>Exhumation and relocation of graves according to legal requirements (if applicable)</p> <p>Mark remaining heritage sites on plan</p>

Potential Impact	Technical and Management Measures
	<p>Inspect sites for encroachment and/or damage</p> <p>Education and awareness training of workers</p> <p>Implement emergency response with respect to the chance find procedure for heritage, cultural and paleontological resources</p>
Economic impact	<p>Hire people from closest communities as far as practically possible</p> <p>Extend the formal bursary and skills development to closest communities</p> <p>Implement a procurement mentorship programme</p> <p>Local procurement of goods and services as far as practically possible</p> <p>Compensation for loss of land use</p> <p>Closure planning will consider skills, economic consideration and the needs of future farming</p>
Inward migration	<p>Good communication in terms of recruitment, procurement and training</p> <p>Number of temporary and permanent new job opportunities and procurement will be made public</p> <p>Employment and procurement opportunities provided to closest communities as far as practically possible</p> <p>No recruitment at the mine</p> <p>Notify unsuccessful job seekers</p> <p>Encourage formal housing of employees and implement contractual requirement for contractors to ensure formal housing for workers, both temporary and permanent</p> <p>Maintain a skills profile for the nearest communities</p> <p>Monitor and prevent the development of informal settlements through the interaction with neighbors, local authorities and law enforcement officials</p> <p>Implement a health policy of HIV/AIDS and tuberculosis to promote</p>
Potential Impact	Technical and Management Measures
	<p>Awareness and training</p> <p>Implement an emergency response</p>
Land uses	<p>Implementation of EMP commitments that focus on environmental and social impacts</p> <p>Take necessary steps to prevent negative impact on surrounding land</p> <p>Compensation for loss. Closure planning to incorporate measures to achieve future land use plans</p>

Measures to manage the potential impact on Water quality and availability

Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion will be mitigated and managed as follows.

- Existing tracks and roads must be used as far as is practicable to minimize the potential for soil erosion. In instances where access to mining sites are to be established, and if required, raised blade clearing will be undertaken with a view to maintain vegetation

cover to limit soil erosion potential.

- Soil disturbances are to be limited as far as is practicable to minimize the potential for soil erosion.
- Where practicable topsoil will be stripped to a depth of 10cm.
- Topsoil will be stockpiles to a maximum height of 1.5m with a side slope of not more than 1:3.
- Oils and lubricant will be stored with in secondary containment structures.
- Where practicable, vehicle maintenance will be undertaken off-site.
- In the event that vehicle maintenance is undertaken on - site (i.e. such as break down maintenance), drip trays and / or UPVC sheets will be used to prevent spills and leaks onto the soil.
- A waste management system will be implemented and sufficient waste bins will be provided for on-site. A fine system will be implemented to further prohibit littering and poor housekeeping practices.
- Waste separation will be undertaken at source and separate receptacles will be provided (i.e. general waste, recyclables and hazardous waste).
- Wastes will be removed and disposed of at an appropriately licensed landfill (facility disposal licenses will be verified) and recyclables will be taken to a licensed recycling facility.

Motivation where no alternative sites were considered

The geology of the area is well-known due to mining activities that are taking place in the surrounding areas.

The site was selected as it contains good quality Mineral located in a convenient position in close proximity to Mineral operation and transport routes. The layout and technology of this mining project has been determined by the shape, position and orientation of the mineral resource. Refer to the Site Plan above at figure 3. The operational approach is practical and based on best practice to ensure a phased approach of mining followed by rehabilitation in sequential stages.

- ✓ The preferred and only location of the proposed mining activity is on the earmarked section of the application area.
- ✓ The preferred and only activity is the mining of Mineral
- ✓ The preferred and only technology is the use of mine infrastructures mentioned above to extract Mineral by trucks to transport to the clients.

Therefore no other reasonable or feasible sites, layouts, activities, technologies, or operational alternatives for further consideration in the impact assessment component, other than the mandatory "no-go" alternative that must be assessed for comparison purposes as the environmental baseline.

Motivation of the alternative development location within the overall site

The neighbouring mines are known to have the desired Mineral commodity, which has been confirmed by current mining in the application area.

Process undertaken to identify, assess and rank the impacts and risks of the activity 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 mining operational phase, most of the potential negative impacts are rated as moderate, which can be mitigated to a low status. The potential impacts rated as moderate before mitigation measures are implemented includes potential mining impacts such as increased dust levels and exposed soil (which may lead to soil erosion if not mitigated). In addition, mining activities can lead to increased sediment loads in water resources, caused by potential erosion of the site and surroundings due to mining activities along steep slopes. This can trap all storm water within the excavations on the mine area, together with waste from chemical toilets and litter, hydrocarbon spills, fire and increased traffic due to mining activities requiring various vehicles to come onto and leave the site. Potential negative impacts rated as high before mitigation measures include impacts on mining on the agricultural land. Potential positive impacts are the creation of job opportunities during the construction and operational phase (mining).

Potential impacts associated with the decommissioning/closure/rehabilitation phase include soil erosion, soil contamination and alien plant invasion. The area in question will be rehabilitated during mine operation and after mine closure (see Part B).

It was concluded that the proposed development will not have a significant negative environmental impact if the proposed mitigation measures are implemented and the EMP adhered to. (Refer to the following section for a detailed impact and risk assessment).

Detailed impact and risk assessment

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

Identification		Consequences	Impact before mitigation								Mitigation measures
Phase	Activity	Aspect	Impact	Nature	Extent	Duration	Intensity	Probability	Significant	Classification	Mitigation and management measures
SITE CLEARANCE AND CREATION OF ACCESS ROAD											
Construction	Site clearance and access road	Geology	No impact is expected	N/A	0	0	0	0	0	N	No mitigation measures are anticipated.
		Topography	No impact is expected	N/A	0	0	0	0	0	N	No mitigation measures are anticipated.
		Soil	Soil compaction of surrounding areas due to vehicle movement	N	1	1	1	2	1	L	Topsoil will be stripped from all areas where physical surface disturbance will occur and stored at a designated area for future topsoil backfilling.
		Vegetation	Loss of vegetation	N	1	1	1	1	1	L	The disturbance of natural vegetation will be limited to the mining area.
		Fauna	Destruction of habitat	N	1	1	1	1	1	L	The development footprint will be limited as far as possible. Temporary emigration of local species has already been disturbed by agricultural and mining activities in adjacent areas.
		Dust	Natural resources Road users Nearby people	N	1	1	1	2	1	L	Dust suppression will be implemented wherever necessary during construction. Dust liberation into the surrounding environment will be minimised by controlling vehicle speed to avoid excessive dust or road deuteriation.
		Air quality	Natural resources	N	1	1	1	2	1	L	Vehicles and machinery on site will be monitored for excessive emissions. Vehicles and machinery will be maintained to minimise emissions.
		Surface water	Water contamination	N	1	1	1	2	1	M	Water will be diverted to the PCD.

