



**mineral resources**

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

**REVISED BASIC ASSESSMENT REPORT AND  
ENVIRONMENTAL MANAGEMENT PROGRAMME  
REPORT FOR THE APPLICATION OF A MINING  
PERMIT SITUATED ON PORTION OF PORTION 60  
OF FARM RIETPOORT 518 IQ, IN THE  
MAGISTERIAL DISTRICT OF POTCHEFSTROOM**

**FOR**

**VAN NIEKERK BOERS VERVOER CC**

**DMR REF NO.: NW 10694 EM**

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL 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).

**Prepared by: Engedi Minerals and Energy (Pty) Ltd**

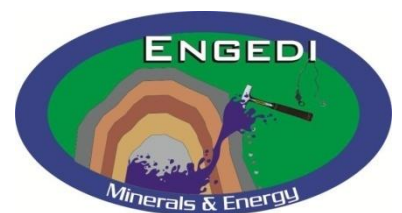
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## IMPORTANT NOTICE

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

Unless an Environmental Authorization can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Program 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 authorization for listed activities triggered by an application for a right or a permit submitted in the exact format of, and provide all 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 Authorization being refused.

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

## OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

- (a) Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) Identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) Describe the need and desirability of the proposed alternatives;
- (d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within the sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
  - The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
- i. The degree to which these impacts–
  - a) Can be reversed
  - b) May cause irreplaceable loss of resources; and
  - c) 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.

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## LIST OF ABBREVIATIONS

<b>DEA</b>	Department of Environmental Affairs
<b>DMR</b>	Department of Mineral Resources
<b>DWS</b>	Department of Water and Sanitation
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECA</b>	Environmental Conservation Act, 1989 (Act No. 73 of 1989)
<b>ECO</b>	Environmental Control Officer
<b>I&amp;APs</b>	Interested and Affected Parties
<b>LED</b>	Local Economic Development
<b>MPRDA</b>	The Minerals and Petroleum Development Act, 2002 (Act No. 28 of 2002)
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NEM: AQA</b>	National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004)
<b>NEMA</b>	The National Environmental Management Act, 1998 (Act No. 107 of 1998)
<b>NEM: WA</b>	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
<b>NHRA</b>	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
<b>NWA</b>	National Water Act, 1998 (Act No. 36 of 1998)
<b>WRB</b>	Waste Rock Berm
<b>WRD</b>	Waste Rock Dump

## 1. EXECUTIVE SUMMARY

### 1.1 Background and Introduction

Engedi Minerals and Energy (Pty) Ltd has been appointed as the environmental assessment practitioners (EAP) for the proposed gravel mining activity by Van Niekerk Boers Vervoer CC (the proponent), to undertake the application for a gravel Mining Permit on the proposed site (Portion 60 of Farm Rietpoort 518 IQ) in Potchefstroom, North West (**see Appendix B: Locality Map and Appendix C: Site Plan**).

<b>Name of Project:</b>	Portion 60 of Farm Rietpoort 518IQ
<b>Name of Applicant:</b>	Van Niekerk Boers Vervoer CC
<b>Responsible person:</b>	Mr. A.I van Niekerk
<b>Postal Address:</b>	P.O. Box 1046, Parys,9585
<b>E-mail:</b>	vanniekerbrs@lantic.net
<b>Telephone:</b>	083 2283320

The Environmental Impact Assessment Regulations (EIA), 2014 (as amended), states the following: “activities related to prospecting, exploration, or extraction of a mineral or petroleum resource, including primary processing, or activities directly related thereto, must be handled by the competent authority.” In this case, the competent authority is the Department of Mineral Resources. This Basic Assessment Report (BAR) documents an assessment of potential environmental impacts for the proposed gravel mining in Potchefstroom, North West.

