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).

NAME OF APPLICANT: MERABE THE FIRM (PTY) LTD

TEL NO: 0724239073

FAX NO: 0865464469

POSTAL ADDRESS: 832 Dipelaneng, Hobhouse,Free State, 9740

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FILE REFERENCE NUMBER SAMRAD: FS 30/5/1/3/2 (10278) MP

Contents

1. IMPORTANT NOTICE

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

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

In terms of section 16(3)(b) of the 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 activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

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

2. Objective of the basic assessment process

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

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:

  (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) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to:
  (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.

PART A

SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of
i) Details of the EAP

Name of The Practitioner: Moses Malungisa Msitsini

Tel No.: 0719064780

e-mail address: malungisamoses@gmail.com

ii) Expertise of the EAP.

(1) **The qualifications of the EAP**

BSc Geology and Geography, See appendix A

(2) **Summary of the EAP's past experience**.
(In carrying out the Environmental Impact Assessment Procedure):

I have worked with the small scale miners in the region of Free State helping them with the application for Mining permit, prospecting right and comply reports with the legislation of the Department of Mineral Resource

b) Location of the overall Activity.

Farm Name:	Dorpsgronden van Hobhouse 557
Application area (Ha)	1.5 ha
Magisterial district:	Ladybrand
Distance and direction from nearest town	About 1 km west of Hobhouse
21digit Surveyor General Code for each farm portion	F02100000000557000001

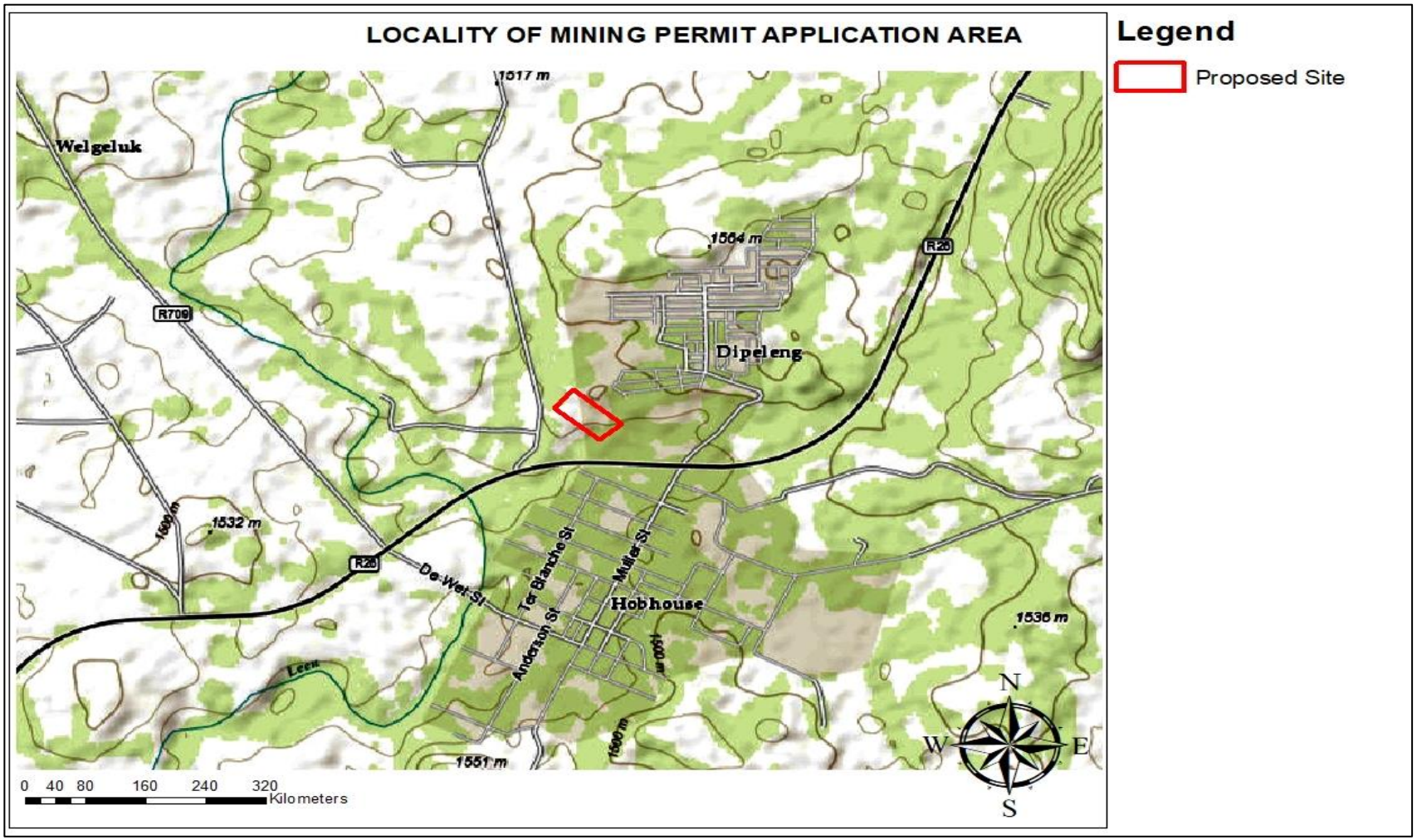
c) Locality map

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

LOCALITY OF MINING PERMIT APPLICATION AREA
PROPOSED SITE PLAN

MAP INDICATING LOCALITY WHERE MINING PERMIT IS APPLIED FOR HIGHLIGHTED WITH RED SHAPE

APPLICANT: Merabe The Firm (Pty) Ltd



d) 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

MERABE THE FIRM (PTY) LTD proposes to establish a small-scale sand mining operation. The total development area will be approximately 1.5 hectares, and will have a lifespan of 2 years. The process will include the excavation of weathered rock, processing into aggregate and gravel from the demarcated land. The aggregate and gravel will be stored in stockpiles within the 1.5-hectare area. The excavated aggregate and gravel will be transported using a Truck Load Backhoe (TLB) to the camp site, located within the 1.5 hectares. The following infrastructure will form part of this mining operation

- Stockpile area
- 1 x TLB
- Diesel storage tank
- Machinery/vehicle maintenance area
- Storage facility
- Septic toilets
- Security/Workers hut
- Office
- Excavator and Dump Truck
- Crusher Machine

(i) 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 544, GNR 545 or GNR 546)***	**WASTE MANAGEMENT AUTHORISATION** (Indicate whether an authorisation is required in terms of the Waste Management Act). **(Mark with an X)**
Excavation of weathered rock and processing into aggregate and gravel	1.5	X	GNR 327, Listed activity number 21	
Stockpile	On-site	X	GNR 327, Listed activity number 21	
Access Roads	Off-Site	X	GNR 327, Listed activity number 24	

(ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to be prospected/mined and for a linear activity, a description of the route of the activity)

MERABE THE FIRM (PTY) LTD plans to have an excavating mining operation for aggregate and gravel within a 1.5 ha area to be located on Dorpsgronden van Hobhouse 557 about 1 km west of Hobhouse

PROJECT PHASES:

Construction Phase

• Preparing an area of 900 m2 for a portable camp site to accommodate infrastructure associated with stockpiling, septic toilets and offices etc.
• Clearing vegetation for mining operation.

Operational Phase

• Excavation and transportation of aggregate and gravel
• TLB activity and operation of mining equipment
• Storage of diesel and vehicle/machinery maintenance equipment
• Stockpiling of aggregate and gravel

Decommissioning Phase

• Demolition and/or removal of mobile camp site infrastructure/equipment and vehicles
• Rehabilitation and restoration of disturbed areas

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (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	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY** CONTEXT? (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
The Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002	Mining activity	This BAR and EMP report have been compiled in accordance with the Act.
National Environmental Management Act (Act No. 107 of 1998)	Mining activity	This BAR is being undertaken in terms of NEMA in order to determine any possible impacts on the environment and to undertake mitigation measures that reduce any potential harm to the environment.
Environmental Impact Assessment Regulations: GNR 982 to 985 of 4 December 2014	Mining activity	Listed activities as per the NEMA EIA Regulations have been considered and authorisation is thus required with regards to the triggering activities. National
National Water Act, 1998 (Act No. 36 of 1998	Not applicable	An application for a water use licence is not required.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) The National Heritage Resources Act (Act No. 25 of 1999	Not applicable	Listed activities as per the 2013 NEM:WA Regulations have been considered and it has been determined that a waste licence is not required.

f) 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).

For years, mining has been the driving force behind South Africa's economy and continues to make a valuable contribution to the country's economy. Aggregate and gravel mining makes a valuable contribution to the local economy as this Aggregate and gravel is used in many infrastructure projects such as the building of malls, roads, schools, hospitals, houses etc. In addition, it supports Small-medium and micro sized enterprises (SMME's) and it is also one of the sectors that provide employment opportunities for unskilled and semi-skilled people.

The South African mining industry has its origin in small-scale mining activities, with these operations offering much needed employment opportunities and entrepreneurship, as well as contributing to the mineral sector and local economy. Small-scale mining impact on employment is especially observed in the rural town where there are limited opportunities; providing significant livelihood for rural communities and a means of alleviating poverty. The proposed project is for a small-scale mining operation at Dorpsgronden van Hobhouse 557 located in the Mantsopa Local Municipality. The municipality is faced with challenges of high unemployment levels and poverty, making economic development one of the municipality's main priorities and general public needs. Economic sectors identified as important in the Mantsopa municipality include agriculture, tourism and mining, with these sectors making a significant contribution to the local economy, thus necessitating the need to prioritise and support these sectors.

The municipality's objective is to also create an enabling environment for job creation and businesses to thrive, with some of its specific strategies aimed at monitoring the implementation of Social Labour Plans by mining businesses in the municipal area in this period. Merabe The Firm (Pty) Ltd has thus identified an opportunity as the proposed project will add great socio-economic value. It could contribute to the local economic opportunities, the business, ultimately impacting socio-economic development of the area in support of the municipality and district's development opportunities and targets/goals.

g) Motivation for the overall preferred site, activities and technology alternative.

The aggregate and gravel mining industry is one of the important industries in the country and Dorpsgronden van Hobhouse 557about 1km west of Hobhouse has an abundant supply of this resource.

The proposed method of excavating aggregate and gravel allows easy access of machinery to the site and does not require extensive machinery as other methods, making it feasible for small-scale miners. It reduces the overall costs associated with the mining process, thus allowing financial viability in small scale mining of deposits.

Merabe The Firm (Pty) Ltd would contribute towards local socio-economic development, as it aims to provide employment opportunities to the local people as far as possible, thus stimulating development in the Hobhouse ort community. The proposed project therefore is an effort to make use of available opportunities and development in the Mantsopa Local Municipality.

h) Description of the process followed to reach the proposed preferred alternatives within the site.

NB!! – 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.

i) Details of the development footprint alternatives considered.

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

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

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

No property alternatives have been considered as the envisaged mining operations will occur in an area of existing mining operations, and also in close proximity to the access road and community in need of such a development.

(b) The type of activity to be undertaken;

No alternatives to the mining of aggregate and gravel have been considered.

(c) The design or layout of the activity;

The site layout was determined by considering the ease of access to roads and the desired resource.

(d) The technology to be used in the activity;

No alternative technology has been considered for the proposed mining activity.

(f) The option of not implementing the activity.

The option of not implementing the activity has been considered, and assumes that should the proposed activity not proceed then the status quo would remain. This includes no clearing of land, no digging of trenches, no mining operations on site and no decommissioning at the end of the project life cycle. The fact that this is an area of mineral potential and that the proposed mining would lead to job creation, contribution to the GDP of the municipality and the province, and be an opportunity to

improve the local socio-economic situation, therefore the option of not implementing the activity will not be pursued at this stage.

ii) Details of the Public Participation Process Followed

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 or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

A Basic Assessment is required to obtain Environmental Authorisation for Merabe The Firm (Pty) Ltd proposed small-scale sand mining operation. A public participation process was undertaken as part of the Basic Assessment process and was done in the following manner:

Notice of the Basic Assessment process has been given by:

(1) Placing a Site Notice in public places such as stores, offices, town hall, site of the operation, public clinic, Hobhouse Police Station, Hobhouse Hospital, Hobhouse Municipality;
(2) Posting and emailing written notice regarding the proposed development to interested and affected parties, including neighbours and community leader (representing the community in control of the farm), competent authority and other relevant Government departments;
(3) Placing of an advert in the newspaper.

iii) Summary of issues raised by I&Aps

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

Interested and Affected Parties List the names of persons consulted in this column, and 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 the issues and or response were incorporated.
AFFECTED PARTIES					
Landowner/s					
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties					
Municipal councillor					
Municipality					
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS					
Communities					

Dept. Land Affairs					
Regional Land Claims Commissioner: Free State Province					
Traditional Leaders					
Dept. Environmental Affairs					
Other Competent Authorities affected					
Heritage Affairs					
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

iv) The Environmental attributes associated with the alternatives. (The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

(its current geographical, physical, biological, socio- economic, and cultural character).

Site description

The proposed project site is located approximately 1 km west of Hobhouse. The area is a portion of land with no formal activities. There is no other infrastructure in project site and land is relatively flat. The site is dominated with gravel and aggregates surfaces cover by very light dry grass and shrubs. The site is characterised by natural vegetation with a few trees occurring on site.