Identification		Consequences	Impact before mitigation								Mitigation measures
Phase	Activity	Aspect	Impact	Nature	Extent	Duration	Intensity	Probability	Significant	Classification	Mitigation and management measures
		Groundwater	No impact anticipated	N	1	1	1	2	1	M	It is important to monitor groundwater levels before and during mining on a quarterly basis in all boreholes within a zone of 2 km surrounding the proposed opencasts. This will ensure that any deviation of the groundwater flow from the idealised predictions is detected in time and can be addressed appropriately. Only a competent geohydrologist or hydrologist should be appointed to conduct this task.
TOPSOIL AND OVERBURDEN STRIPPING											
Construction	Topsoil and overburden stripping	Geology	Alter the geology of the area	N	1	2	2	1	2	L	Excavated topsoil and overburden should be stored and preserved separately for rehabilitation post-mining. The mining operations will remain within the limits of the designated mining permit area.
		Topography	Alter the geology of the area	N	0	0	0	0	0	L	The disturbed area will be profiled and sloped to represent the natural topography when mining is complete.
		Soil	Possible residual impact due to hydrocarbon spillages	N	2	1	2	4	2	M	Saw dust will be used as a preliminary measure and contaminated soil will be excavated and removed to a licensed landfill site.
		Vegetation	Decreased growth on vegetation	N	1	1	1	1	1	L	No mitigation necessary.
		Fauna	Destruction of habitat	N	1	1	1	1	1	L	The development footprint will be limited as far as possible. Temporary emigration of local species has already been disturbed by agricultural and mining activities in adjacent areas.
		Air quality	Dust	N	1	1	1	2	1	M	Dust suppression will be implemented using water carts wherever necessary during construction.
		Surface water	Water contamination	N	2	1	2	2	1	M	Clean/storm water trenches will be constructed to divert water to the designated dam.
		Groundwater	Chemical pollution from moving machinery on site	N	2	1	2	2	1	M	Vehicle maintenance must take place off site. If soil contamination takes place, the contamination area will be stripped and removed to a dedicated hazardous waste bin.

Phase	Identification		Consequences	Impact before mitigation							Mitigation measures
	Activity	Aspect		Impact	Nature	Extent	Duration	Intensity	Probability	Significant	
TOPSOIL AND OVERBURDEN STOCKPILING											
Construction and operation	Topsoil and overburden stockpiling	Geology	No geological alterations are anticipated	N	0	0	0	0	0	L	No mitigation measures are anticipated.
		Topography	Change of topography	N	2	2	1	2	1	L	No mitigation necessary.
		Soil	Soil destruction and erosion	N	2	1	2	4	2	M	The clearance footprint will be kept within the mining permit area. Topsoil will be stored separately from overburden material and maintained by grassing to avoid erosion. Topsoil stockpiles will not exceed a height of 6 m which is high enough to reduce leaching impacts of stockpiled topsoil.
		Air quality	Dust	N	1	1	1	2	1	L	Stockpile and overburden heaps with cover crop to protect from storm water and wind erosion.
		Groundwater	Water Ingress	N	1	2	2	1	2	L	Pit inflows to be considered for the mine water balance during the operational mining phase is expected to range between 200 m ³ /d and 1 800 m ³ /d. Provision must be made for sufficient storage capacity within dirty water return water dams and the possible treatment of dirty water containing hydrocarbons.
POLLUTION CONTROL DAM (PCD)											
Construction	PCD	Geology	No anticipated impact	N	1	2	1	2	1	N	No mitigation measures are necessary as there are no anticipated impacts
		Topography	Permanent alteration to the natural topography	N	1	2	1	2	1	L	The disturbed area should be rehabilitated to its pre-existing condition post use of the PCD
		Soil	Soil erosion and hydrocarbon contamination from construction vehicles	N	2	2	1	2	2	M	Undertake mining activities only in the identified and specifically demarcated and proposed areas.

Identification		Consequences	Impact before mitigation								Mitigation measures
Phase	Activity	Aspect	Impact	Nature	Extent	Duration	Intensity	Probability	Significant	Classification	Mitigation and management measures
		Vegetation	Habitat alteration	N	1	1	1	1	1	L	Minimise impacts on the designated area for construction of the PCD. Limit construction activities and footprint impacts to the PCD construction area.
		Air quality	No impacts	N	2	2	2	2	2	M	No mitigation necessary
		Surface water	Water contamination	N	2	2	2	2	2	M	Clean/storm water trenches will be constructed to divert water to the designated dam
		Groundwater	Water Ingress	N/A	2	3	3	3	3	N	The pollution control dam must be lined to prevent pollutants from entering the subsurface.
DRY/CLEAN WATER TRENCHING											
Construction	Trenching	Geology	No geological impact is anticipated	N/A	3	1	3	4	2	N	Trenching will remain within the designated mining permit area.
		Topography	No impact is anticipated on the topography	N/A	2	1	2	1	1	N	No mitigation measures are anticipated.
		Soil	Soil erosion and contamination	N	2	2	1	2	2	M	The construction footprint must be kept within the mining permit area All spillages will be curbed and attended for clean up immediately Ensure that machinery used is of good working condition and that no hydrocarbon leakages exist
		Air quality	No anticipated impacts	N	2	1	1	2	2	L	No mitigation necessary
		Groundwater	No anticipated groundwater impacts during trenching	N	2	2	1	2	1	L	Mine dewatering will result in pit inflows that will vary from 200 m ³ /d to 1 600 m ³ /d. The maximum zone of influence will extend approximately 500 m into a south-easterly direction. No privately-owned supply boreholes are situated within the zone of influence which will be affected by the pit dewatering. Considering the proposed mining area will be situated at a lower elevation, the risk of pit inflows containing hydrocarbons will impact the treatment options of the