The BAR also serves as supporting documentation for a Mining Permit application that has been submitted (reference number: NW 30/5/1/3/3/2/1 (10694) EM) as required under Section 27 of the Mineral and Petroleum Resources Development Act (MPRDA), Act 28 of 2002. The proposed gravel mining is expected to contribute to the construction sector through increased availability and delivery of gravel. It is also expected to contribute positively to the local economy through the creation of employment opportunities. Basic mining methods will be employed for this activity and the proposed gravel mining will occur over a period of approximately 60 months.

## 2.1 Contact Details

### a) Details of the EAP

<b>Environmental Consultant (EAP):</b>	Engedi Minerals and Energy (Pty) Ltd
<b>Responsible Person:</b>	Tshimangadzo Mulaudzi
<b>Physical Address:</b>	15 Barnes Street, Langebaan building, Bloemfontein 9301
<b>Postal Address:</b>	P.O. Box 29567, Danhof, 9310
<b>Telephone:</b>	079 362 6046
<b>Fax:</b>	086 556 2568
<b>E-mail:</b>	info@engedime.com

### b) Expertise of the EAP

#### i. The qualifications of the EAP (with evidence)

Tshimangadzo hold an Honours Degree in Prospecting and Environmental Geology from the University of Venda. He has since been working as an environmental geologist and environmental practitioner. He has 5 years' experience in Environmental Science, 3 years' experience in Geology, and 5 years' experience in public participation.

#### ii. Summary of the EAP's past experience (in carrying out the Environmental Impact Assessment Procedure)

Tshimangadzo has been carrying out Environmental Impact Assessment Procedure since 2012, managing a construction company called Tshedza Concrete Art in North West Province, Makhado town.

In 2014, he joined a large prospecting consulting company in Kimberly called Breeze Court Investments 47 (Pty) Ltd (Geologist and Prospecting consulting firm). This is where Mr. Mulaudzi acquired in-depth experience and know how in the prospecting consulting business by assisting the

large to small scale prospecting companies to obtain prospecting right, prospecting rights, prospecting permits, technical co- operate permits, reconnaissance permits, exploration rights, production rights, integrated water use license, and environmental authorization among other licenses.

## 2.2 Details of the Project

The site comprises of Portion 60 of Farm Rietpoort 518 IQ. The portion is approximately 30 000 m<sup>2</sup> in extent. The site is currently being used for gravel mining by the applicant. The site (co-ordinates: - 26.879009167; 27.423433333) is located within the Potchefstroom area in the JB Marks Local Municipality in the North West Province. The site proposed for gravel mining is approximately 36.65 km south-east of Potchefstroom (**please see Appendix B: Locality Map**).

**Table 2.1: Location of the overall activities**

<b>Farm name:</b>	Portion 60 of Farm Rietpoort 518 IQ
<b>Application area (Ha):</b>	3 Hectares
<b>Magisterial district:</b>	Potchefstroom
<b>Distance and direction from nearest town:</b>	The farm is located approximately 36.65 km south-east of Potchefstroom.
<b>21 digit Surveyor General Code for each farm portion:</b>	T0IQ0000000051800060

## 2.3 Description of the activities to be undertaken

The proposal is to mine an area of 3 ha on the site. The intention is to mine the entire site to ground level. The proposed activity is expected to be undertaken over a two-month period and is intended to mine gravel for commercial purposes in the area with approximately 70 000 m<sup>3</sup> of gravel to be mined on the site. The soils found on the site have limited pedological development being gravely and excessively drained soils. The site is highly transformed with only a handful of indigenous plants occurring. Basic mining methods will be employed for this activity.

Basic mining methods will be implemented, which include:

- Topsoil will be stripped using an excavator and stockpiled on the site. This topsoil will be re-used for rehabilitation of the site.
- Both dragging and excavation methods will be used for mining of the gravel; and
- The excavated gravel for commercial purposes will be loaded onto tip trucks with the assistance of front-end loaders. The gravel will be transported off site and be sold to the local market. No processing activities will be undertaken on site.