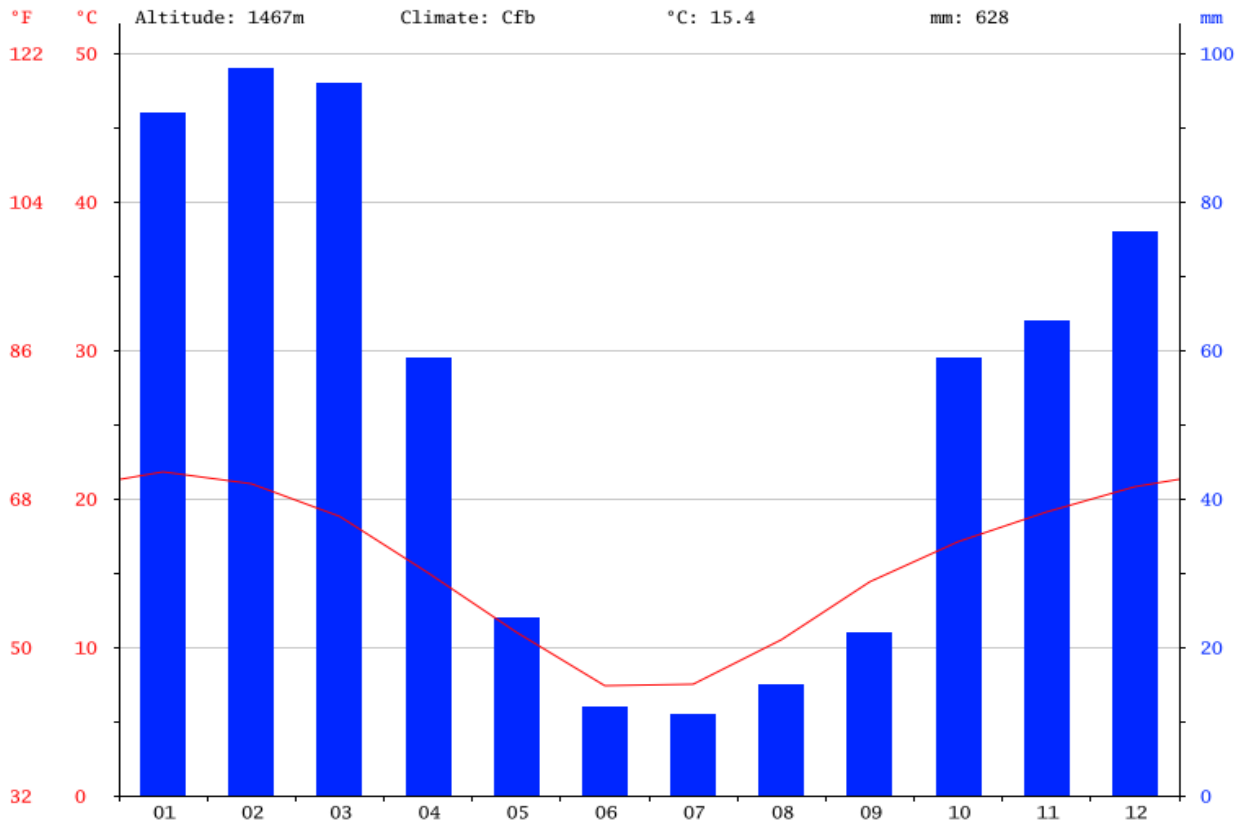
Geology

The geology of the study area and surroundings is dominated by the Karoo Supergroup. The area is mostly consisting of sandstone and dolerite rock. The dolerite formed as part of an intrusion. An outcrop area of Adelaide Subgroup (Pa, Beaufort Group, Karoo Supergroup) strata, which are represented by blue-grey and purple mudstone inter-bedded with yellow sandstone and siltstone, is located in Dorpsgronden van Hobhouse 557.

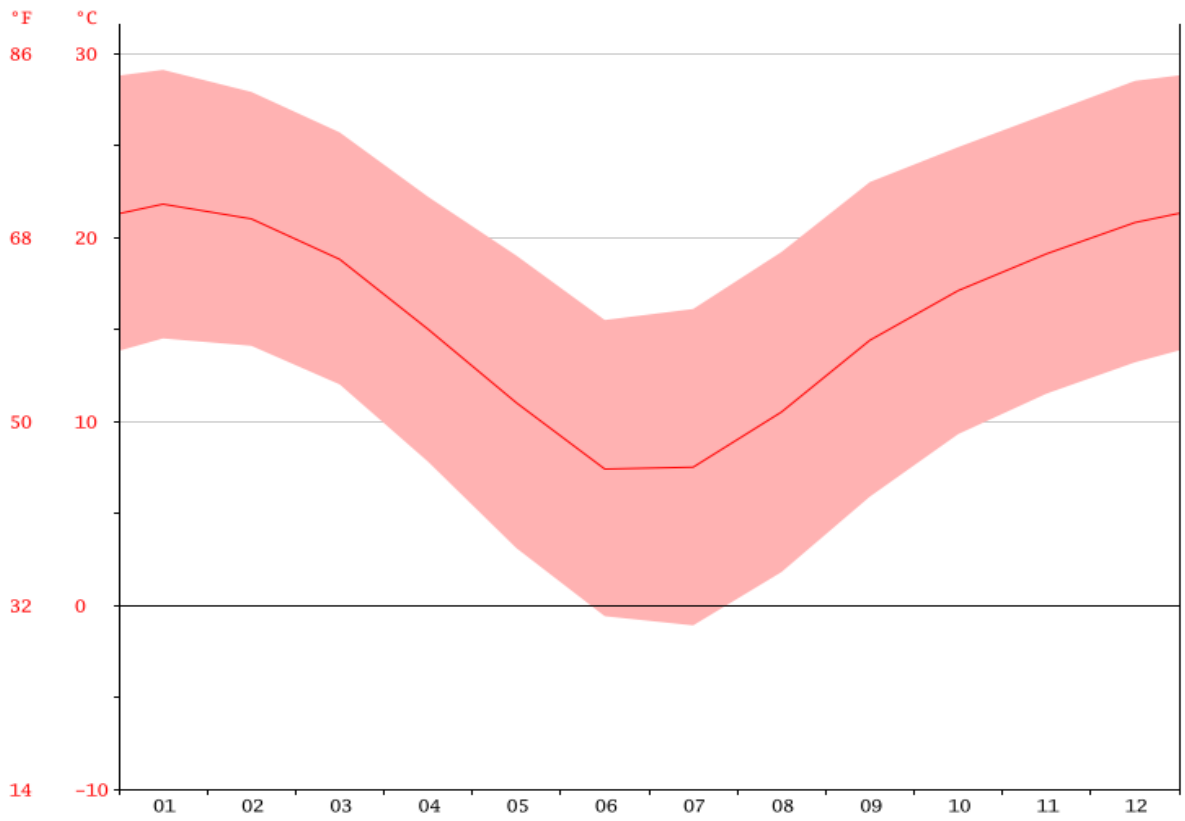
Climate

The climate is warm and temperate in Hobhouse. There is significant amount of rainfall throughout the year in Hobhouse. Even the driest month still has a lot of rainfall. This climate is considered to be Cfa according to the Köppen-Geiger climate classification. The average annual temperature in is 15.4 °C. About 628 mm of precipitation falls annually.

CLIMATE GRAPH // WEATHER BY MONTH HOBHOUSE



AVERAGE TEMPERATURE HOBHOUSE



Water Resources

The project is located about 1.5 km near the river (Caledon), so this will be the water source for the operation if the water in needed.

Soil and land capability

Soils of the general area are loamy sand and appear relatively shallow with sections of prominent surface rock (dolerite and sand stone) Land capability of the area is described as non-arable, with moderate potential grazing land. The area is thus not very suitable for cultivation.

Biodiversity

According to Mucina & Rutherford (2006) the area consists of Northern Upper Karoo (NKu 3). The vegetation type is considered as being of Least Concern (LC) and is not currently subjected to any pronounced development pressures. The site seems to be largely natural and has not been transformed by human impacts. The vegetation structure on the site consists of a grass layer with a minor dwarf shrub component. The site is devoid of shrubs and trees and this is considered natural to this vegetation type. The vegetation is dominated by grasses notably Eragrostis lehmanniana. Other grass species prominent on the site include Cynodon dactylon, Eragrostis obtusa, Enneapogon desvauxii and Sporobolus fimbriatus. Dwarf shrubs are scattered on the site and include Rosenia humilis, Salsola calluna, Lycium horidum, Pentzia incana and Wahlenbergia nodosa. Several herb species were also identified on the site. These include Hermannia depressa, Berkheya onoporidfolia and Salvia disermas. Two dwarf succulent species were identified on the site. These are Chasmatophyllum musculinum and Nananthus pole-evansii. These species are widespread and not considered to be rare.

Socio-economic

The Mantsopa Local Municipality falls under the Ladybrand District Municipality.
Agriculture is the main contributor to the local economy, of which crop and meat production (sheep and cattle) and wool are the largest.

The Merabe The Firm (Pty) Ltd project will contribute work opportunities during the construction phases and operation of the proposed site.

Cultural Heritage

There are no archaeological, cultural or historical materials were found on site, if any are found they will be reported to SAHRA.

(b) Description of the current land uses.

The site is covered with grass and minor dwarf shrub component. The site is devoid of shrubs and trees and this is considered natural to this vegetation type. There are no current activities located the site.

(c) Description of specific environmental features and infrastructure on the site.

There is a pathways road and, with no infrastructure occurring on site and general area. The proposed mining site is predominantly covered by mixed shrub land/grassland.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

LEGEND

R26 Road

Proposed site

Coordinates

S29.51440 E27.13982
S29.51352 E27.14031
S29.51592 E27.14464
S29.51664 E27.14429

(v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

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

1. Construction Phase

1.1. Site preparation and Vehicular activities

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated
Loss of vegetation and faunal habitat	Site	Short-term	Low	Very likely	Moderate	Moderate (rehabilitation after construction	Moderate	No	Yes
Exposed soil susceptible to erosion	Site	Medium-term	Low	Likely	Low	Moderate (rehabilitation after construction	Moderate	No	Yes
Noise generation	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Dust emissions	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Erosion of cultural landscape	Site	moderate-term	Slight	Very likely	Very low	High (with rehabilitation)	Moderate	No	Yes
Soil and water resources contamination	Local	Medium-term	Moderate	likely	low	High (with rehabilitation)	Moderate	No	Yes
Impact on health, and safety of workers	Site	short-term	Low	Likely	Low	Non-reversible	Low	No	Yes

1.2 Site clearing and topsoil removal for mining operation, and construction of a mine

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed Or mitigated?
Loss of vegetation and faunal habitat	Site	short-term	Low	Very likely	Low	Moderate (rehabilitation after Construction)	Low	No	Yes
Exposed soil susceptible to erosion	Site	Short-term	Low	Likely	Low	Moderate (rehabilitation after construction)	Low	No	Yes
Noise generation	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Dust emissions	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Soil and water resources contamination	local	Short-term	Moderate	Likely	Low	Non-reversible	Low	No	Yes

Topography and visual alteration	Site	Medium-term	Moderate	Likely	Moderate	High (rehabilitation during closure)	Low	No	Yes
Soil disturbance resulting in the spread of alien plant species	Site and Local	Long-term	Substantial	Likely	Low	Moderate (rehabilitation after construction)	Moderate	No	Yes
Loss of Species of Special Concern	Site and Local	Long-term	Substantial	Very likely	Moderate	Low (rehabilitation after construction)	Moderate	No	Yes
Disturbance of fauna	Site and Local	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes

Nature of potential Impact/risk	**Extent**	**Duration**	**Consequence**	**Probability**	**Significance**	**Reversibility of impact**	**Irreplaceability of receiving environment/resource**	**Can impact be avoided?**	**Can impact be managed or mitigated?**
Destruction of archaeology	Site	Permanent	Slight	Unlikely	Very low	Non-reversible	High	Yes	Yes
Destruction of palaeontology	Site	Permanent	Moderate	Unlikely	Low	Non-reversible	High	No	Yes

1.3 Construction of pollution control and storm water management facilities

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Loss of vegetation and faunal habitat	Site	Long-term	Moderate	Very likely	Moderate	Moderate (rehabilitation after construction)	Moderate	No	Yes
Exposed soil susceptible to erosion	Site	Medium-term	Moderate	Likely	Low	Moderate (rehabilitation after construction)	Moderate	No	Yes
Noise generation	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Dust emissions	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Soil and water resources contamination and siltation	Local	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes
Topography and visual alteration	Site	Medium-term	Substantial	Likely	Moderate	Moderate (rehabilitation during closure)	Low	No	Yes

Soil disturbance resulting in the spread of alien plant species	Site and Local	Long-term	Moderate	Likely	Low	Low (rehabilitation after construction)	Moderate	No	Yes
Loss of Species of Special Concern	Site and Local	Long-term	Substantial	Very likely	Moderate	Moderate (rehabilitation after construction	Moderate	No	Yes
Disturbance of fauna	Site and Local	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes

1.4 Preparing an area of 1.5 ha for a portable camp site to accommodate infrastructure associated with stockpiling, and offices etc.