Identification		Consequences	Impact before mitigation								Mitigation measures
Phase	Activity	Aspect	Impact	Nature	Extent	Duration	Intensity	Probability	Significant	Classification	Mitigation and management measures
											dirty water to be discharged or re-used.
CHEMICAL TOILETS AND SANITATION											
Construction /Operational	The use of chemical toilets on site	Natural and agricultural resources	Nuisance pollution and soil contamination	N	2	2	1	1	1	L	Mobile toilets will be used on site. PVC sheet lining will be placed on the ground to trap any seepage that might occur. Toilets are to be disposed weekly by a competent service provider. Toilets will be serviced when needed and emptied when almost full. If a leak occurs, the correct emergency procedures will be followed.
	Water for drinking on site	Natural land	Waste litter and soil contamination	N	2	1	1	1	1	L	Drinking water will be brought on site by tanks.
MOBILE OFFICES											
Construction	The use of mobile office on site	Natural land	Waste litter and soil contamination	N	2	1	1	1	1	L	Waste bins will be available at all times for all types of waste (paper, glass and plastic) on site and collected weekly to the licensed dumping site. Separation of general waste and hazardous waste will be done.
LOADING, HAULING AND TRANSPORT											
Operational	The use of transport on site	The road users	Traffic, social impact and dust	N	2	1	1	1	1	L	A speed limit of 20km/hour will be displayed at the site entrance. The applicant will be responsible for the upkeep and repair of the farm roads used during mining activities to the satisfaction of the landowner. Dust suppression will be done using water tankers.
BOX CUT CONSTRUCTION AND MINERAL EXTRACTION (OPEN CAST MINING)											
Operational	Mineral mining	Geology	Permanent alteration of geology	N	2	3	1	2	2	M	No mitigation measures are possible as mining permanently destroys the geological strata. The mining operations will remain within the limits of the designated mining permit area
		Topography	Permanent alteration of topography and loss of agricultural land	N	2	2	2	2	2	H	Compensate the landowner for a temporary loss of agricultural land during mining activities. Soil fertility samples (in terms of agricultural potential) must be taken by a qualified person and samples must be tested at the certified laboratory before any mining activities commence.

Phase	Identification		Consequences	Impact before mitigation							Classification	Mitigation measures
	Activity	Aspect		Impact	Nature	Extent	Duration	Intensity	Probability	Significant		
		Soil	Soil contamination by hydrocarbons from machinery on site	N	1	2	1	2	1	L	Hydrocarbon spillages must be cleaned immediately. Contaminated soil will be scraped and placed into a designated hazardous waste container, which will be collected quarterly or when needed by a dedicated service provider.	
		Surrounding people	Noise	N	2	2	1	2	2	M	Operators will use safety PPE such as ear plugs and the activity will take place during the day.	
		Air quality	Dust	N	2	2	1	2	2	M	Dust suppression will be implemented wherever necessary. The suppression of dust will be done using water tankers	
		Surface water	Contaminated storm water in the opencast pit as a result of possible rain which can also ingress from stockpiled soil and overburden material	N	2	2	2	1	2	M	Soil berms must be placed upstream of the opencast pit to divert clean water away from the pit. All dirty water in the mine will be diverted and contained in the PCD. The size of the open pit area controls the amount of storm water that may be collected within the pit and such water will be pumped into the PCD. Water that falls in the pit is considered contaminated and may not be discharged. This water will be stored in the PCD.	
		Groundwater	Exposure of the geological strata will result in geochemical changes in-pit and groundwater system contamination. Acid mine drainage may result from Mineral extraction.	N	2	1	2	4	2	M	Should water ingress into the pit, it will be pumped out to the dirty water dam or PCD to allow for mining to continue. The pit must be kept as dry as possible to reduce contact time of water and oxygen with exposed rock, therefore keeping contamination to a minimum. Mine dewatering will result in pit inflows that will vary from 200 m ³ /d to 1 600 m ³ /d. The maximum zone of influence will extend approximately 500 m into a south-easterly direction. No privately-owned supply boreholes are situated within the zone of influence which will be affected by the pit dewatering. Considering the proposed mining area will be situated at a lower elevation, the risk of pit inflows containing hydrocarbons will impact on the treatment options of the dirty water that is to be discharged or re-used. Hard rocks and pyrite materials will be placed on the	

Phase	Identification		Consequences	Impact before mitigation							Classification	Mitigation measures
	Activity	Aspect		Impact	Nature	Extent	Duration	Intensity	Probability	Significant		
												bottom of the pit and compacted, followed by soft material and topsoil to avoid acid formation. Establish dedicated monitoring boreholes to track groundwater quality changes.
DRILLING AND BLASTING												
Operational	Blasting	Geology	Permanent alteration of geology	N	3	2	2	2	3	M		Blasting will only be employed if the Mineral is deep in the strata. In general, truck and shovel mining will be used to mine the Mineral since the level is considered shallow.
		Soil	Possible soil contamination from hydrocarbons	N	2	1	2	1	1	L		Ensure that machinery used is up to standard and no leakage exists. Hydrocarbon spillages must be cleaned immediately. Spillage will be contained by removing the affected surface soil and disposing of it at the designated waste bin for removal to a designated landfill site by service provider.
		Fauna	Harm to possible surrounding fauna	N	2	1	1	1	1	L		Blasting will only be employed if the Mineral is deep in the strata, however truck and shovel mining will be used to mine the Mineral since the level is considered shallow. Fauna of the surrounding area has already been affected by mining and agricultural activities within the property.
		Air quality	Poor visibility, dust creation, air blast disturbances, fly rock creation	N	2	2	1	2	2	M		Blasting will only be employed if the Mineral is deep in the strata, however truck and shovel mining will be used to mine the Mineral since the level is considered shallow. Stakeholders will be notified of blasting schedules if blasting is used. The Site Environmental Control Officer and Mine Personnel will be notified before any blasting operation. There should be reduced charge mass per delay and different initiation systems must be tied to the drilling and charging mechanisms. Stemming control will be in place to avoid air blast and fly rock.
		Surface water	Water contamination	N	2	2	1	1	2	L		Drilling and blasting where a pond of rain water exists will be avoided. If found, such water will be diverted to the relevant designated PCD.

Identification		Consequences	Impact before mitigation								Mitigation measures
Phase	Activity	Aspect	Impact	Nature	Extent	Duration	Intensity	Probability	Significant	Classification	Mitigation and management measures
		Groundwater	Groundwater contamination from contaminated water seepage	N	2	2	2	3	2	H	Should drilling be necessary, it will be kept as dry as possible. Water encountered during drilling and blasting will be pumped to the designated PCDs as soon as possible.
		Surrounding people	Noise	N	2	2	2	1	2	M	Operators will use safety PPE such as ear plugs and activity will take place during the day. Stakeholders will be notified of blasting schedules if blasting is employed.
		Within the mining area	Fire hazards due to drilling	N	2	2	2	1	2	M	Fire extinguishers will always be available on the site.
ROM STOCKPILING											
Operational	Stockpile will be used to store Mineral from the mining area	Air quality	Dust	N	1	2	2	1	2	M	Dust suppression will be implemented wherever necessary. This will be done using water tankers. A speed limit of 20km/hour will be displayed on site.
		Surface water	Contamination of water	N	2	2	1	2	1	M	Dirty water emanating from this area will be diverted to the PCD. The report recommends that the quarterly monitoring of groundwater be done once the mining operations commence to assess if the operations had any negative impacts.
		Ground water	Contamination of water	N	2	2	1	2	1	M	Dirty water emanating from this area will be diverted to the PCD.
		Impact on the mine area	Erosion of ROM	N	2	1	2	1	1	M	The stockpile must not exceed a height of 6 m.
		Surface contamination	Hydrocarbon spill	N	2	1	2	2	2	M	All Mineral spillages will be cleaned immediately and moved to the Mineral stockpile Any leaking mine vehicles will be serviced. A drip tray will be placed under the leak to trap any spillages.
MINERAL HAULING AND TRANSPORTATION BY TRUCK											
Operational	Hauling and transport	Geology	No geological impacts are	N	1	1	1	1	1	L	No known mitigation is necessary at this point.