**Figure 2.1: Demonstration of gravel mining.**

### 2.4.1 Listed and specific activities

**Table 2.2: Listed and Specified Activities**

<b>NAME OF ACTIVITY</b>  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.)	<b>AERIAL EXTENT OF THE ACTIVITY</b>  Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b>  (Mark with an X where applicable or affected)	<b>APPLICABLE LISTING NOTICE</b>  (GNR 324,  GNR 325 or  GNR 327)	<b>WASTE MANAGEMENT AUTHORISATION</b>  (Indicate whether an authorization is required in terms of the Waste Management Act).  (Mark with an X)
Mining	0.5 Ha	X	Listing Notice 1  Activity No. 21	N/A
Ablution facility	0.01 Ha	X	Listing Notice 1  Activity No. 21	N/A
Access Roads	0.01 Ha	X	Listing Notice 1  Activity No. 21	N/A
Stock piling	0.01 Ha	X	Activity No. 21	N/A



### **2.4.2 Site Preparation / Establishment (Construction Phase)**

While no infrastructure development will occur on site, the site will be prepared for mining commencement.

The following will be in place:

- Environmental training and awareness for workers;
- Demarcation of the mining site (3 ha) and 'no-go' areas
- The erecting of fences;
- The placement of a chemical toilet, waste bins, spill kits and first aid kits;
- Facilitating the access road to the mining site;
- The use of equipment (e.g. loader, truck etc.) and vehicles for operation.

Therefore, no infrastructure associated with the mining site will require breaking down or demolishing at closure. The areas used for facilities or equipment will be less than 300 m<sup>2</sup> in size and will be rehabilitated post - mining operations by maintaining the general topography of the area, ensuring that there are no remnants of the structures.

The area to be mined will be clearly demarcated with a silt / dust fence to prevent to control and contain dust as practical possible and also to ensure that the protection of the surrounding environment.

### **2.4.3 Decommissioning phase**

The closure and rehabilitation of the stockpile area will be pursued as soon as the operation comes to an end. Disturbed areas will be rehabilitated naturally by spreading across the area, a thick soil layer. In order to identify whether any additional measures need to be taken to ensure the area is restored to a reasonable and acceptable condition, there would need to be post-closure monitoring which would assist in determining the success of the rehabilitation.

**Table 2.3: Policy and Legislative Context**

<b>Applicable Legislation And Guidelines Used To Compile The Report</b>	<b>Reference Where Applied</b>	<b>How Does This Development Comply With And Respond To The Legislation And Policy Context.</b>
National Environmental Management Act (NEMA), No. 107 of 198, as amended	Section 24	In terms of the National Environmental Management Act, an application for an Environmental Authorization has been applied for.
Regulation 982. National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations, 2014	Regulation 19	In terms of the NEMA EIA Regulations a Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) were prepared to submit to the competent authority.
Regulation 983. National Environmental Management Act (Act No. 107 of 1998): Listing notice 1: List of activities and competent authorities identified in terms of sections 24(2) and 24D	Regulation 20	In terms of NEMA EIA Regulations R.983, Listing notice 1, the activity triggers regulation 21 which refers to a mining permit application and therefore needs an Environmental Authorizations to proceed as well as follow procedures as prescribed in regulation 19 of R.982 (EIA Regulations, 2014).
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Section 27	In terms of the MPRDA, any person who wishes to apply for a mining permit must lodge the application in the prescribed manner.
Mineral and Petroleum Resources Development Amendment Act (Act No. 49 of 2008)	Section 23	In terms of the MPRDA, any person who wishes to apply for a Mining permit must simultaneously apply for an environmental authorization and must lodge the application to requirements contemplated by competent authority.

## **2.5 Need and desirability of the proposed activities**

Whilst the project is small in operation, the gravel to be mined will also aid the construction sector in terms of service delivery and local economic development. The proposed gravel mining will offer good quality gravel to the local building industry for use in the construction of buildings and roads and other forms of infrastructure. It would ultimately contribute towards the wider socio-economic development of the area in the form of job opportunities and service delivery through promoting infrastructural development.