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Loss of vegetation and faunal habitat	Site	Short-term	Low	Very likely	Low	Moderate (rehabilitation after construction)	Moderate	No	Yes
Exposed soil susceptible to erosion	Site	Short-term	Low	Likely	Low	Moderate (rehabilitation after construction)	Moderate	No	Yes

Noise generation	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Dust emissions	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Soil and water resources contamination and siltation	Local	Medium-term	Low	Likely	Low	Moderately-reversible	Moderate	No	Yes
Topography and visual alteration	Site	Short-term	Substantial	Likely	Moderate	Moderate (rehabilitation during closure)	Low	No	Yes
Soil disturbance resulting in the spread of alien plant species	Site and Local	Long-term	Moderate	Likely	Low	Low (rehabilitation after construction)	Low	No	Yes
Loss of Species of Special Concern	Site and Local	Long-term	Substantial	Unlikely	Moderate	Low (rehabilitation after construction)	Low	No	Yes
Disturbance of fauna	Site and Local	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Destruction of archaeology	Site	Permanent	Slight	Unlikely	Very low	Non-reversible	High	Yes	Yes
Destruction of palaeontology	Site	Permanent	Moderate	Very likely	Low	Non-reversible	High	No	Yes
Erosion of cultural landscape	Local	Long-term	Slight	Unlikely	Very low	Low (with rehabilitation)	Moderate	No	Yes
Impact on health, and safety of workers	Site	Medium-term	Moderate	Likely	High	Non-reversible	Moderate	No	Yes

2. Operation Phase

2.1 Extraction and transportation of aggregate and gravel

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Noise generation	Site	Long-term	Substantial	Very likely	Moderate	Non-reversible	Low	No	Yes
Air quality and dust emissions	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Soil and water resources contamination	Local	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes
Destruction of Archaeology	Site	Permanent	Slight	Unlikely	Very low	Non-reversible	High	Yes	Yes
Destruction of palaeontology	Site	Permanent	Moderate	Likely	Low	Non-reversible	High	No	Yes
Erosion of cultural landscape	Local	short-term	Slight	Likely	Low	Low (with rehabilitation)	Low	No	Yes
Impact on health, and safety of workers	Site	Short-term	Moderate	Unlikely	Low	Non-reversible	Moderate	No	Yes

2.2 TLB activity and operation of mining equipment

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Loss of vegetation and faunal habitat	Site	Medium-term	Moderate	Very likely	Moderate	Moderate (rehabilitation after construction)	Moderate	No	Yes
Exposed soil susceptible to erosion	Site	Medium-term	Moderate	Likely	Moderate	Low (rehabilitation after construction)	Moderate	No	Yes
Noise generation	Site	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Dust emissions	Site	Long-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Soil and water resources contamination and siltation	Local	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes
Topography and visual alteration	Site	Medium-term	Substantial	Likely	Moderate	Moderate (rehabilitation during closure)	Low	No	Yes

Soil disturbance resulting in the spread of alien plant species	Site and Local	Long-term	Moderate	Likely	Low	Low (rehabilitation after construction)	Moderate	No	Yes
Loss of Species of Special Concern	Site	Medium-term	Substantial	Very likely	Moderate	Moderate (rehabilitation after construction)	Moderate	No	Yes
Disturbance of fauna	Site and Local	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes
Impact on health, and safety of workers	Site	Medium-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes

2.3 Storage of diesel and vehicle/machinery maintenance equipment

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Air quality	Site	Medium-term	Slight	Likely	Very low	Non-reversible	Low	No	Yes
Surface water impacts	Local	Medium-term	Substantial	Likely	Very low	Non-reversible	Moderate	No	Yes

Impact on hydrogeology and soil contamination due to spills or seepage	Site	Medium-term	Moderate	Likely	Moderate	Non-reversible	Moderate	No	Yes
Visual impact	Site	Medium-term	Moderate	Likely	Low	High	Low	No	Yes

2.4 Waste generation and disposal

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Air quality	Local	Medium-term	Slightly Moderate	Likely	Low	Non-reversible	Low	No	Yes
Surface water impacts	Local	Medium-term	Moderate	Likely	Moderate	Non-reversible	Moderate	No	Yes
Impact on hydrogeology and soil contamination due to spills, seepage or hazardous substances	Site	Short-term	Moderate	Likely	Moderate	Non-reversible	Moderate	No	Yes
Topography and visual alteration	Site	Medium-term	Moderate	Likely	Moderate	High	Low	No	Yes

3. **Decommissioning phase**

3.1Demolition and/or removal of mobile camp site infrastructure/equipment

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Destruction of vegetation	Site	Short-term	Substantial	Likely	Moderate	Moderate (rehabilitation post closure)	Moderate	Yes	Yes
Establishment and spread of alien plant species	Site and Local	Long-term	Substantial	Very likely	Moderate	Low (rehabilitation post closure)	Moderate	No	Yes
Impact on groundwater and aquifer	Local	Medium-term	Moderate	Likely	Moderate	Non-reversible	Moderate	No	Yes
Topography and visual impact	Site	Short-term	Moderate	Likely	Neutral	None-reversible	Low	No	Yes
Noise generation	Site	Short-term	Moderate	Very likely	Moderate	Non-reversible	Low	No	Yes
Air quality and dust emissions	Local	Short-term	Slight	Very likely	Very low	Non-reversible	Low	No	Yes
Impact on health, and safety of workers	Site	Short-term	Moderate	Likely	Low	Non-reversible	Moderate	No	Yes

3.2 Rehabilitation and restoration of disturbed areas

Nature of potential Impact/risk	Extent	Duration	Consequence	Probability	Significance	Reversibility of impact	Irreplaceability of receiving environment/resource	Can impact be avoided?	Can impact be managed or mitigated?
Impact on groundwater and aquifer	Local	Long-term	Moderate	Very likely	Low	Non-reversible	Moderate	No	Yes
Topography and visual impact	Site	Long-term	Moderate	Very likely	Low	Non-reversible	Low	Yes	Yes
Noise generation	Site	Short-term	Low	Very likely	Moderate	Non-reversible	Low	No	Yes
Air quality and dust emissions	Site	Short-term	Moderate	Very likely	Very low	Non-reversible	Low	No	Yes
Impact on land capability	Site	Medium-term	Substantial	Likely	Moderate	Non-reversible	Moderate	No	Yes

vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(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).

APPROACH TO THE BASIC ASSESSMENT

1. METHODOLOGY OF IMPACT ASSESSMENT

According to the DEA IEM Series guideline on "Impact Significance" (2002), there are a number of quantitative and qualitative methods that can be used to identify the significance of impacts resulting from a development. The process of determining impact significance should ideally involve a process of determining the acceptability of a predicted impact to society. Making this process explicit and open to public comment and input would be an improvement of the EIA/BA process. The approach to determining significance is generally as follows:

- Use of expert opinion by the specialists ("professional judgement"), based on their experience, a site visit and analysis, and use of existing guidelines and strategic planning documents and conservation mapping (e.g. SANBI biodiversity databases);
- Review of specialist assessment by all stakeholders including authorities such as nature conservation officials, as part of the report review process (i.e. if a nature conservation official disagreed with the significance rating, then we could negotiate the rating); and
- Our approach is more a qualitative approach - we do not have a formal matrix calculation of significance as is sometimes done.

2. SPECIALIST CRITERIA FOR IMPACT ASSESSMENT

Assessment of Potential Impacts

The assessment of impact significance is based on the following conventions:

Nature of Impact - this review the type of effect that a proposed activity will have on the environment and should include “what will be affected and how?”

Spatial Extent - this should indicate whether the impact will be:

- Site specific;
- Local (<2 km from site);
- Regional (within 30 km of site); or
- National.

Duration - The timeframe during which (lifetime of) the impact will be experienced:

- Temporary (less than 1 year);
- Short term (1 to 4 years);
- Medium term (5 to 10 years);
- Long term (the impact will cease after the operational life of the activity); or
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient).

Intensity - it should be established whether the impact is destructive or innocuous and should be described as either:

- High (severe alteration of natural systems, patterns or processes such that they temporarily or permanently cease);
- Medium (notable alteration of natural systems, patterns or processes; where the environment continues to function but in a modified manner); or
- Low (negligible or no alteration of natural systems, patterns or processes); can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making.

Probability - this considers the likelihood of the impact occurring and should be described as:

- Improbable (little or no chance of occurring);
- Probable (<50% chance of occurring);
- Highly probable (50 – 90% chance of occurring); or
- Definite (>90% chance of occurring).

Reversibility - this considers the degree to which the adverse environmental impacts are reversible or irreversible. For example, an impact will be described as low should the impact have little chance of being rectified to correct environmental impacts. On the other hand, an impact such as the nuisance factor caused by noise impacts from wind turbines can be considered to be highly reversible at the end of the project lifespan. The assessment of the reversibility of potential impacts is based on the following terms:

- High - impacts on the environment at the end of the operational life cycle are highly reversible;
- Moderate - impacts on the environment at the end of the operational life cycle are reasonably reversible;
- Low - impacts on the environment at the end of the operational life cycle are slightly reversible; or

- Non-reversible - impacts on the environment at the end of the operational life cycle are not reversible and are consequently permanent.

Irreplaceability – this review the extent to which an environmental resource is replaceable or irreplaceable. For example, if the proposed project will be undertaken on land that is already transformed and degraded, this will yield a low irreplaceability score; however, should a proposed development destroy unique wetland systems for example, these may be considered irreplaceable and thus be described as high. The assessment of the degree to which the impact causes irreplaceable loss of resources is based on the following terms:

- High irreplaceability of resources (this is the least favourable assessment for the environment);
- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (this is the most favourable assessment for the environment).

The status of the impacts and degree of confidence with respect to the assessment of the significance is stated as follows:

Status of the impact: A description as to whether the impact will be:

- Positive (environment overall benefits from impact);
- Negative (environment overall adversely affected); or
- Neutral (environment overall not affected).

Degree of confidence in predictions: The degree of confidence in the predictions, based on the availability of information and specialist knowledge. This should be assessed as:

- High;
- Medium; or
- Low.

Based on the above considerations, the specialist provides an overall evaluation of the significance of the potential impact, which should be described as follows:

- **Low to very low**: the impact may result in minor alterations of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated;
- **Medium:** the impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated; or

- **High:** Where it could have a “no-go” implication for the project unless mitigation or re-design is practically achievable.

Furthermore, the following must be considered:

- Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
- All impacts should be evaluated for the construction, operation and decommissioning phases of the project, where relevant.
- The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region, if relevant.

Management Actions:

- Where negative impacts are identified, migratory measures will be identified to avoid or reduce negative impacts. Where no migratory measures are possible this will be stated.
- Where positive impacts are identified, augmentation measures will be identified to potentially enhance these.
- Quantifiable standards for measuring and monitoring migratory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.

Monitoring:

Specialists should recommend monitoring requirements to assess the effectiveness of mitigation actions, indicating what actions are required, by whom, and the timing and frequency thereof.

Cumulative Impact: Consideration is given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts are evaluated with an assessment of similar developments already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

Mitigation: The objective of mitigation is to firstly avoid and minimise impacts where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on the receiving environment and to maximise re-vegetation and rehabilitation of disturbed areas. For each impact identified, appropriate mitigation measures to reduce or otherwise avoid the potentially negative impacts are suggested. All impacts are assessed without mitigation and with the mitigation measures as suggested.

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

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

Kindly see Section (i) above; the advantages and disadvantages of the proposed site layout have been discussed in the reasons provided in this section, inclusive of the reasons for not considering alternatives.

viii) 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).

CONSTRUCTION PHASE			
Potential impact Description	**Significance Rating (positive or negative)**	**Proposed Mitigation**	**Significance Rating after Mitigation**
Proposal (preferred alternative)			
Direct Impacts			
Loss of vegetation and faunal habitat	Moderate (Negative)	- Development planning must ensure loss of vegetation and disturbance is restricted to within the minimum and designated areas only. - Vegetate and irrigate open areas to limit erosion, but take care not to promote erosion by irrigating. - Removal of vegetation during construction and operation will be minimised to reduce the risk of excessive open areas occurring. - Adhere to existing roads, and if new roads are constructed, these must not cross sensitive areas such as the ridges or drainage lines. - Protected plant or animal species encountered must be managed in accordance with an accepted management plan for these species.	Low
Loss of Conservation Important (CI) or medicinally important flora.	Moderate (Negative)	- Preconstruction walk through the facility in order to locate species of conservation concern that can be translocated as well as comply with permitting conditions. - If removing CI species such as the Protected Poison bulb or Orange/Vaal River Lily then submit permits for their removal. - Prior to construction any CI and medicinally important floral specimens that may occur within the site layout should be collected and replanted in the surrounding areas.	Low

Soil and water resources contamination	Moderate (Negative)	- Prevent any spills from occurring; If a spill occurs it is to be cleaned up immediately and Reported to the appropriate authorities. - All vehicles are to be serviced in a correctly bunded area or at an off-site location. - Ensure that spillage control kits are available during transport and on storage sites in case of any accidental leakages of spillages, which can then be cleared immediately. -The temporary storage facilities of fuel, lubricants and explosives must be a hard park, roofed and bunded facility. This will prevent contamination of soils and the possibility of contamination of the surface water resources. -Machinery should be maintained properly. Diesel and other chemicals should be handled appropriately. Refuelling protocols must be followed to ensure no diesel is spilled during filling. - Clean and dirty surface water channels should be constructed to divert runoff separately to appropriate storage dams (dirty water to the PCD to avoid eroded soils entering the clean water areas).	Low
Potential of soil erosion due to exposed soil	Low (Negative)	- Removal of topsoil should be done systematically, only clearing the necessary areas at a time. - The topsoil stockpiles should be vegetated as soon as possible to prevent erosion, which might cause siltation of the water resources. - Erosion berms are to be put in.	Very low
Noise disturbances as a result of construction activities.	Very low (Negative)	-The noise created by the proposed development is not expected to be problematic. If required, noise reduction measures will have to be implemented in compliance with Noise standards and Regulations. - No sound amplification equipment to be used on site, except in emergency situations. - Limit vehicles travelling to and from the site to minimise traffic noise to the surrounding environment.	Very low