Phase	Identification		Consequences	Impact before mitigation							Classification	Mitigation measures
	Activity	Aspect		Impact	Nature	Extent	Duration	Intensity	Probability	Significant		
			anticipated.									
		Topography	No further topography alterations are anticipated as the haul road is already constructed.	N	1	2	1	1	1	L	Hauling will be limited to the already constructed designated road.	
		Soil	Surface soil contamination from loose or spilled from trucks and soil compaction.	N	2	1	2	2	1	L	All spillages will be cleaned immediately and moved to the mineral stockpile. All trucks must be loaded to the truck carrier limits and covered to avoid spillage. During breakdowns, appropriate plastic sheet/other appropriate means will be used to prevent soil contamination. If soil contamination takes place, an emergency spill kit will be used to clean up the spillage immediately.	
		Vegetation	Loss of natural vegetation	N	1	1	2	1	1	L	Trucks hauling and transporting mineral will be limited to the designated haul road.	
		Air quality	Dust	N	2	1	1	2	1	L	Trucks hauling and transporting mineral will be limited to the designated haul road. Haul roads will be watered and dust suppressed at all times using dust suppression mechanisms like water tankers.	
		Surface water	Contamination of water	N	1	2	1	2	1	L	All contaminated water will be directed to and collected in the PCD. Trucks hauling and transporting mineral will be limited to the designated haul road. Daily vehicle checks will be done to ensure that there are no leaks present. Prevention of accidental releases of hydrocarbons, as well as the implementation of spill response plans.	
		Groundwater	No groundwater contamination is anticipated at this point	N	1	2	1	1	1	L	Trucks hauling and transporting mineral will be limited to the designated haul road. In case of possible Mineral spillage from trucks, will be cleaned immediately and contained. The contaminated area will be scraped and disposed of at the relevant hazardous waste site.	

Identification		Consequences	Impact before mitigation								Mitigation measures
Phase	Activity	Aspect	Impact	Nature	Extent	Duration	Intensity	Probability	Significant	Classification	Mitigation and management measures
											collected by an appointed service provider for disposal at a registered site. Reports recommends that the quarterly monitoring of groundwater be done once mining operations commence to assess if the operations had any negative impacts.
REHABILITATION AND BACKFILLING – CLOSURE PHASE											
Closure	Rehabilitation and backfilling	Geology	Permanent alteration to the geology	N	1	2	2	2	1	M	Rehabilitate as far as possible to the initially found natural state. Should acid mine drainage be suspected or detected, deployment of acid mine drainage migration and prevention measures should be enforced by collecting the acid water in the PCD. The area disturbed by mining activities will be rehabilitated following the rehabilitation plan, where hard-seeded materials will be compacted at the bottom of the pit, followed by the softs, topsoil and profiled.
		Topography	Permanent change to the topography	N	2	1	1	2	2	L	All carbonaceous material must be backfilled first to prevent oxidation. The disturbed area will be rehabilitated as per the rehabilitation plan, where hard materials will be compacted at the bottom of the pit, followed by the softs, topsoil, profiled and seeded. Ensure that all areas are free draining.
		Soil	Soil erosion and hydrocarbon contamination	N	2	1	2	1	2	L	Disturbed area will be backfilled and top soiled. The area will be sloped to ensure that the rehabilitated area is free draining and slopes are gentle. Accidental releases of liquids will be monitored through inspection and maintenance of storage and conveyance systems, including stuffing boxes on pumps and valves and other potential leakage points, as well as the implementation of spill response plans.
		Vegetation	Improvement of vegetation habitat	N	2	2	2	1	2	M	The disturbed area will be re-vegetated/seeded. Rehabilitation will be monitored by means of weekly visual inspections to ensure its effectivity. A weed eradication programme will be implemented to ensure removal of invasive species.
											Prevention of accidental releases of liquids through

Phase	Identification		Consequences	Impact before mitigation							Classification	Mitigation measures
	Activity	Aspect		Impact	Nature	Extent	Duration	Intensity	Probability	Significant		
												inspections and maintenance of storage and conveyance systems, including stuffing boxes on pumps and valves and other potential leakage points, as well as the implementation of spill response plans.
		Fauna	The rehabilitation of surface land use areas will result in an increase in the available habitat for fauna	N	2	1	2	2	2	M		Restrict movement of machinery used for rehabilitation to the designated rehabilitation area.
		Air quality	Dust from the movement of machinery	N	2	1	1	2	1	L		Moving machinery footprint will be limited to activities to within this footprint as far as possible. Rehabilitation activity will be kept as small as possible. As much original land cover as possible will be kept and dust suppression will be implemented by spraying wherever necessary during rehabilitation. Dust suppression spray will be implemented continuously using methods such as a water tanker.
		Surface water	Water contamination	N	2	2	2	2	2	M		The disturbed mining area will be rehabilitated to as close to its pre-mining status as possible. The area will be free of draining post-rehabilitation.
		Groundwater	Unrehabilitated pyrite material may cause acid mine drainage. Groundwater quality may decrease due to decanting. Open voids may be contaminated with hydrocarbons and other contaminants, and contaminate groundwater.	N	2	2	2	3	2	H		Ensure rehabilitation of pyrite material when backfilling for rehabilitation by placing hard rocks/overburden and pyrite materials at the bottom of the pit and compacting, followed by soft material and topsoil to avoid formation of acid water and infiltration of storm water into the ground voids Rehabilitate all open voids and ensure no open voids are left on site. Compact the backfilled material and ensure that the area is free draining and rehabilitated to as close to the pre-mining status as possible.