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

The proposed mining site is preferred because:

1. It contains the right quality of gravel and gravel bearing material required for the recovering of gravel and stone aggregate, it also has a good history of gravel and gravel quality;
2. The mining site still has good high grade gravel and gravel bearing material; and
3. The mining site is historic mining area compared to breaking a new virgin ground for mining.

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

With reference to the site plan provided below 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.*

The focus of this proposal is to remove the excessive amount of gravel on the site. As such, no alternatives have been identified and perused for this proposal. The alternatives presented and

assessed in this basic assessment report are Alternative A, mining the gravel on the site to ground level, and Alternative B, the “do nothing” option. The impacts identified have been assessed based on these two alternatives.

The proponent wishes to mine gravel on the site. Thus, no other development proposals have been put forward. Due to the terms of reference and scope of works, no other activity alternatives are being investigated.

### **2.7.1 Design or Layout Alternative**

The proposed layout for the gravel mining will be as per the site plan (Appendix C). No further designs or layout of the site is proposed. The site design/layout was determined by considering both spatial and practical mining operation aspects.

### **2.7.2 Methods and Technologies Alternatives**

Due to the fact that the site is small and the gravel will be of relatively low proportions in terms of the long term viability, alternative technologies are not optional for this project. Basic mining methods and equipment will be used for this project. An excavator and/or front-end loader will be used to strip the topsoil which will be stockpiled on the site for use later in rehabilitation. The gravel will be loaded onto trucks by the front-end loader for transport off the site and for sale to the local market.

An area of 3 ha will be demarcated for mining and will not compromise any infrastructure, or impact any nearby watercourses or wetlands.

### **2.7.3 Operational Alternatives**

The gravel mining activity will commence once the Department of Mining Resources issues the required Mining Permit and the Environmental Authorisation. Approximately 70 000m<sup>3</sup> of gravel will be mined.

### **2.7.4 No-Go Alternative**

This alternative assumes that the activity applied for does not proceed and thus a continuation of the current situation is anticipated. Should the gravel mining activity not be undertaken, job creation and

skills development during the mining phase will not be afforded to the Potchefstroom community. Therefore, positive community development will not be undertaken.

## 2.8 Details of the Public Participation Process Followed

### **Definitions:**

**‘consultation’** means a two way communication process between the applicant and the community or interested and affected party wherein the former is seeking, listening to, and considering the latter’s response, which allows openness in the decision making process.

**‘community’** means a group of historically disadvantaged persons with interest or rights in a particular area of land on which the members have or exercise communal rights in terms of an agreement, custom or law: Provided that, where as a consequence of the provisions of the Act negotiations or consultations with the community are required, the community shall include the members or part of the community, directly affected by prospecting or mining, on land occupied by such members or part of the community.

The public participation process mainly comprises engagement with I&APs and is of utmost importance in any environmental assessment process. The public participation process, *inter alia*, involves the following:

- Inform, raise awareness, educate and increase understanding of a broad range of environmental issues that might be arise with the proposed extension in the size of mining operation.
- Establish lines of communication between stakeholders, I&APs and the project team.
- Provide opportunity to all parties for the exchange of information and expression of views and concerns.
- Obtain contributions of stakeholders and I&APs and ensure that all views, issues, concerns and queries raised are fully documented.
- Identify all the significant issues associated with the proposed extension of project.

**Engedi Minerals and Energy (Pty) Ltd** was appointed by **Van Niekerk Boers Vervoer CC** as the independent consultant to conduct the public participation process as part of the Basic Assessment Report and Environmental Management Programme Report. As stipulated in Section 27 (5) (b) of the MPRDA (Act 28 of 2002) as amended by the MPRDA (Act 49 of 2008) and Regulations, Interested and Affected Parties (I&APs) need to be notified and consulted with, as part of a mining permit application and extension thereof.