		- Limit construction activities to day time hours. - Mining related machines and vehicles to be serviced on a regular basis to ensure noise suppression mechanisms are effective. - Activities that will generate the most noise should be limited to during the day, where viable, in order minimise disturbance. - Equipment that is not in use should be switched off. - A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed.	
Sensory disturbance of fauna due to noise	Low (Negative)	- Limit construction activities to day time hours. - Minimize or eliminate security and construction lighting, to reduce the disturbance of nocturnal fauna. - All outside lighting should be directed away from sensitive areas.	Low
Impact on health, and safety of workers.	Moderate (Negative)	- Training of workers in the correct use of the machinery and/or equipment so as to avoid incidents. - Workers to wear Personal Protective Equipment (PPE). - Hazardous material must be correctly labelled and handled in a safe manner.	Low
Potential deterioration of the existing gravel road due to use by heavy vehicles.	Moderate (Negative)	-Limit vehicles coming to the site and limit to a temporary minimal duration. - Maintain and/or upgrade the gravel road.	Moderate
Generation of waste	Moderate (Negative)	- Any waste generated during construction must be stored in such a manner that it prevents pollution and amenity impacts. - Waste to be disposed of at a licenced landfill site. - Hazardous waste to be correctly stored and disposed of in terms of relevant legislation and guidelines.	Low

Topography and visual alteration.	Moderate (Negative)	- Limit the footprint area of the construction where possible. - Topsoil stockpiles should be vegetated and positioned to reduce visual disturbance where possible.	Low
Degradation of ambient air quality as a result of dust and other emissions generated.	Very low (Negative	-Exposed areas should be revegetated with locally indigenous flora. If the soil is compacted, it should be ripped, and fertilised. -Implement effective and environmentally-friendly dust control measures, such as mulching or periodic wetting of the entrance road. -A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed.	Very low
Indirect Impacts			
Introduction and increase in alien vegetation	Moderate (Negative)	- Keep the footprint of the disturbed area to the minimum and designated areas only. - Vegetate and irrigate open areas to limit erosion, but take care not to cause erosion by irrigating. Removal of vegetation during construction and operation will be minimised to reduce the risk of excessive open areas occurring. - Adhere to existing roads, and if new roads are constructed, these must not cross sensitive areas such as the ridges or drainage lines.	Low
The creation of new employment opportunities and skills development	Moderate (Positive)	Ensure maximisation of job creation and promote local employment and skills training.	High
NO-GO ALTERNATIVE			

DIRECT IMPACTS:

- None of the impacts mentioned above will occur.
- The site will remain with existing structures, no new clearance will occur which will result in no clearance of indigenous vegetation and no clearance of present alien species.

INDIRECT IMPACTS:

There are no indirect impacts during the construction phase for the No-go Option.

If the proposed project does not proceed, increased income and economic benefits associated with the project will not be realised.

No employment opportunities will be created.

If the proposed project does not proceed, the potential to produce and supply minerals to industrial and commercial establishments and the subsequent contribution to the Gross Domestic Product (GDP) of the municipality and Province will not be realised; thus, hindering economic growth potential.

OPERATIONAL PHASE			
Potential Impact Descriptio	**Significance Rating (Positive or Negative)**	**Proposed Mitigation**	**Significance Rating after Mitigation**
PROPOSAL (preferred alternative)			
Direct Impacts			
Impact on aquifers and groundwater quality.	Low (Negative)	- Portable toilets must be set up correctly and emptied regularly to prevent any leaks and potential contamination of the aquifer. - Fuel needs to be stored in a specified lined area to prevent any chance of contamination to the underlying soil/aquifer.	Low

		- Waste generated from the operation of the mine to be stored in an appropriate and designated storage and be disposed of in a permitted designated waste disposal site. - Mining equipment is regularly maintained to prevent any fuel or oil leaks. - Correct lining of any tailings dam facilities, as well as ensuring correct dam wall heights, in order to prevent infiltration of potential contaminants and overflow respectively. - Tailings piles should be lined covered, to reduce exposure to the atmosphere and prevent infiltration of potential contaminants. - Funnelling of all drainage from mining operations to lined tailings dam facilities via lined channels with bund walls and swales, in order to reduce infiltration of potential Acid Mine Drainage (AMD) water into the aquifer. - Funnelling of all drainage from mining operations to lined tailings dam facilities via lined channels with bund walls and swales, in order to reduce infiltration of potential AMD water into the aquifer.	
Impact on groundwater recharge and run-off alteration	Very low (Negative)	Implement measures to collect and store clean water that falls within the Project area for use on site e.g. watering of gardens, wash bays and dust suppression. Although the hard surfaces on site will increase runoff thereby reducing recharge of the aquifer. - Monitor changes in water levels and quality around the Project area, so as to be aware of changes in groundwater conditions.	Very Low
Impact on upstream tributaries and water in catchment	Very low (Negative)	-A surface water management plan must be implemented to minimise the volume of dirty water produced thereby reducing the probability of contamination of groundwater from infiltration of dirty surface water.	Very low

Impact on ambient air quality and dust emissions	Low (Negative)	-Vehicles operating on the mine must keep at minimum speed to reduce dust generation. - Vehicles that are used must be roadworthy and regularly inspected in order to prevent unwanted emissions and/or leaks. - In order to reduce emissions from stockpiles, mitigation measures such as spraying must be implemented as well as regular re-vegetation of topsoil stockpile to avoid or minimise wind erosion from exposed surfaces. - Waste management plans must be developed and implemented to reduce negative impact on the ambient air quality.	Low
Noise generation	Low (Negative)	- The noise created by the proposed development is not expected to be problematic. If required, noise reduction measures will have to be implemented in compliance with Noise Regulations. - No sound amplification equipment to be used on site, except in emergency situations. - Limit vehicles travelling to and from the site to minimise traffic noise to the surrounding environment. - Mining related machines and vehicles to be serviced on a regular basis to ensure noise suppression mechanisms are effective. - Activities that will generate the most noise should be limited to day-time hours, where viable, in order to minimise disturbance. - Equipment that is not in use should be switched off. - A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed.	Very low
Construction activities may disturb or destroy	Low – Very low (Negative)	- Should any features of heritage be identified on site, these should not be disturbed. They should be safeguarded, preferably in situ, and immediately reported to a Heritage specialist and/or SAHRA.	Very low

sites or features of heritage importance			
Impact on health, and safety of workers.	Moderate (Negative)	-Training of workers in the correct use of the machinery and/or equipment so as to avoid incidents. - Workers to wear Personal Protective Equipment (PPE). - Hazardous material must be correctly labelled and handled in a safe manner. - Hazardous waste to be correctly disposed of.	Low
Topography and visual alteration.	Low (Negative	-Limit the footprint area where possible. -Roads used for hauling of ore should be regularly contoured.	Very low
Impact of operational activities on fauna	Moderate (Negative)	- Minimize noise to limit its impact on sensitive fauna. - Operational areas to be demarcated and workers to stay within these areas. - Create awareness on the importance of fauna and ecosystem functioning. - Workers to stay within demarcated operational areas.	Low
Possible soil and water contamination from diesel storage on site.	Low (Negative)	Appropriate storage of hazardous material such as diesel must be implemented. - The areas where hazardous substances are stored should be bunded to avoid soil and water contamination. - Fuel must be stored in a secure designated room. - The ground where refuelling takes place must be protected and refuelling to be handled in a cautious manner. - In the event of spills, the area is to be cleaned immediately using bioremediation products. - Ensure that any accidental spills do not move beyond the designated storage area. - Ensure appropriate and safe disposal of hazardous chemicals.	Low

		- Ensure training of staff to handle hazardous chemicals.	
Indirect Impacts			
Impact on vegetation and faunal habitat.	Moderate (Negative)	-Vegetation cover must be reinstated through rehabilitation. - Removal of vegetation during operation will be minimised to reduce the risk of excessive open areas occurring. - Adhere to existing roads, and if new roads are constructed, these must not cross sensitive areas such as the ridges or drainage lines. - Continuously manage the establishment of alien invasive species through removal. - Protected plant or animal species encountered must be managed in accordance with an accepted management plan for these species.	Low
The proposed project is a job creation initiative with the potential to create local employment and skill development.	Moderate (Positive)	-Maximise job creation and promote local employment and skills training. - Promote employment of women and youth.	High
The proposed project will contribute to the short-term growth of the local economy.	Moderate (Positive)	-Explore opportunities for mineral markets. - Development of skills in mining Small-Medium Micro Enterprises (SMMEs) as part of Municipal Local Economic Development initiatives. - Development of contractual agreements to supply local beneficiation markets.	High
NO-GO ALTERNATIVE			

Potential Impact Description	Significance Rating (Positive or Negative)
Direct Impacts	
DIRECT IMPACTS: • None of the impacts mentioned above will occur. • The status quo of the site and area will remain with existing structures • No new clearance will occur which will result in no clearance of indigenous vegetation and no clearance of present alien species.	
Indirect Impacts	
• If the proposed project does not proceed, increased income and economic benefits associated with the project will not be realised. • No new employment opportunities will be created.	

DECOMMISSIONING			
Potential Impact Description	**Significance Rating (Positive or Negative)**	**Proposed Mitigation**	**Significance Rating after Mitigation**
PROPOSAL (preferred alternative)			
Direct Impact			
Soil and water resources contamination.	Low (Negative)	- Prevent any spills from occurring; If a spill occurs it is to be cleaned up immediately and reported to the appropriate authorities. - Accredited contractors must be used for disposal and transport of demolition material.	Very low
Destruction of vegetation.	Moderate (Negative)	- Special care must be taken not to destroy rehabilitated areas. - All disturbed areas must be rehabilitated.	Low
Impact on land capability.	Moderate (Negative)	- Topsoil replacement should be done systematically; slopes should be kept low to prevent run-off and erosion, and replaced according to the soil types. - The topsoil stockpiles should be vegetated as soon as possible to prevent erosion, which might cause siltation of the water resources. - Avoid compaction of topsoil.	Very low

Noise disturbances as a result of decommissioning activities.	Very low (Negative)	- The noise created by the proposed development is not expected to be problematic. If required, noise reduction measures will have to be implemented in compliance with Noise Regulations. - No sound amplification equipment to be used on site, except in emergency situations. - Mining related machines and vehicles to be serviced on regular basis to ensure noise suppression mechanisms are effective. - Activities that will generate the most noise should be limited to during the day, where viable, in order minimise disturbance. - Equipment that is not in use should be switched off. - A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed.	Very low
Impact on health, and safety of workers.	Moderate (Negative	- Training of workers in the correct use of the machinery and/or equipment so as to avoid incidents. - Worker to wear Personal Protective Equipment (PPE). - Hazardous material must be correctly labelled and handled in a safe manner.	Low
Topography and visual alteration.	Low (Negative)	- Ensure that all infrastructure installed pre-mining is removed from the site. - Roads should be regularly maintained. - Topsoil stockpiles should be vegetated and positioned to reduce visual disturbance where possible.	Very low
Degradation of ambient air quality as a result of dust and other emissions generated.	Very low (Negative)	-Demolition and removal of structures and rubble to be done cautiously. - Exposed areas should be revegetated with locally indigenous flora. If the soil is compacted, it should be ripped, and fertilised. - Limit the area of exposure to minimise wind erosion.	Very Low

		- Implement effective and environmentally-friendly dust control measures, such as mulching or periodic wetting of the entrance road. -Vehicles must keep at minimum speed to reduce dust generation. - A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed.	
Indirect Impact			
Establishment and increase in alien vegetation.	Moderate (Negative)	-Reinstate vegetation cover through rehabilitation. -Keep the footprint of the disturbed area to the minimum and designated areas only. - Adhere to existing roads, and if new routes are used, these must not cross sensitive areas such as the ridges or drainage lines. - All alien plant species should be removed, preferably as juveniles, before they become established and bear seed and flowers. - Alien plant monitoring should take place for 2-3 years.	Very low
Restoration of water quality and quantity	Low (Negative)	-If the site is not rehabilitated post mining operations then impacts on the water resources may occur, therefore rehabilitation will have a positive impact on the water resources. - Disturbed areas should be vegetated and contoured to allow for good drainage. - Associated potential soil erosion post rehabilitation should be mitigated. - Regular inspection and monitoring of water quality should be implemented for a period of at least 3 years post closure of the mine, in order to determine any negative residual impacts that could occur years later.	Low (Positive)
NO-GO ALTERNATIVE			
DIRECT IMPACTS:			

-None of the impacts mentioned above will occur.

INDIRECT IMPACTS:

-There are no indirect impacts during the decommissioning phase for the No-go Option.

ix) Motivation where no alternative sites were considered.

No property alternatives have been considered as the envisaged mining operations will occur in an area of existing mining operations, and also in close proximity to the access road.

x) Statement motivating the alternative development location within the overall site. **(Provide a statement motivating the final site layout that is proposed)**

The site layout was determined by both spatial and practical mining operation aspects. The proposed layout is more of a security measure, allowing for more effective management of mined aggregate and gravel. The site layout within the overall site is also supported by the specialist studies undertaken, in accordance with the recommended management measures.