Table 12: Impact Assessment and Management Type

NAME OF ACTIVITY (E.g. For Mining site, site camp, access route etc.)	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (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.)	SIGNIFICANCE if mitigated
Phase 1: Data Acquisition and Desk top Study						
Data collection and assessment (desktop only)	1. None identified.	N/A	Planning	N/A	No mitigation proposed	N/A
Data Assessment	2. None identified	N/A	Planning	N/A	No mitigation proposed	N/A
Phase 2: Mining Operation						
Mining operation	3. Noise impacts resulting from site mining affecting cattle and other farm/ wild animals.	Noise generation	Planning	7	Directly affected, adjacent landowners and farms in proximity to the site will be informed of the planned dates of the airborne geophysics survey and a grievance mechanism will be made available. Mitigation alternatives are limited to timing of the flyovers which may affect aspects such as hunting activities on the farms. Farm owners must be consulted and informed of any low fly overs which may affect cattle being held in restricted holding pens, which may result in injury or damage.	7

	Nuisance noise impacts on communities and landowners and other persons.	Noise generation	Planning	7	No mitigation proposed.	7
Ground surveys	Poor access control resulting in impacts on cattle movement, breeding and grazing practices.	Loss of Cattle	Planning	10	Access control procedures must be agreed on with farm owners and all staff trained on these procedures.	8
No construction or site establishment activities will be undertaken	No anticipated impacts.	N/A	N/A	N/A	No mitigation proposed.	N/A
Mineral Material	Destruction and / or disturbance of on-site fauna and flora.	Loss of Fauna and Flora	Operational Phase	6	Use existing tracks and roads in all instances as far as is practicable.	5
					As part of the mining programme, no tracks will be cleared for once-off access to mining sites. Avoid significant vegetation such as trees and large shrubs in the event that driving through the veld is required to access an identified mining site. Vehicle speed will be reduced, particularly in highly vegetated areas to avoid deaths by vehicle impacts.	
	Poor access control resulting in impacts on cattle movement, Breeding and grazing practices.	Noise generation	Operational Phase	10	Access control procedures must be agreed on with farm owners and all staff trained on these procedures.	8
	Vehicle traffic noise impact affecting cattle and / or wildlife.	Loss of cattle and/or nuisance creation	Operational Phase	6	Site activities will be conducted during daytime hours 07h00 – 17h30 to avoid night time noise disturbances and night time collisions with fauna.	4

					Vehicle speed will be reduced, particularly in highly vegetated areas to avoid deaths by vehicle impacts.	
	Poor access control resulting in impacts on cattle movement, breeding and grazing practices.	Noise generation	Operational Phase	10	Access control procedures must be agreed on with farm owners and all staff trained on these procedures.	8
	Vehicle traffic noise impact affecting cattle and / or wildlife.	Loss of cattle and/or nuisance creation	Operational Phase	6	Site activities will be conducted during daytime hours 07h00 –17h30 to avoid night time noise disturbances and night time collisions with fauna.	4
	Poor housekeeping could result in littering and the associated impacts this will have on the aesthetics of the area, contamination of river systems in the rainy season and also the potential health hazard to cattle.	Loss of aesthetic value, loss of water resources, loss of fauna and flora	Operational Phase	13	<p>A waste management system will be implemented and sufficient waste bins will be provided for on-site. A fine system will be implemented to further prohibit littering and poor housekeeping practices.</p> <p>Waste separation will be undertaken at source and separate receptacles will be provided (i.e. general waste, recyclables and hazardous waste).</p> <p>Wastes will be removed and disposed of at an appropriately licensed landfill (facility disposal licenses will be verified) and recyclables will be taken to a licensed recycling facility.</p>	6

	Activities within the Mining area could result in the disturbance to the natural geomorphology.	Loss of fauna and flora, altering the river bed	Operational Phase	12	No other activities (roads, etc.) may be undertaken.	4
	Activities within the mining area could result in safety hazards during rainy periods.	Loss and/or damage to life	Operational Phase	15	A first aid station and emergency plan must be available on site.	7
Mineral Mining	Soil disturbance from mining resulting in soil structure destruction, compaction and erosion.	Loss soil resources	Operational Phase	6	Soil disturbances are to be limited as far as is practicable.	5
No decommissioning activities will be required	No anticipated impacts.	N/A	Decommissioning g Phase	NA	No mitigation proposed.	N/A

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 that have been included in the EIA report (Mark with an X where applicable)	Reference to applicable section of report where specialist recommendations have been included

Environmental impact statement

Part of the proposed mining area was previously mined, and major environmental impacts could have been encountered. The proposed site is considered suitable for Mineral mining and the potential impacts identified will be adequately managed and effectively mitigated through the implementation outlined in this report.

Concerned companies will conduct a Health, Safety, Environment and Community awareness workshop with the employees to educate them about the possible environmental impacts and the controlling measures to be taken if they can occur. Monitoring will be conducted to ensure compliance.

It was concluded that the proposed mining operation will not have a significant negative environmental impact and that the socio-economic benefits of the proposed Mineral mining outweigh the potential negative impacts on the environment if the mitigation measures outlined in this report are effectively implemented.

Summary of the key findings of the Environmental Impact Assessment

Name of activity	Potential impact	Aspects affected	Phase	Significance (if not mitigated)	Mitigation type	Significance (if mitigated)
Site preparation	Dust Noise Loss of flora, fauna and topsoil	Air quality Land Habitat	Construction	Medium	Avoidance and control through dust and noise	Low
Removal of vegetation and topsoil for access road	Dust Noise Loss of topsoil Loss of vegetation Soil compaction	Land	Construction	Moderate	Avoidance and control through dust and noise Control through management and monitoring through rehabilitation	Low
Excavation of storm water diversion trenches	Dust Noise Loss of flora and topsoil Soil pollution Soil compaction	Land Air quality	Construction	Moderate	Avoidance and control through dust and noise Control through management and monitoring through rehabilitation	Low
Removal of overburden material	Water pollution Health impact	Water resources	Construction	Moderate	Avoidance and control Rehabilitation	Low
Stockpiling of topsoil and overburden material for use in rehabilitation	Dust Noise Loss of topsoil	Air quality Topsoil	Construction	Moderate	Avoidance and control Rehabilitation	Low
Possible drilling and blasting to extract Mineral	Water pollution Vibration	Topography Geology Surface water	Operational	Moderate	Control, remedy, avoidance and rehabilitation	Low

Name of activity	Potential impact	Aspects affected	Phase	Significance (if not mitigated)	Mitigation type	Significance (if mitigated)
		Groundwater				
Mineral extraction	Water pollution	Topography Geology	Operational	High	Control, remedy and rehabilitation	Moderate
		Groundwater Land				
Transportation of Mineral to stockpile areas	Dust Noise	Air quality Social aspect	Operational	Low	Avoidance and control	Very low
Temporary stockpiling of Mineral in the stockpile area	Dust Water pollution	Air quality Water resources	Operational	Low	Control	Very low
Daily transportation of Mineral from stockpile areas to customers	Dust Noise	Air quality Social aspect	Operational	Low	Control	Very low
Waste dumping	Land pollution	Land	Operational	Moderate	Avoidance and control	Very low
Use of chemical toilet	Soil contamination	Soil	Operational	Moderate	Avoidance and control	Low
Topsoil reseeded Scraping the surface Rehabilitation of trenches. Post rehabilitation monitoring through weekly visual inspections	General catchment					
Concurrent rehabilitation	Positive environmental impact	Land use	Operational and closure	Very low	When mining is completed, the land and access road will be subjected to rehabilitation	Very low

The supporting impact assessment conducted by the EAP must be attached as an appendix.

Final site map

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

Positive and negative impacts, risks of the proposed activity and alternatives

See the previous section for details concerning the impacts identified as a result of the proposed mining activities. Most of the potential negative impacts identified during the mining operation phase is rated as medium which can be mitigated to a low status. The potential negative impacts rated as medium before mitigation measures will be implemented. These include impacts such as increased dust levels exposing soil (which may lead to soil erosion if not mitigated), increased sediment loads in water resources, impact on drainage lines, hydrocarbon spills and litter, fire, increased traffic due to vehicles coming onto and leaving the site. It was concluded that the proposed mining project will not have a significant negative environmental impact if the proposed mitigation measures are implemented and the EMP is adhered to.

Proposed impact management objectives and outcomes for inclusion in the EMP

Based on the assessment and, where applicable, specialist report recommendations, proposed impact management objectives and outcomes for inclusion in the EMP, as well as for inclusion as conditions of authorisation, have been recorded.

The main management objectives for mining activities are to:

- Minimise the impact from mining activities on its workforce and the environment.

- Improve process efficiencies from extraction of Mineral to the final product and reduce worker exposure to hazards, as well as maintain a competitive mining sector.

When implemented, the above objectives will:

- Implement a mining programme that does not impact sensitive environmental features.

- Implement a mining programme with the consent of the landowner.

- Ensure that all temporary impacts are minimised.

- Remove any evidence that the mining activities took place.

The following are the proposed impact management mitigations:

Dust

- A speed limit of 30km/h will be displayed at the entrance of the mining area.

- As much original land cover as possible will be retained and dust will be suppressed by spraying water wherever necessary.

Soil erosion

Implement erosion and storm water runoff management measures as per the EMP to prevent or limit any erosion from occurring on the mining areas and surroundings and limit any storm water runoff from the mining areas, topsoil and overburden storage areas. Mine areas must be rehabilitated, and pastures planted immediately after mine is completed. The area will be monitored after rehabilitation. If erosion is detected during the rehabilitation phase, prevention measures will be followed as outlined in the EMP.

Aspects for inclusion as conditions of authorisation

Any aspects which must be made conditions of the Environmental Authorisation (EA)

The mine owner must appoint a suitably qualified Environmentalist/Consultant responsible for ensuring compliance with the requirements of the EA and EMP during mining and decommissioning. The Environmentalist/Consultant must have at least four/five years' experience in Environmental Management and must be familiar with the area's environmental conditions.

The environmentalist must be responsible for the following on a daily basis:

Site inspection and record mine compliance with the EA and EMP.

Ensuring that all mining activities are undertaken according to the EA and EMP.

Report to the mine owner of any non-compliance with the EA and EMP and any other issue (environmental issue) that may require attention.

Description of any assumptions, uncertainties and knowledge gaps

Which relate to the assessment and mitigation measures proposed.

Based on the detailed EIA undertaken and the proposed management measures proposed, the EAP is of the opinion that the proposed expansion project (development and operation of the main adit and overland conveyor) can be granted EA provided that the company adheres to the management and mitigation measures proposed. EA should include those conditions.

Proposed activity authorisation

Reasons why the activity should be authorised or not

The activity should be authorised for the following reasons:

The environmental impacts associated with the proposed mining activities are minimal will be mitigated if they occur.

The spatial extent of the physical impact is minimal over a proposed area of 5 ha.

To produce Mineral for the power stations' ability to produce electricity needed in South Africa as they currently rely on Mineral.

Conditions that must be included in the authorisation

Buffer zones will be applied in consultation with an authorised and competent consultant.

Period for which the EA is required

The EA is required for the duration of the mining permit which is two years from the date on which mining commences.

Undertaking

The undertaking required to meet the requirements of this section is provided at the end of the EMP and is applicable to both the BAR and the EMP report. The undertaking has been provided at the end of the report.

Financial provision

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

A financial provision of **R 460 432.00** is proposed for the mining application.

Explain how the aforesaid amount was derived

The amount was derived from the quantum calculations.

Confirm that this amount can be provided for 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 Prospecting Work Programme as the case may be.

CALCULATION OF THE QUANTUM

Applicant:
Evaluator:

MD Survey and Technical Services Pty Ltd
Livhuwani Sigwadi

Ref No.:
Date:

MP 30/5/1/1/3/13231 MP
Jun-22

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	18	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	256	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	377	1	1	0
3	Rehabilitation of access roads	m2	0,09	46	1	1	4,14
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	444	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	242	1	1	0
5	Demolition of housing and/or administration facilities	m2	0,002	512	1	1	1,024
6	Opencast rehabilitation including final voids and ramps	ha	0	260391	1	1	0
7	Sealing of shafts adits and inclines	m3	0	137	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,079	178800	1	1	14125,2
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	222692	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0,022	646804	1	1	14229,688
9	Rehabilitation of subsided areas	ha	0	149718	1	1	0
10	General surface rehabilitation	ha	4,48	141639	0,1	1	63454,272
11	River diversions	ha	0	141639	1	1	0
12	Fencing	m	0	162	1	1	0
13	Water management	ha	0,5	53856	1	1	26928
14	2 to 3 years of maintenance and aftercare	ha	4,48	18849	1	1	84443,52
15 (A)	Specialist study	Sum	0	0	1	1	0
15 (B)	Specialist study	Sum	0	0	1	1	0
Sub Total 1							203185,844
1	Preliminary and General		24382,30128		weighting factor 2		24382,30128
					1		
2	Contingencies				20318,5844		20318,5844
Subtotal 2							247886,73
SIGN	Sigwadi L						
DATE	2022/06/13						
VAT (15%)							212545,57
Grand Total							460432

The amount of **R 460 432.00** for financial provision was calculated for the mining application. Financial provision will be made in the form of a bank guarantee upon the successful granting of the mining permit.

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 (Act 107 of 1998). The EIA report must include the following:

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.

A consultation process was implemented, the purpose of which was to provide affected parties the opportunity to raise any potential concerns. No socio-economic conditions of the direct affected party will be affected.

National estate impact as per section 3(2) of the National Heritage Resources Act

Provide the results of investigation, assessment, and evaluation of the impact of 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 Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.53; 2.11.6. and 2.12. herein.

There are no sites of cultural and heritage resources that have been identified within the application area or within the property of applicant

Other matters required in terms of sections 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 Appendix A.

The infrastructure required in support of the proposed mining project and the activities included in this application, is therefore determined by the location of the Mineral reserve and the mining method to be used.

PART B

EMP report

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

Details of the EAP are included in Part A of this report.

Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required.

The aspects of the activity are covered in Part A of this report.

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, including buffers.