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

(Including **(i) a description of all environmental issues and risks that erer 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.)**

The identified risks and impacts for this study, specifically the proposed site layout, were informed by the environmental studies undertaken for this site, the socio-economic need of the surrounding area, as well as the evidence of historical aggregate and gravel on site and the landscape.

i) Assessment of each identified potentially significant impact and risk

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

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.)	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…. etc…)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated (e.g. Construction, commissioning, 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. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..	**SIGNIFICANCE** if mitigated
Vehicular activities.	Dust emissions.	Air Quality	Construction Phase Operation Phase Decommissioning Phase	Very low (Negative)	Monitor and manage through Dust Management Plan and Measures.	Very low (Negative)

	Soil and water resources Contamination.	Surface and Groundwater	Construction Phase Operation Phase Decommissioning Phase	Moderate (Negative)	Monitor and remedy through Emergency Response Plan.	Very low (Negative)
	Noise generation.	Noise Receptors	Construction Phase Operation Phase Decommissioning Phase	Very low (Negative)	Manage through Noise Reduction Measures and Regular Vehicle Inspections.	Very low (Negative)
Site clearing and topsoil removal for mining operation, and construction of a mine	Soil erosion due to exposed soil.	Soils	Construction Phase Operation Phase	Low (Negative)	Manage and control through Soil Rehabilitation Plan and Stormwater Management Plan.	Very low (Negative)
	Loss of vegetation and faunal habitat.	Fauna and Flora	Construction Phase	Moderate (Negative)	Remedy through Rehabilitation Plan, Conservation Management Plan and Alien Invasive Management Plan.	Low (Negative)
	Dust emissions.	Air Quality	Construction Phase Operation Phase Decommissioning Phase	Very low (Negative)	Monitor and manage through Dust Management Plan and Measures.	Very low (Negative)
	Noise generation.	Noise Receptors	Construction Phase Operation Phase Decommissioning Phase	Very low (Negative)	Manage through Noise Reduction Measures and Regular Vehicle Inspections.	Very low (Negative)
	Soil and water resources contamination.	Surface and Groundwater	Construction Phase Operation Phase Decommissioning Phase	Moderate (Negative)	Monitor and remedy through Emergency Response Plan and Stormwater Management Plan.	Low (Negative)

	Topography and visual alteration.	Topography and Visual Environment	Construction Phase Operation Phase	Moderate (Negative)	Minimise through Mine Design and Management Plan.	Low (Negative)
	Destruction of features of heritage importance.	Heritage	Construction Phase	Low – Very low (Negative)	Manage and avoid through Environmental Conservation Management Plan.	Very low (Negative
Preparing an area of 1000 m2 for a portable camp site to accommodate infrastructure associated with stockpiling, crushing, washing, sorting and offices).	Loss of vegetation and faunal habitat	Flora and Fauna	Construction Phase	Moderate (Negative)	Remedy through Rehabilitation Plan, Conservation Management Plan and Alien Invasive Management Plan.	
	Exposed soil susceptible to erosion.	Soils	Construction Phase Operation Phase	Low (Negative)	Manage and control through Soil Rehabilitation Plan and Stormwater Management Plan.	
	Dust emissions.	Air quality	Construction Phase	Very low (Negative)	Monitor and manage through Dust Management Plan and Measures.	Very low (Negative)
	Noise generation	Noise receptors	Construction Phase Operation Phase Decommissioning Phase	Very low (Negative)	Manage through Noise Reduction Measures.	Very low (Negative)
	Soil and water resources contamination and siltation.	Surface water and Groundwater	Construction Phase	Low (Negative)	Monitor and manage through Stormwater Management Plan and Groundwater Monitoring Plan.	Very low (Negative)
	Topography and visual alteration.	Topography and Visual Environment	Construction Phase	Moderate (Negative)	Minimise through Mine Design and Management Plan.	Low (Negative)
	Soil disturbance	Fauna and Flora	Construction Phase	Low (Negative)	Monitor and manage through Rehabilitation	Very low (Negative)

	resulting in the spread of alien plant species.				Plan, Conservation Management Plan and Alien Invasive Management Plan.	
	Destruction of features of heritage importance.	Heritage	Construction Phase	Very low (Negative)	Manage and avoid through Environmental Conservation Management Plan.	Very low (Negative)
Extraction and transportation of aggregate and gravel. TLB activity and operation of mining equipment.	Impact on upstream tributaries and water in the catchment.	Surface water	Operation Phase	Very low (Negative)	Control through Stormwater Management Plan.	Very low (Negative)
	Noise generation.	Noise receptors	Operation Phase	Low (Negative)	Manage through Noise Reduction Measures and Regular Vehicle Inspections.	Very low (Negative)
	Air quality and dust emissions.	Air quality	Operation Phase	Low (Negative)	Monitor and manage through Dust Management Plan and Measures.	Low (Negative)
	Soil and water resources contamination	Surface water and Groundwater	Operation Phase	Moderate (Negative)	Monitor and remedy through Emergency Response Plan.	Low (Negative)
	Destruction of features of Heritage importance.	Heritage	Operation Phase	Low (Negative)	Manage and avoid through Environmental Conservation Management Plan.	Very low (Negative)
	Topography and visual alteration.	Topography and Visual Environment	Operation Phase	Moderate (Negative)	N/A	N/A
Storage of diesel and vehicle/machinery maintenance equipment.	Impact on ambient air quality.	Air quality	Construction Phase Operation Phase Decommissioning Phase	Very low (Negative)	Manage through Regular Inspection and Management Plan.	Low (Negative)

Waste generation and disposal.	Surface water contamination.	Surface water	Construction Phase Operation Phase Decommissioning Phase	Very low (Negative)	Monitor and remedy through Emergency Response Plan.	Very low (Negative)
	Hydrogeology and soil contamination.	Hydrogeology Soils	Construction Phase Operation Phase Decommissioning Phase	Low (Negative)	Monitor and remedy through Emergency Response Plan.	Very low (Negative)
	Visual impact.	Visual Environment	Construction Phase Operation Phase Decommissioning Phase	Moderate (Negative)	Manage and Minimise through Management Plan and Rehabilitation Plan.	Low (Negative)
Demolition and/or removal of mobile camp site infrastructure/equipment Rehabilitation and restoration of disturbed Areas	Establishment and spread of alien plant species.	Fauna and Flora	Decommissioning Phase Post Closure	Moderate (Negative)	Manage and control through Alien Invasive Management Plan.	Low (Negative)
	Destruction of vegetation.	Fauna and Flora	Decommissioning Phase	Moderate (Negative)	Manage and Minimise through Management Plan and Rehabilitation Plan	Low (Negative)
	Soil and water resources contamination.	Soils Groundwater	Decommissioning Phase	Low (Negative)	Monitor and remedy through Emergency Response Plan.	Very low (Negative)
	Impact on upstream tributaries and water in the catchment.	Surface water	Decommissioning Phase	Moderate (Negative)	Manage and Minimise through Management Plan and Rehabilitation Plan.	Low (Negative)
	Topography and visual alteration.	Topography and Visual Environment	Decommissioning Phase	Low (Negative)	Remedy through Rehabilitation and Closure Plan.	Very low (Negative)

	Noise generation.	Noise receptors	Decommissioning Phase	Very low (Negative)	Manage through Noise Reduction Measures and Regular Vehicle Inspections.	Very low (Negative)
	Air quality and dust emissions.	Air quality	Decommissioning Phase	Very low (Negative)	Monitor and manage through Dust Management Plan and Measures.	Very low (Negative)
	Land capability reduction.	Soils Vegetation	Decommissioning Phase Post Closure	Moderate (Negative)	Manage, minimise through Post-closure Management Plan and Rehabilitation Plan.	Low (Negative)
Employment of workers, and acquiring mining vehicles, machinery, equipment and materials.	Creation of local employment and skills development.	Socio-economic	Construction Phase Operation Phase	Moderate (Negative)	Promote through Local Based Employment Strategy, and Women and Youth Employment Initiatives.	High (Positive)
	Contribution to the short-term growth of the local economy.	Socio-economic	Construction Phase Operation Phase	Moderate (Negative)	Promote through Local Beneficiation Markets Support to SMME Initiatives.	High (Positive)
	Impact on health and safety of workers.	Socio-economic	Construction Phase Operation Phase	Moderate (Negative)	Prevent through Awareness Campaigns and Training.	Low (Negative)

j) 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):

Specialist report needed for this site.

k) Environmental impact statement

(i)Summary of the key findings of the environmental impact assessment;

The proposed mining area is a single section, which is land that is not transformed and, the land is physical not disturb, it consists of most naturally occurring plants. it consists of small terrain that is made of a lying belt of sandstone rock. The main potential environmental impacts associated with the proposed project include:

Noise generation

Noise generation as a result of machinery and vehicles operated on site is likely to impact on the surrounding receptors in the nearby location. All reasonable measures need to be implemented to minimise noise levels to the nearby receptors throughout the life cycle of the proposed mine. Due to the small-scale nature and size of the proposed mining activity, and therefore basic machinery and equipment, this impact is expected to be of very low significance.

Air quality and dust emission

Vehicles transporting mining material to and from the site, as well site preparation activities, excavation, processing and decommissioning activities will result in the generation of fugitive dust.
Air quality emissions will also include the evaporation of fuels stored on site. Air quality emissions will be of low to very low significance. The recommended mitigation measures in this report should reduce the potential for these impacts on the ambient air quality.

Topography and Visual Alteration

Storage of material and equipment on site, vehicular activities, stockpiling of topsoil and excavating will alter the visual environment in the area. The impacts will be of moderate to low significance at the different phases and activities of the project. All reasonable measures need to be implemented to minimise and limit these impacts where possible, incorporating the recommended mitigation measures of the specialists included in this report. Rehabilitation of the disturbed areas to return the site to its similar visual state prior mining will have a neutral visual impact on the area.

Soil erosion

Mining activities on site will result in exposed soil, which could result in soil erosion. Erosion can lead to destruction of natural habitats and sedimentation of the watercourse. This impact will have a low probability of occurrence with implemented mitigation measures and ultimately low impact.

Soil and water resources contamination

The potential impact of contamination will arise throughout the life cycle of the proposed mine as a result of contaminants such as fuels, waste material on site, seepage of waste water, spills etc. These possible contaminants need to be managed and prevented through an effective Emergency Response Plan and Storm water Management Plan in order to reduce the significance of these impacts.

Loss of vegetation and faunal habitat

Vegetation loss is unavoidable during the activities of the proposed mining project. The majority of the site has been transformed and is degraded; however, these degraded areas contain some indigenous vegetation thus necessitating high consideration of the vegetation on site. The developmental footprint of the proposed small-scale mining will impact on the natural vegetation and faunal habitats. Recommended mitigation measures described in the assessment must be adhered to in order to reduce the impacts from moderate to low and special care must be taken to manage any species of special concern.

Destruction of features of heritage importance

It is of the opinion of the heritage study undertaken that any heritage resources (palaeontology, possible archaeology and the cultural landscape) that are affected by the proposed development would be impacted during the construction and operation phases when the site is cleared. The impacts would be direct but because of their very low significance would not require any further studies or mitigation work prior to the commencement of development. It is recommended that the Environmental Control Officer (ECO) and mine staff should be made aware of the possibility of uncovering fossils such as wood in the gravels. With this plan in place the significance of impacts would be reduced from low to very low.

Groundwater quantity and quality

It is expected that environmental impacts on groundwater will occur as result of potential contaminants being on site. The significance is expected to be of low significance and thus low risk of groundwater contamination on a local scale; however, this impact may increase to moderate at a regional scale. Mining operations may also influence groundwater recharge as a result of excavating. Monitoring and the implementation of the recommended mitigation measures can reduce the potential hydrogeological impacts to the environment.

Surface water

Surface is running on site, and the mine operation has a potentially moderate to low significance. Monitoring and the implementation of the recommended mitigation measures can reduce the potential hydrogeological impacts to the environment.

Land capability reduction

Removal of soil for site preparation during the construction and operation phase will impact the land capability in that it will prevent the support of vegetation growth thereof. The removed soil should be stockpiled and managed correctly to minimise this impact. Soil replacement during rehabilitation has the potential to impact on the land capability as it will support the growth of vegetation, potentially returning land capability to its pre-mining state such as arable and/or grazing land.

Establishment and spread of alien plant species

Alien plant invasion is expected to occur in disturbed areas, however with the implementation of mitigation measures this impact can be reduced from moderate to low. This should be mitigated through the establishment of an alien invasive management plan to ensure the establishment of indigenous vegetation.

Socio-economic

Based on the environmental assessment presented in this report and the specialists' reports, it is the conclusion of this Basic Assessment that the proposed project will have relatively low impacts on the environment. With effective implementation management and mitigation measures, as well as recommended monitoring plans suggested in this report and those of the specialists', the significance of most potential environmental impacts on site from an environmental perspective will be reduced to low-very low. There will be potential impacts on vegetation and habitat, groundwater, soil, dust, air quality and visual environment as a result of earthworks associated with the activity, influx and movement of vehicles, infrastructure, waste and waste water generated by the project as a whole. The Environmental Management Programme supporting this BA outlines adequate methods and mitigation measures that need to be implemented in order for the identified impacts to not pose any environmental flaws associated with the proposed establishment of a small-scale mining operation.

(ii) Final Site Map

Provide a map at an appropriate scale which 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.

Attached as AppendixB

(iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

A summary of the positive and negative potential impacts associated with the project has been outlined in Section l (i) above.

l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

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

The EMPr addresses the environmental impacts associated with the project during Construction, Operation, Decommissioning and Post Closure Phases of the proposed project. The objectives of the EMPr will be to provide detailed information that will advise the planning design of Merabe The Firm (Pty) Ltd mining activities in order to avoid and/or reduce impacts that may be detrimental to the environment.