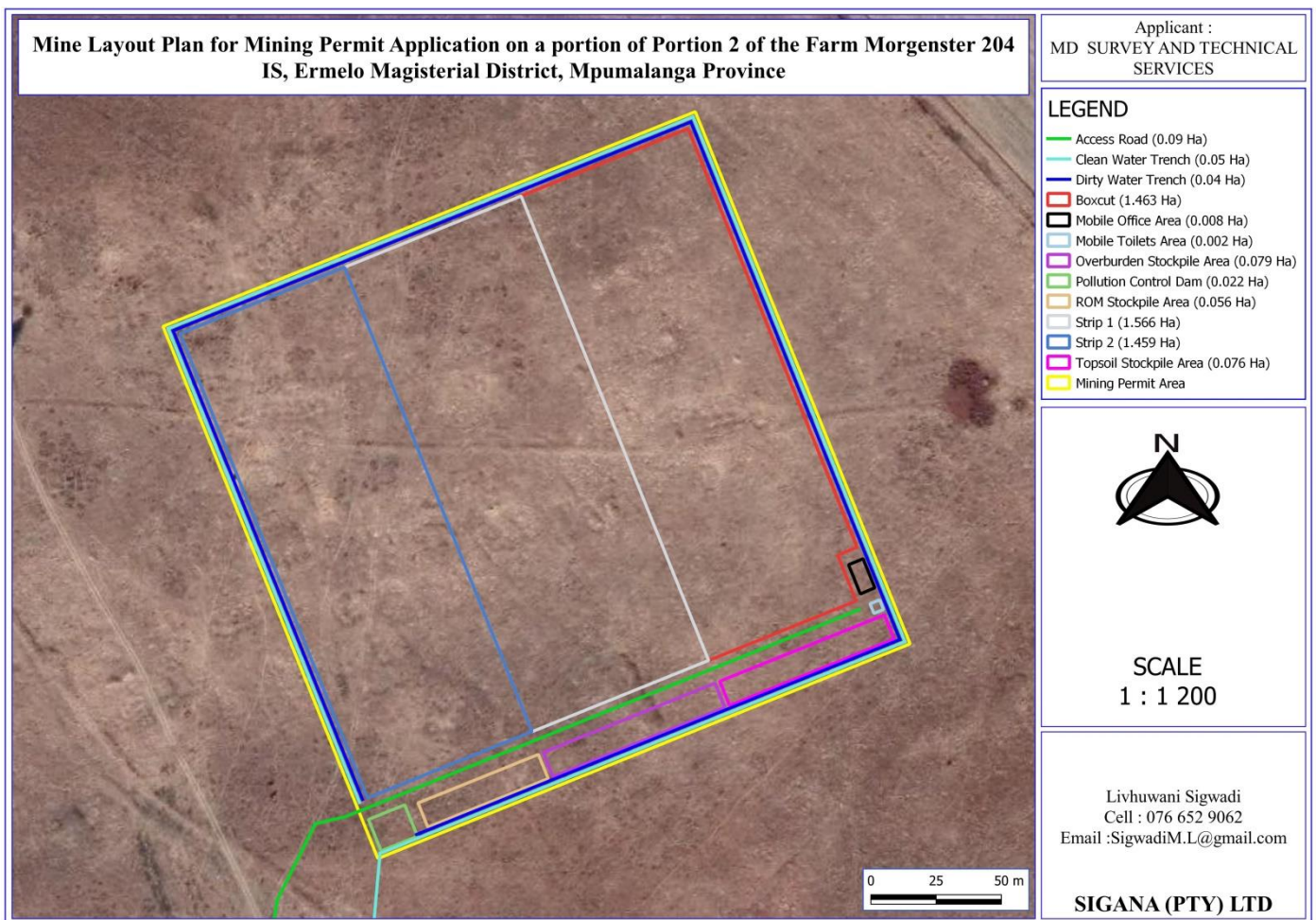


Figure 31: Infrastructure plan (Also attached under Error! Reference source not found.)

Description of impact management objectives including management statements

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

The closure objectives and rehabilitation measures include the following:

The mobile office will be removed from the area. Soil will be decontaminated, and the site rehabilitated. This will be done on a case-by-case basis in consultation with stakeholders

Ensure that all areas are stable and there is no risk of erosion

Haul roads will be ripped and rehabilitated to grasslands

Return the topography and vegetation of the area to an acceptable condition

Ensure that no soil compaction remains on site

Prevent the alien plant invasion on site until the area is in a stable condition

Ensure that no contaminated material remains on site

Ensure that the areas are free draining and non-polluting

Ensure that no degradation in land capability remains

Ensure that vegetation re-establishment is successful

Volumes and rate of water use required for the operation

After careful consideration of the scale of operation it has been deduced that approximately 6 000 l of water will be used for dust suppression and ~500 L will be used as potable water. It is anticipated that water will be purchased from a private water filter dealer such as Oasis and brought onto the site.

Water use license application

Best practice guidelines will be used for mine water management, mine water characterisation, mine water resource protection, mine water treatment and development of mine water management model (Best Practice Guidelines: Series A, G, & H), hence a water use licence has not been applied for.

Impact management outcomes

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

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
Whether listed or not. E.g. excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and 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. E.g. modify through alternative method, control through noise control, control through management and monitoring, and remedy through rehabilitation	Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives, etc.
Preparation of access road	Dust pollution	Air quality	Construction	Control by dust suppression	Conduct dust suppression techniques
				Control by minimisation of vehicle movement and monitoring of dust-fall to determine measure effectivity	
	Soil erosion, compaction and contamination	Soil		Prevent by restricting disturbed area and spillage from haulage vehicles. Control by removal and storage of all utilisable soil and implementation of storm water management. Remedy by treatment of contaminated soils.	Rehabilitation standards/objectives

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	Loss of vegetation	Vegetation		Modify by vegetating soil stockpiles and control through alien invasive eradication programme.	Rehabilitation standards/objectives
	Invasion by alien invasive species	Vegetation		Modify by vegetating soil stockpiles and control through alien invasive eradication programme.	Rehabilitation standards/objectives
	Visual impact	Visual receptors		Avoid leaving any building material or waste on site.	Rehabilitation standards/objectives
	Heritage	Archaeological or heritage features		Control by appropriate management measures and prevent through HSEC management measures.	Impact avoided
Clearing of vegetation within the footprint of the topsoil stockpile and the proposed mine	Dust pollution	Air quality	Construction	Control by dust suppression and minimisation of vehicle movement, as well as monitoring of dust fall to determine if measures are effective.	Conduct dust suppression techniques
	Soil erosion, compaction and contamination	Soil		Prevent by restricting the disturbed area and restricting spillage from haulage vehicles. Control by removal and storage of all utilisable soil and implementation of storm water management. Remedy by treatment of contaminated soils.	Rehabilitation standards/objectives
	Loss of vegetation	Vegetation		Control by restricting the footprint to be cleared and through alien invasive	Rehabilitation

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
				eradication programme.	standards/objectives
	Invasion by alien invasive species	Vegetation		Control by restricting the footprint to be cleared and through alien invasive eradication programme.	Rehabilitation standards/objectives
	Visual Impact	Visual receptors		Avoid leaving any building material or waste on site.	Rehabilitation standards/objectives
	Heritage	Archaeological or heritage features		Prevent through reporting and evaluation of any archaeological/ heritage features found.	Impact avoided
Hauling and transport of Mineral during operations	Dust pollution	Air quality	Operational	Control through dust suppression and minimisation of vehicle movement. Control through monitoring of dust fall to determine if measures are effective.	Conduct dust suppression techniques
	Soil erosion, compaction and contamination	Soil		Prevent by restricting the disturbed area and restricting spillage from haulage vehicles. Control by removal and storage of all utilisable soil and implementation of storm water management measures. Remedy through treatment of contaminated soils.	Rehabilitation standards/objectives

Financial provision

Determination of the amount of financial provision

Describe the 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 will be either left for future users or sold for removal. Soil will be decontaminated, and the site rehabilitated. This will be done on a case-by-case basis in consultation with stakeholders. The area will be restored to as much of the natural condition as it was before construction.

Ensure that all areas are stable and there is no risk of erosion.

Haul roads will be ripped and rehabilitated to grasslands.

Return the topography and vegetation of the area to an acceptable condition.

Ensure that no soil compaction remains on site.

Prevent the alien plant invasion on site until the area is in a stable condition.

Ensure that no contaminated material remains on site.

Ensure that the areas are free draining and non-polluting.

Ensure that no degradation in land capability remains.

Ensure that vegetation re-establishment is successful.

Environmental objectives: Consultations with landowner and IAPs

The landowner and IAPs have been consulted on the closure objectives and rehabilitation during the consultation period.

Rehabilitation plan indicating the scale and aerial extent of the main mining activities, including the anticipated mining area at closure

The retrenchment processes will be followed as per the applicable legislation. All roads will be rehabilitated and left behind in a safe and good working condition, ensuring public safety and access to site and monitoring points. Any road degradation will be repaired with consultation of the roads department

Rehabilitated profiles must ensure free drainage of water and should be contoured to fit in with the catchment dynamics. Waste will be removed and appropriately disposed of. The land will be re-established to an acceptable condition prior to construction; i.e. to its natural state or a predetermined and agreed-to standard of land use, which conforms to the concept of sustainable development. Areas will be fenced off once seeded to prevent surface disturbance to the site and allow for vegetation to be established and stabilised.

Compatibility of the rehabilitation plan with the closure objectives

The closure plan will assist the company to achieve the following objectives:

Ensure shareholder value is preserved.

Ensure that stakeholders' needs, concerns and aspirations are considered when considering closure.

Comply with relevant or applicable legislation.

Limit or mitigate adverse environmental effects to an extent that it is acceptable by all parties.

Ensure land is rehabilitated to, as far as is practicable, its natural state, or to a predetermined and agreed standard or land use which conforms with the concept of sustainable development.

Quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline

CALCULATION OF THE QUANTUM							
Applicant:		MD Survey and Technical Services Pty Ltd			Ref No.:		MP 30/5/1/1/3/13231 MP
Evaluator:		Livhuwani Sigwadi			Date:		Jun-22
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	18	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	256	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	377	1	1	0
3	Rehabilitation of access roads	m2	0,09	46	1	1	4,14
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	444	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	242	1	1	0
5	Demolition of housing and/or administration facilities	m2	0,002	512	1	1	1,024
6	Opencast rehabilitation including final voids and ramps	ha	0	260391	1	1	0
7	Sealing of shafts adits and inclines	m3	0	137	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,079	178800	1	1	14125,2
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	222692	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0,022	646804	1	1	14229,688
9	Rehabilitation of subsided areas	ha	0	149718	1	1	0
10	General surface rehabilitation	ha	4,48	141639	0,1	1	63454,272
11	River diversions	ha	0	141639	1	1	0
12	Fencing	m	0	162	1	1	0
13	Water management	ha	0,5	53856	1	1	26928
14	2 to 3 years of maintenance and aftercare	ha	4,48	18849	1	1	84443,52
15 (A)	Specialist study	Sum	0	0	1	1	0
15 (B)	Specialist study	Sum	0	0	1	1	0
Sub Total 1							203185,844
1	Preliminary and General		24382,30128	weighting factor 2 1			24382,30128
2	Contingencies				20318,5844		20318,5844
Subtotal 2							247886,73
SIGN		Sigwadi L				VAT (15%)	
DATE		2022/06/13				212545,57	
Grand Total							460432

Confirm that the financial provision will be provided as determined.

The financial provision will be provided as determined. Mechanisms for monitoring compliance with a performance assessment against the EMP and reporting.

Environmental monitoring programme (EMP)

General monitoring and reporting

The environmentalist/consultant/mine manager will ensure that the integrity of the lining of all dirty water management facilities is tested at least quarterly. This includes inspecting all water management facilities and associated pipelines at least weekly to ensure optimal functionality and that there are no leaks resulting in water loss.

The groundwater flow dynamics will be calibrated every two years with updated monitoring data. This will assist with management and long-term risk prediction and management. The environmentalist/consultant/mine manager will be responsible for inspection of sites and keeping records of all monitoring activities. All incidences and issues will be recorded, as will the actions taken to address issues.

Action required

Should significant changes in qualities or levels be observed, then:

All medium risk facilities will be inspected to ensure no severe problems occur in these areas.

Any issues observed will be reported to the environmental site manager and respective site managers.

All leaks identified will be repaired.

Silt build-up in water management facilities/dams will be cleared and deposited in soil stockpiles if clean or in residue deposits if dirty.

Frequency of performance assessment/environmental audit report submission

The environmental performance assessment report will be submitted to the DMRE

Environmental awareness plan (EAP)

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

The successful implementation of the EMP depends on training and awareness of all personnel working on the mining site. The EAP aims to (see **Error! Reference source not found.**):

Promote general environmental awareness amongst all employees.

Inform all personnel of environmental policies, procedures and programmes applicable to the mining activities.

Provide general training on the implementation of environmental management actions.

Provide job-specific environmental training to ensure environmental protection.

The environmental awareness training programme will include:

Environmental induction of new employees.

Code of conduct signed by all inducted employees.

Identification of environmental risks associated with each job and job-specific training on addressing these risks.

Training on the implementation of emergency procedures where necessary.

Specific information required by the competent authority

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

Specific information requirements have been stated by the competent authority to date.

Undertaking

The EAP herewith confirms

The correctness of the information provided in the reports

The inclusion of the comments and inputs from stakeholders and IAPs

The inclusion of input and recommendations from the specialist report where relevant, and

That the information provided by the EAP to the interested and affected parties and any responses by the EAP to comments or input made by interested and affected parties are correctly reflected herein

Signature of the environmental assessment practitioner

Sigana Enviro & Construction Pty Ltd

Name of company

13 June 2022

Date

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