The following environmental management objectives are recommended for the proposed mining development and associated infrastructure:

- Alien plant monitoring should take place after construction, throughout the lifecycle of the mine, as well as post closure of the mine.
- Development planning must restrict the area of impact to a minimum and designated areas only.
- Monitor and prevent contamination and undertake appropriate remedial actions.
- Limit the visual and noise impact on receptors.
- Avoid impact on possible heritage finds.
- Promote health and safety of workers.
- Limit dust and other emissions to within allowable limits.
- Manage soils to prevent erosion.
- Limit the impact on the watercourse.

m) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The following aspects as recommended by the specialist studies are emphasised to be included as conditions in the Environmental Authorisation:

- Since the majority of the site is of moderate ecological sensitivity, it is of the specialist's opinion should the project proceed then the ecological aspects related to the impact assessment can be managed accordingly.
- Mitigation and management measures described in the flora and fauna report should be followed.
- If any archaeological or palaeontological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist or palaeontologist as appropriate. Such heritage is the property of the state and may require excavation and curation in an approved institution. The project EMPr should make reference to this possibility so that appropriate action can be taken as and when necessary.
- Workers should be educated about the importance of wildlife and the environment.

n) Description of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

Uncertainties form part of any proposed development with regards to the actual degree of impact that the development will have on the immediate environment. Any actual and/or site-specific results will only be determined once development has commenced and throughout the life cycle of the proposed project.

o) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorized or not.

Mining is the most important economic sector in the Free State and the area proposed for the project is an area of existing aggregate and gravel mining activities. The proposed project is thus an initiative in meeting and/or addressing this socio-economic need.

Specialists' studies were conducted as part of this BAR, providing mitigation measures and recommendations to ensure that environmental aspects of the site and surrounding area are not impacted severely. The site is naturally not disturbed areas, and the undertaken ecological study did not identify any areas of high significance that could pose a fatal flaw prohibiting the proposed development. It is the opinion of the EAP that the proposed project will comply with current relevant

legislation, and that with the implementation of the mitigation measures suggested in this BAR, there are no environmental impacts identified as highly detrimental to the environment. It is therefore recommended that following the above, the proposed development be granted Environmental Authorisation.

ii) Conditions that must be included in the authorisation

The EMPr of this proposed project must form part of the contractual agreement and be adhered to by both the contractors and the applicant. The applicant must also ascertain that there is representation of the applicant on site, at all times of the project, ensuring compliance with the conditions of the EMPr and specialist reports, and Environmental Authorisation thereof.

p) Period for which the Environmental Authorisation is required.

The proposed Merabe The Firm (Pty) Ltd mining project will have a Life of Mine of approximately 5 years upon commencement of operation.

q) Undertaking

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

The undertaking is provided at the end of the EMPr.

r) Financial Provision

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

i) Explain how the aforesaid amount was derived.

The amount required manage and rehabilitate the environment is R69 777. This amount was calculated according to the guideline for the Calculation of the Quantum for rehabilitation as provided by DMR. The mining operation will entail the excavating of aggregates and gravel in sections, where after excavating each section will be closed/rehabilitated and a different/new section will be excavated, within the 1.5 hectares area. The open cast rehabilitation fee is thus calculated on a pit size of rehabilitated concurrently, camp site area.

ii) 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).

Mr Lebohang Gregory Manye (the Project Applicant), has confirmed that this amount can be provided for from operating expenditure.

s) Specific Information required by the competent Authority

i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the: -

a) **Impact on the socio-economic conditions of any directly affected person. (Provide the sults of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix.**

The proposed Merabe The Firm (Pty) Ltd mining operation is proposed on property under the jurisdiction of the municipality.

b) **Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act. (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(*i*)(vi) and (vii) of that Act, attach the investigation report as Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).**

There are no significant heritage resources present on the site and significant impacts are thus not expected.

t) 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 4)**.

No other matters required.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT8

1) Draft environmental management programme.

a) Details of the EAP. (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).

The requirements for the provision of the details and expertise of the EAP are included in Part A,

Section a) and as **Appendix A.**

b) Description of the Aspects of the Activity (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 requirement to describe the aspects of the activity that are covered by the environmental management programme is included in PART A, **Section d)**.

c) Composite Map

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

The composite plan is included in **Appendix B**.

d) Description of Impact management objectives including management statements

The proposed impact management objectives and management statements are informed by the environmental setting of the proposed mining site, as well as the desired state during closure and post closure of the mine.

i) Determination of closure objectives.

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

The proposed mining area is a single section, which is transformed and excavated land, mostly as a result of alien plant species, and possible past clearing activities that have occurred in the area. The transformed areas contain few or no indigenous species,

whereas the excavated areas are mainly made up of indigenous species with some invasive species in disturbed areas. The main potential environmental impacts associated with the proposed project include:

- Noise generation
- Air quality and dust emission
- Topography and Visual Alteration
- Soil erosion
- Soil and water resources contamination
- Loss of vegetation and faunal habitat
- Destruction of features of heritage importance
- Groundwater quantity and quality
- Land capability reduction
- Establishment and spread of alien plant species
- Socio-economic

Therefore, effective and practical measures need to be implemented to prevent, reduce or control and remedy any impacts that may be detrimental to the environment, as well as to rehabilitate the site to a desired state similar to that of the pre-mining state. These measures include:

- Rehabilitate the site in accordance with a detailed closure plan and implement an alien invasive management plan to ensure the establishment of indigenous vegetation.
- Rehabilitation of the disturbed areas to return the site to its similar visual state prior mining.
- Identify and attend to possible areas of erosion.
- Implement an effective waste management plan to contain waste on site, as well as any spills that may occur.

ii) Volumes and rate of water use required for the operation.

Not applicable to this project.

iii) Has a water use licence has been applied for?

No application for a water use licence has been made. The required mine operation volume falls within the General Authorisation, in terms of water use, of the farm portion, and therefore a Section 21 (a) water use licence will not be required by the mine.

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES (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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE of Disturbance** (volumes, tonnages and hectares or m²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Vehicular activities.	Construction Operational Decommissioning	Site	-Adhere to existing roads, and if new roads are constructed, these must not cross sensitive areas such as the ridges or drainage lines. -Limit vehicles travelling to and from the site to minimise traffic noise to the surrounding environment. -Effective signage and traffic control measures along the route.	-Manage and avoid through Environmental Conservation Management Plan. -Minimise through Mine Design and Management Plan. -Monitor and manage through Dust Management Plan and Measures. - Implement noise reduction measures in compliance with Noise standards and Regulations.	Daily and on-going during the Life of Mine.

			- Implement effective and environmentally-friendly dust control measures, such as mulching or periodic wetting of the entrance road. -Vehicles operating on the mine must keep at minimum speed to reduce dust generation.		
Site clearing and topsoil removal for mining operation, and construction of a mine	Construction	Site	-Development planning must ensure loss of vegetation and disturbance is restricted to within the minimum and designated areas only. -Revegetate exposed areas to prevent soil erosion and the establishment of alien invasive species. -Manage any encountered protected plant or animal species. -Implement dust suppression measures. -Prevent any spillages from hauling vehicles. -Report any identified features of heritage.	-Manage and avoid through Environmental Conservation Management Plan. -Implement in accordance with the rehabilitation plan and standards. -Comply with the Alien invasive Management Plan in accordance with NEM:BA. -Monitor and manage through Dust Management Plan and Measures to ensure that the acceptable standards as set out in Regulation 3 of NEMAQA National Dust Control Regulations. - Manage through Emergency Response Plan. -Manage through Best Practice Guidelines.	On-going during the construction and operational phase.

Construction of infrastructure.	Construction	Site	-Implement effective Storm-water Management measures. -Vegetate soil stockpiles and prevent soil erosion. -Avoid contamination and divert any dirty water to suitable storage facility.	-Manage through Stormwater Management Plan. -Manage in accordance with the rehabilitation plan. -Manage through Stormwater Management Plan and Groundwater Monitoring Plan.	On-going during the construction phase.
Preparing an area of the Offsite land for a portable camp site to accommodate infrastructure associated with stockpiling, and offices).	Construction	Site	-Development planning must ensure loss of vegetation and disturbance is restricted to within the minimum and designated areas only. -All disturbed areas must be rehabilitated. - Vegetation cover must be reinstated through rehabilitation. - Implement effective and environmentally-friendly dust control measures.	-Minimise through Mine Design and Management Plan. -Manage in accordance with the Rehabilitation Plan. -Dust Monitoring Measures to ensure that the acceptable standards as set out in Regulation 3 of NEMAQA National Dust Control Regulations.	Daily during construction in accordance with the Management Plan.
Extraction and transportation of ore. TLB activity and operation of mining equipment.	Operational	Site	- Avoid contamination and divert any dirty water to suitable storage facility. -Implement noise minimisation measures.	-Control through Stormwater Management Plan. -Regular vehicle and machinery inspection.	Ongoing during the Life of Mine.

Stockpiling			-Implement effective and environmentally-friendly dust control measures. -Undertake closure and rehabilitation of pits when activities are completed in those pits.	-Implement in accordance with the rehabilitation plan and standards. -Monitor and manage through Dust Management Plan and Measures to ensure that the acceptable standards as set out in Regulation 3 of NEMAQA National Dust Control Regulations.	
Waste generation and disposal.	Construction Operational Decommissioning	Municipal	-Waste must be stored in demarcated storage facilities and disposed of in terms of relevant legislation and guidelines.	-Manage in accordance with Best Practice Guidelines.	Weekly during Life of Mine.
Demolition and/or removal of mobile camp site infrastructure/equipment. Rehabilitation and restoration of disturbed areas.	Decommissioning Post Closure	Local Site	-All disturbed areas must be rehabilitated. -Limit activity footprint and avoid disturbance of rehabilitated areas. -Implement an effective Alien Invasive Management Plan. -Demolition and removal of structures and rubble to be done cautiously. -Monitoring to be undertaken for a long enough period post closure, eg, 2-3 years	-Manage in accordance with the Rehabilitation Plan, Environmental Conservation Plan, Alien Invasive Management Plan, NEM:BA and Best Practice Guidelines	Ongoing during Decommissioning and Post Closure Phase.

e) Impact Management Outcomes

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

ACTIVITY whether listed or not listed **(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)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(eg. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**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)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
Demarcation of site with visible beacons	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	N/A	Site Establishment phase	Control through management and monitoring	Mining of aggregate and gravel is only allowed within the boundaries of the approved area. □ MPRDA, 2008 □ NEMA, 1998

WINNING OF AGGREGATE AND GRAVEL	Visual intrusion associated with the aggregate and gravel mining activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	Management of the mining activities must be in accordance with the: • MPRDA, 2008 • NEMA, 1998
WINNING OF AGGREGATE AND GRAVEL	Noise nuisance generated by Excavation equipment.	Should noise levels become excessive it may have an impact on surrounding landowners	Operational phase	Control: Noise control measures	Noise generation on site must be managed in accordance with the: • NEM: AQA, 2004Regulation 6(1) • NRTA, 1996
WINNING OF AGGREGATE AND GRAVEL	Contamination of surface or groundwater with hydrocarbons or hazardous waste material.	Contamination may cause surface or ground water pollution if not addressed.	Operational phase	Control & Remedy: Implementation of waste management	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM: WA, 2008
WINNING OF AGGREGATE AND GRAVEL	Negative impact on the aquatic fauna of the area	This may have a negative impact on the biodiversity of the area.	Operational phase	Control: Implementation of proper housekeeping and site management.	Site specific fauna and flora must be managed in accordance with the: • NEM:BA, 2004

ACTIVITY whether listed or not listed **(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)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**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)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
WINNING OF AGGREGATE AND GRAVEL	Impact on downstream water users.	This impact may lead to complaints from surrounding landowners.	Operational phase	Control: Implementation of proper housekeeping and site management.	The aquatic aspects at the site and rights of downstream users must be managed in terms of: NWA, 1998
WINNING OF AGGREGATE AND GRAVEL	Loss of mining equipment due to unexpected flooding.	This impact may have financial impacts on the Applicant.	Operational phase	Control: Implementation of proper housekeeping and site management.	The mining area must be managed in accordance with the: MPRDA, 2008 NEMA, 1998 NWA, 1998

STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Negative impacts on the riparian vegetation.	This may have a negative impact on the biodiversity of the area.	Operational phase	Control: Implementation of proper site management.	Site specific flora must be managed in accordance with the: □ NEM:BA, 2004
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Dust nuisance from loading and vehicles transporting the material.	An increase in dust levels may lead to complaints received from surrounding landowners and road users.	Operational phase	Control: Dust suppression	Dust generation on site must be managed in accordance with the: □ NEM: AQA, 2004 Regulation 6(1) □ National Dust Control Regulations, GN No R827 □ ASTM D1739 (SANS 1137:2012)
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Negative impacts on the riparian vegetation.	This may have a negative impact on the biodiversity of the area.	Operational phase	Control: Implementation of proper site management.	Site specific flora must be managed in accordance with the: □ NEM:BA, 2004

ACTIVITY whether listed or not listed **(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)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**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)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Degradation of access road.	If the road is not maintained it will negatively affect all road users.t only the landowner.	Operational phase	Control & Remedy: Road condition management	The access road must be managed in accordance with the: □ NRTA, 1996	The aquatic aspects at the site and rights of downstream users must be managed in terms of: MPRDA, 2008 □ NEMA, 1998
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Negative impact on the fauna (aquatic and terrestrial) of the area.	This may have a negative impact on the biodiversity of the area.	Operational phase	Control: Implementation of proper housekeeping and site management.	Site specific fauna and flora must be managed in accordance with the: □ NEM:BA, 2004	The mining area must be managed in accordance with the: □ MPRDA, 2008 □ NEMA, 1998

STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Contamination of area with hydrocarbons or hazardous waste material.	Contamination may cause surface or ground water pollution if not addressed.	Operational phase	<u>Control & Remedy:</u> Implementation of waste management	Mining related waste must be managed in accordance with the: □ NWA, 1998 □ NEM: WA, 2008	Site specific flora must be managed in accordance with the: □ NEM:BA, 2004
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Overloading of trucks having an impact on the public roads.	.	Operational phase	<u>Control:</u> Proper site management	Load weights must be managed in accordance with the: □ NRTA, 1996	Dust generation on site must be managed in accordance with the: □ NEM: AQA, 2004 Regulation 6(1) □ National Dust Control Regulations, GN No R827 □ ASTM D1739 (SANS 1137:2012)
STOCKPILING AND TRANSPORTING MATERIALFROM SITE	Overloading of trucks having an impact on the public roads.	Overloading will negatively affect the roads in the vicinity of the mining area	Operational phase	<u>Control:</u> Proper site management	Load weights must be managed in accordance with the: □ NRTA, 1996	Dust generation on site must be managed in accordance with the: □ NEM: AQA, 2004 Regulation 6(1) □ National Dust Control Regulations, GN No R827

ACTIVITY whether listed or not listed **(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)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**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)**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
SLOPING AND LANDSCAPING UPON CLOSURE OF THE MINING AREA	Impact on the flow regime of the river.	A negative impact on the flow regime of the river may lead to erosion of banks, and impact on the downstream users.	Operational phase	Control: Implementation of proper housekeeping and site management.	The aquatic aspects at the site and rights of downstream users must be managed in terms of: NWA, 1998	The aquatic aspects at the site and rights of downstream users must be managed in terms of: NWA, 1998
SLOPING AND LANDSCAPING UPON CLOSURE OF THE MINING AREA	Contamination of area with hydrocarbons or hazardous waste material.	Contamination may cause surface or ground water pollution if not addressed.	Operational phase	Control & Remedy: Implementation of waste management	Mining related waste must be managed in accordance with the: NWA, 1998 NEM: WA, 2008	The mining area must be managed in accordance with the: MPRDA, 2008 NEMA, 1998 NWA, 1998

f) Impact Management Actions

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

ACTIVITY whether listed or not listed **(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)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, stormwater 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** • **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** **Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.** **With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or.** **Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.**	**COMPLIANCE WITH STANDARDS** **(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)**
Demarcation of site with visible beacons	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	Control through management and monitoring	Beacons need to be in place throughout the life of the mine.	Mining of aggregate and gravel is only allowed within the boundaries of the approved area. □ MPRDA, 2008 □ NEMA, 1998

WINNING OF AGGREGATE AND GRAVEL	Visual intrusion associated with the aggregate and gravel mining activities	Control: Implementation of proper housekeeping	Throughout operational phase	Management of the mining activities must be in accordance with the: MPRDA, 2008 NEMA, 1998
WINNING OF AGGREGATE AND GRAVEL	Noise nuisance generated by excavation equipment.	Control: Noise control measures	Throughout operational phase	Noise generation on site must be managed in accordance with the: NEM:AQA, 2004 Regulation 6(1) NRTA, 1996
WINNING OF AGGREGATE AND GRAVEL	Contamination of surface or groundwater with hydrocarbons or hazardous waste material.	Control & Remedy: Implementation of waste management	Throughout operational phase	Mining related waste must be managed in accordance with the: NWA, 1998 NEM:WA, 2008
WINNING OF AGGREGATE AND GRAVEL	Negative impact on the aquatic fauna of the area	Control: Implementation of proper housekeeping and site management.	Throughout operational phase	Site specific fauna and flora must be managed in accordance with the: NEM:BA, 2004
WINNING OF AGGREGATE AND GRAVEL	Impact on the flow regime of the river.	Control: Implementation of proper housekeeping and site management.	Throughout operational phase	The aquatic aspects at the site and rights of downstream users must be managed in terms of: NWA, 1998

WINNING OF AGGREGATE AND GRAVEL	Impact on downstream water users.	Control: Implementation of proper housekeeping and site management.	Throughout operational phase	The aquatic aspects at the site and rights of downstream users must be managed in terms of: NWA, 1998
WINNING OF AGGREGATE AND GRAVEL	Loss of mining equipment due to unexpected flooding.	Control: Implementation of proper housekeeping and site management.	Throughout operational phase	The mining area must be managed in accordance with the: MPRDA, 2008 NEMA, 1998 NWA, 1998
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Negative impacts on the riparian vegetation.	Control: Implementation of proper site management.	Throughout operational phase	Site specific flora must be managed in accordance with the: NEM:BA, 2004
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Dust nuisance from loading and vehicles transporting the material.	Control: Dust suppression	Throughout operational phase	Dust generation on site must be managed in accordance with the: NEM:AQA, 2004Regulation 6(1) National Dust Control Regulations, GN No R827 ASTM D1739 (SANS 1137:2012)

ACTIVITY whether listed or not listed (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)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc)	MITIGATION TYPE (modify, remedy, control, or stop) through(e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or.Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Degradation of access road.	Control & Remedy: Road condition management	Throughout Operational phase	The access road must be managed in accordance with the: □ NRTA, 1996
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Negative impact on the fauna (aquatic and terrestrial) of the area.	Control: Implementation of proper housekeeping and site management.	Throughout Operational phase	Site specific fauna and flora must be managed in accordance with the: □ NEM:BA, 2004

STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Contamination of area with hydrocarbons or hazardous waste material.	Control & Remedy: Implementation of waste management	Throughout Operational phase	Mining related waste must be managed in accordance with the: □ NWA, 1998 □ NEM:WA, 2008
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Overloading of trucks having an impact on the public roads.	Control: Proper site management	Throughout Operational phase	Load weights must be managed in accordance with the: □ NRTA, 1996
SLOPING AND LANDSCAPING UPON CLOSURE OF THE MINING AREA	Impact on the flow regime of the river.	Control: Implementation of proper housekeeping and site management.	Throughout Operational phase	The aquatic aspects at the site and rights of downstream users must be managed in terms of: □ NWA, 1998
STOCKPILING AND TRANSPORTING MATERIAL FROM SITE	Contamination of area with hydrocarbons or hazardous waste material.	Control & Remedy: Implementation of waste management	Throughout Operational phase	Mining related waste must be managed in accordance with the: □ NWA, 1998 □ NEM:WA, 2008

ACTIVITY whether listed or not listed (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)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc)	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, stormwater 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 • Remedy through rehabilitation.	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
SLOPING AND LANDSCAPING UPON CLOSURE OF THE MINING AREA	Contamination of area with hydrocarbons or hazardous waste material.	Control & Remedy: Implementation of waste management	Throughout Operational phase	Mining related waste must be managed in accordance with the: □ NWA, 1998 □ NEM:WA, 2008

i) Financial Provision

(1) Determination of the amount of Financial Provision.

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

Merabe The Firm (Pty) Ltd will be using a mobile camp site for its processing activities, and therefore no infrastructure associated with the camp site will require breaking down or demolishing at closure. The areas disturbed as a result of the mining operation will be rehabilitated by maintaining the general topography of the surrounding area, ensuring that there are no remnants of the structures. The closure objectives aim to return the affected area to a land use condition or desired state similar to that of the pre-mining state. Closure and rehabilitation of land will be undertaken during the operational phase when the activities are completed in that area, to achieve a desired land condition as early as possible. Post-closure monitoring will assist in determining the success of the rehabilitation and also identify whether any additional measures need to be taken to ensure the area is restored to a reasonable and acceptable condition.

Rehabilitation measures and objectives will be undertaken in compliance with legislation and policy governing the requirements for rehabilitation such as the National Environmental Management Act 107 of 1998 and the Mineral and Petroleum Resources Development Act 28 of 2002.

(b) Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.

This Report highlights the rehabilitation and management objectives with regards to mitigating negative environmental impacts associated with the proposed mining operation. These environmental objectives related to the closure of the mining operation contained in this report will be subjected to a 30-day review period by Interested and Affected Parties.

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

The rehabilitation plan for the proposed Merabe The Firm (Pty) Ltd mining operation aims to mitigate the negative impacts associated with the mining activities, and ultimately to return the affected land to its desired land use standard. The objectives of the plan are to

ensure that the condition of the site post mining operation are suitable to and in agreement with the affected neighbouring community and the competent authority, that there is minimal loss to the biodiversity of the area, and that rehabilitation restores the land use and capability of the area/site.

The rehabilitation process will commence during the mining operation throughout the life of mine; involving concurrent rehabilitation of excavated land when activities are completed in that excavated land and thereafter the final rehabilitation will be undertaken during the mine closure phase. A more detailed closure plan will be developed during the life of mine, prior to the cessation of mining activities; adapted to the developed information and environmental impact status of the project in order to achieve a site-specific closure plan.

A map showing the site layout and aerial extent of the proposed mining activities, depicting the anticipated mining permit area at the time of closure is included as Map 2 in Appendix B.

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

The closure plan will assist the proposed mining operation to achieve the following objectives:

- Comply with relevant legislation and policy requirements with regards to mine rehabilitation.
- Avoid or mitigate impacts associated with the project which may be detrimental to the environment.
- Land rehabilitation to a predetermined and agreed upon state that allows sustainable land use and capability of the site, that is to return the site to the condition that existed prior to mining or an agreed upon state.
- Cost effective and efficient closure of mining operations.
- Management and monitoring of the area post-closure.

The rehabilitation plan will thus be aligned to the closure objectives and tailored to the project to achieve these objectives. It will include information about the site prior to the mining operation and provide information on the maintenance of resources required for the rehabilitation process, as well as detail how rehabilitation will be undertaken. It will also provide information on the management and monitoring of disturbance to avoid or minimise detrimental impacts, as well as an estimate of the financial closure provision. It

will also include information associated with post-closure environmental monitoring of the site to ensure that the rehabilitation plan is followed and its objectives are achieved.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

This amount was calculated according to the guideline for the Calculation of the Quantum for rehabilitation as provided by DMR. The mining operation will entail the excavating of aggregate and gravel in section on the land, where after processing section will be closed/rehabilitated and a different/new excavated, within the 1.5 hectares area. The open cast rehabilitation fee is thus calculated on a general surface. General surface rehabilitation and grassing at R69 777 for 1.5hectare.

Refer to the table below for the Calculated Quantum Rehabilitation Financial Provision

Table 1: Calculation of the financial provision required for the proposed Merabe the firm (PTY) LTD

CALCULATION OF THE QUANTUM (REAL RATES)

Applicant: **Merabe The Firm (Pty) Lts** **Ref No.: FS 30/5/1/3/2/ (10278) MP**

Evaluators: **Date: 23 July 2019**

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	15,42	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	214,79	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	316,53	1	1	0
3	Rehabilitation of access roads	m2	5	38,44	1	1	189.7
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	373,05	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	203,48	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	429,57	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0.15	218629,41	1	1	32372,1435
7	Sealing of shafts adits and inclines	m3	0	115,31	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	150124,02	1	1	0

8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	**ha**	0	186976,76	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	**ha**	0	543069,13	1	1	0
9	Rehabilitation of subsided areas	**ha**	0	125706,26	1	1	0
10	General surface rehabilitation	**ha**	0,15	118923,55	1	1	17608,839
11	River diversions	**ha**	0	118923,55	1	1	0
12	Fencing	**m**	0	135,66	1	1	0
13	Water management	**ha**	0	56328,08	1	1	0
14	2 to 3 years of maintenance and aftercare	**ha**	0	15826,33	1	1	0
15 (A)	Specialist study	**Sum**	0	0	1	1	0
15 (B)	Specialist study	**Sum**	0	0	1	1	0
					Sub Total 1		**50170,6825**

1	Preliminary and General	6020,4819	**weighting factor 2** 1	**6020,4819**
2	Contingencies	5017,06825		**5017,068**
			Subtotal 2	**61208,23**

VAT (15%)	**8569,15**

Grand Total	**69777**

(f) Confirm that the financial provision will be provided as determined.

Merabe The Firm (Pty) Ltd confirms that the financial provision will be provided as determined.

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

(g) Monitoring of Impact Management Actions
(h) Monitoring and reporting frequency
(i) Responsible persons
(j) Time period for implementing impact management actions
(k) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Site clearing and topsoil removal. Construction of infrastructure (Offices and storage) TLB activity and operation of mining equipment.	Air quality.	Set up PM^{10} Monitoring sites in the area to monitor dustfall, using method ASTM D1739: 1970 (or equivalent).	Environmental Control Officer	Ongoing during the Life of Mine. Compile monthly reports.
	Soil	Management and monitoring of soil stockpiles. Soils must be stored properly and revegetated to prevent erosion and to enable	Environmental Control Officer Merabe The Firm (Pty) Ltd Management	Monitor and inspect on a daily basis. Compile monthly reports.

		re-use during rehabilitation.		
Demolition and/or removal of mobile camp site infrastructure /equipment. Rehabilitation and restoration of disturbed areas.	Surface water.	Monitor and manage through Stormwater Management Plan	Environmental Control Officer Merabe The Firm (Pty) Ltd Management	Ongoing during the Life of Mine, as well as for at least a year post mine closure.
	Establishment and spread of alien plant species.	Alien invasive vegetation monitoring and control through Alien Invasive Management Plan	Environmental Control Officer	Ongoing during the Life of Mine. Monitor and control on a monthly basis.

(l) Indicate the frequency of the submission of the performance assessment/ environmental audit report.

The Environmental Control Officer will undertake audits in compliance with the provided EMP contents and guidelines and will compile audit reports, which will ultimately be submitted to the DMR every year.

(m) Environmental Awareness Plan

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

Merabe The Firm (Pty) Ltd Management has to appoint an independent Environmental Control Officer whose duty is to also implement an effective environmental awareness plan aimed to educate workers and contractors in terms of the biodiversity on site, environmental risks associated with the proposed development and land management of the site. Training and/or awareness should be raised and effectively communicated prior to the commencement of the construction phase. Training sessions should incorporate the management plans addressed in this EMPr as well as any new information and documentation provided by the ECO, as well as that of the Environmental Health & Safety Officer. The ECO would be the most suitable person to conduct these training sessions, identifying sensitive environments as well as all the risks and impacts associated with the mining operation and the methods in which to deal with the impacts in order to avoid environmental degradation. Training sessions can be monitored by providing an attendance register indicating the workers that received training as well as evidence of the training and/or awareness received. These sessions would also need to be carried out throughout the Life of Mine, at least once a year, or as new information becomes available.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

Kindly refer to the table of possible mitigation measures that could be applied in **section (viii) of Part A** for an indication of the manner in which risks will be dealt with

(n) Specific information required by the Competent Authority

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

No specific information requirements have been made by the competent authority at this stage.

2) UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports ☒

b) the inclusion of comments and inputs from stakeholders and I&APs ; ☒

c) the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and

d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties are correctly reflected herein. ☒

MM Msitsini

Signature of the environmental assessment practitioner:

Azatitrax (Pty) Ltd

Name of company:

23 July 2019

Date:

-END-

APPENDICES	
Appendix A	CV of the EAps
Appendix B	Locality map, Site Layout Plan, land Use Mape
Appendix C	Public participation information: including a copy of the register of interested and affected parties, the comments and responses report, proof of notices, advertisements and any other public participation information as required.

Appendix A

EAP Curriculum Vitae

CURRICULUM VITAE

MSITSINI Moses Malungisa

Date of Birth: 1994/02/15

ID Number: 9402155510083

Email: malungisamoses@gmail.com

Mobile: 0719064780

I am an individual who works very hard to deliver goods result, I have developed great combination of key skills that allow me to do my best in everything I do. I am a critical thinker, able to work under pressure and work in group. I give my level best in everything I do, I am an intellectual who is every innovative. Most of the time I am always up for a challenge and this helps me to improve my critical thinking and problem-solving skills.

PERSONAL DETAILS

Surname	: Msitsini
Name(s)	: Moses Malungisa
ID Number	: 9402155510083
Date of Birth	: 1994/02/15
Gender	: Male
Nationality	: South African
Marital Status	: Single
Home Language	: SiSwati
Residential Address	: Stand no 424 Ekulindeni 1301

EDUCATION

SECONDARY EDUCATION

Qualification	: Matric
School Attended	: Highveld Secondary School
Year Completed	: 2013

TERTIARY EDUCATION

Qualification	: Bsc Geology and Geography

Institution : University of the Free State

Year Completed : 2018

WORKING EXPERIENCE

I have worked with the small scale miners in the region of Free State helping them with the application for Mining permit, prospecting right and comply reports with the legislation of the Department of Mineral Resource.

University of the free State-Student Assistance
Worked as a Student lab assistance (Information Technology Assistance). Worked as a student assistance in the Department of Geology and Geography.

Vocational work
I worked as a student geologist at Nkomati mine, doing strata-control and mineral separation.
I also work as a student geologist at Exxaro mine, doing soil sampling.

Attribute acquired during Job experience
Interpersonal skill: I managed to acquire skills that very important when assisting people of different personalities, amongst the skills is communication skill.
Time Management: I managed to work with time when I was assisting student and also in the mine I manage to work with time during the period of time give to complete the given task.
Study Methods: Manage to introduce learners to different study methods that helped students to be successful to their studies.
Report writing: I learned to write different types of reports in different activities or events when I was doing strata control and soil sampling in the mine industry.

INOLVED ORGANIZATIONS AND CERTIFICATES OBTAINED

GSA Geography Student Association
University of the Free State Hospital Ministry

PARTICIPATION

Hostel Soccer Team (University of the Free State)
Hostel Cricket Team (University of the Free State)

KEY SKILLS

Statistical Analysis
Information Evaluation
Good Communication
Interpretation Results

Software Skills: Map production (ArcGis), Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Microsoft Access.

PERSONAL ATTRIBUTES

Communication Skill: I am an individual who communicate with an appreciation for different communication style requires when working with team members.
Honest and Reliable: I have a strong moral and ethics ensuring honest, reliability and ability and ability to responsibly undertake task.
Time Management: Dedication to effective prioritization and management of time by allowing tasks.

REFERENCES

Mr KEOAGILE MOTSHOANE

Contact No: 0761584286

Mr Ngae Richard Tshabalal

Contact No: 0835461379

MRS Rinae Makhadi

Contact No: 0618817149

Mr Lwazi Msithini

Contact No: 0822620925

UNIVERSITY OF THE **FREE STATE**
UNIVERSITEIT VAN DIE **VRYSTAAT**
YUNIVESITHI YA **FREISTATA**

THIS IS TO CERTIFY THAT THE DEGREE

Bachelor of Science

majoring in Geology and Geography

HAS BEEN CONFERRED UPON

MSITSINI, Moses Malungisa

IN ACCORDANCE WITH THE STATUTES AND
RULES OF THE UNIVERSITY. AS WITNESS
OUR RESPECTIVE SIGNATURES
AND SEAL OF THE
UNIVERSITY BELOW.

VICE-CHANCELLOR

ACTING REGISTRAR

BLOEMFONTEIN
5 DECEMBER 2018
2013167552

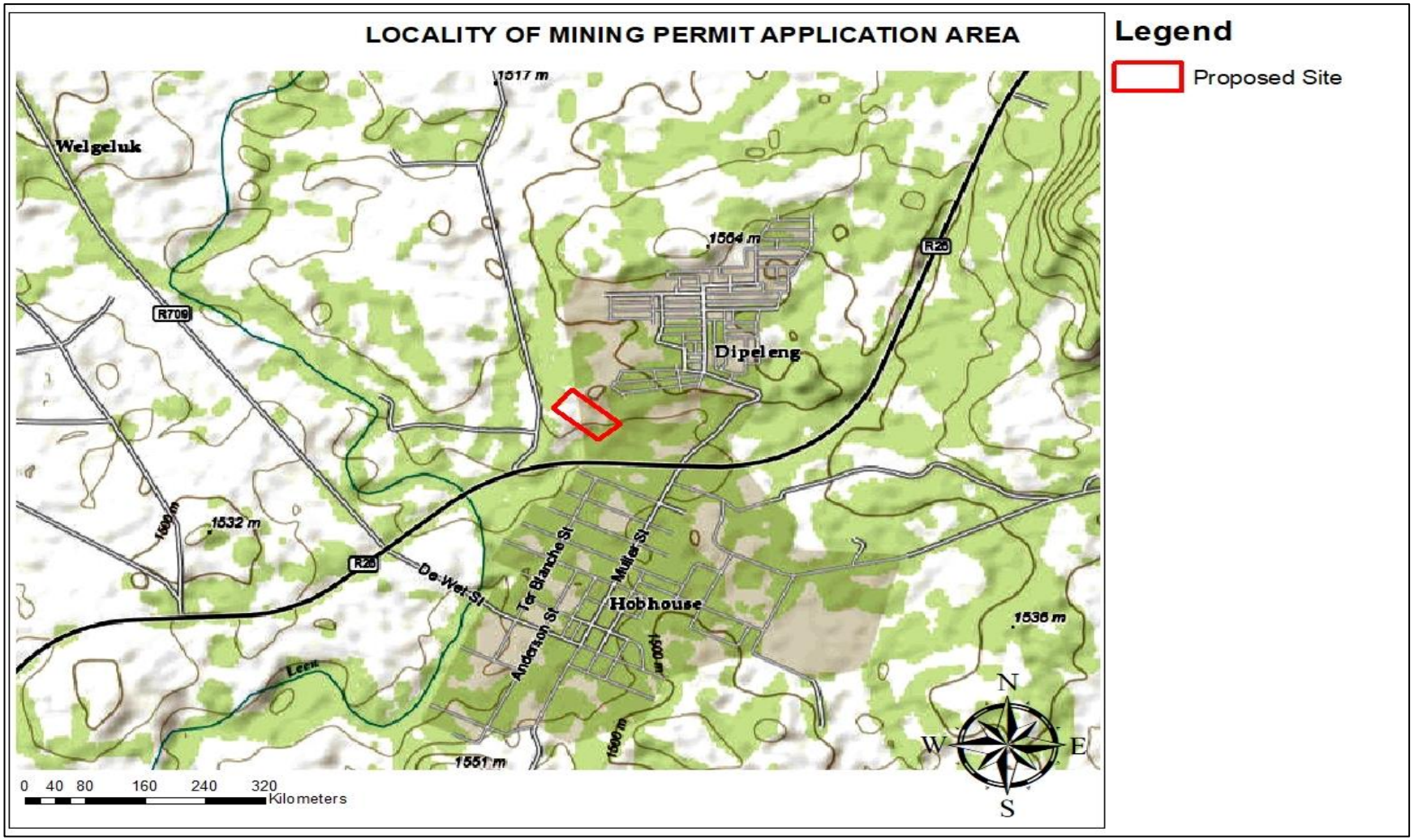
84984

Appendix B

LOCALITY OF MINING PERMIT APPLICATION AREA

MAP INDICATING LOCALITY WHERE MINING PERMIT IS APPLIED FOR HIGHLIGHTED WITH RED SHAPE

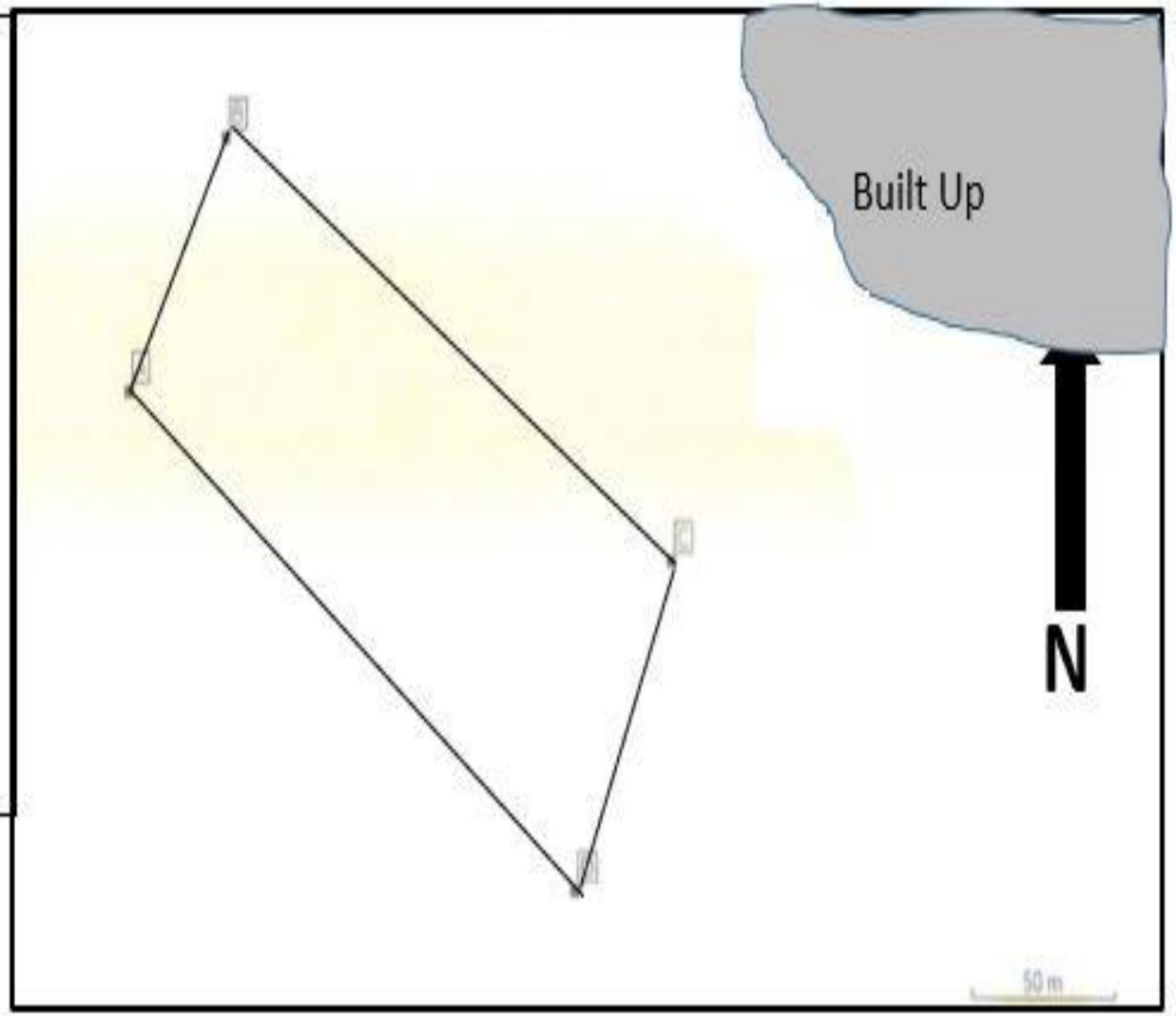
APPLICANT: MERABE THE FIRM (Pty) Ltd



Merabe the Firm (PTY) LTD Proposed Site Layout

COORDINATES OF AREA APPLIED FOR IN TERMS OF SECTION 27(2) OF MPRDA IN A PORTION OF FARM DORPSGRONDEN VAN HOBHOUSE 557 TO THE EXTENT OF 1,5 Ha

A	S29.51440	E27.13982
B	S29.51352	E27.14031
C	S29.51592	E27.14464
D	S29.51664	E27.14429



Current Land Use

LEGEND

R26 Road

Proposed site

Coordinates

S29.51440 E27.13982
S29.51352 E27.14031
S29.51592 E27.14464
S29.51664 E27.14429