The public participation process aims to provide I&APs with objective information in order to assist them to:

- Raise issues of concern and make suggestions for enhanced benefits;
- Contribute local knowledge and experience;
- Verify that their issues have been captured;
- Verify that their issues have been considered; and
- Comment on the findings of the EMP.

A Public Participation Process (PPP) was initiated, and is central to the investigation of environmental and social impacts. It is important that stakeholders who are affected by the Project are given an opportunity to identify concerns and to ensure that local knowledge; needs and values are understood and taken into consideration as part of the impact assessment process. The public participation process for the Project followed the steps provided below.

### **2.8.1 Identification and Verification of Stakeholders**

Stakeholders were identified and their contact details verified.

Stakeholders included:

- Landowner – The applicant is the rightful owner
- North West Department of Economic Development, Environment and Tourism;
- Chief Director: Department of Rural Development and Land Reform (North West);
- JB Marks Local Municipality – Municipal Office;

- Dr Kenneth Kaunda District Municipality– Municipal Office;
- Department of Water and Sanitation; and
- Community members whose socio-economic conditions may be directly affected by the proposed mining operation.

### 2.8.2 Announcement of Application

The legislative requirements indicate that specific materials be developed and distributed as part of the PPP. Considering good practice, the following methods have also been implemented for PP material to inform stakeholders about the Project.

- **Newspaper Advertisements:** an English newspaper advert was placed in the Parys Gazette on Thursday, the 29<sup>th</sup> of September 2019. The advert included a brief project description, applicable legislation, competent authorities and details of the appointed EAP for any concerns or questions.
- **Site Notices:** English site notices were put up at various places around the Project site. These site notices contained a brief project description, information about the required legislation, competent authorities and, details of the EAP for any comments and concerns.

### 8.2.3 Availability of the Draft BAR

The draft BAR and EMP<sub>r</sub> were made available at the local Potchefstroom library for the full 30-day (23<sup>rd</sup> of September - 25<sup>th</sup> of October 2019) for all the registered I&APs, to inform them of the activities, background information of the area, the possible impacts and mitigation measures and other relevant information, and to request input and comment on it. To date, the EAP has not received any concerns or negative comments from the public.

The information documentation detailed above was distributed to identified stakeholders by means of e-mail or post where required.

#### **8.2.4 Project Consultation**

Consultation with I&APs was conducted during the availability of the draft BAR, which was made available for a public comment period of 30 days. A variety of stakeholder consultations were undertaken which included key organs of state stakeholders and the general public.

Provided below is a summary of the individual stakeholder consultation that were scheduled during the 30-day public comment period and information materials utilised during these consultation processes.

##### **8.2.4.1 Key Stakeholder consultation**

The information documentation detailed above was distributed to identified stakeholders by means of e-mail.

The following organs of state were consulted:

- North West Department of Economic Development, Environment and Tourism;
- Chief Director: Department of Rural Development and Land Reform (North West);
- JB Marks Local Municipality – Municipal Office;
- South African Heritage Resources Information System
- Dr Kenneth Kaunda District Municipality– Municipal Office; and
- Department of Water and Sanitation;



### 8.2.5 Public Participation Activities

Public Participation activities for the Application Process are summarised below together with the relevant reference for proof.

**Table 8.2: Public Participation Activities**

ACTIVITY	DETAILS	REFERENCE IN REPORT
Distribution of Consultation Forms	Comment Forms were emailed to stakeholders on 30 September 2019.	<b>Appendix D<sub>1</sub></b> Consultation Forms
Placing of newspaper advertisement	An advert was placed in the Parys Gazette – English (29 September 2019),	<b>Appendix D<sub>2</sub></b> Proof of Advertisement
Putting up of site notices	English site notices were placed at the Project site, local libraries, and visible public venues on 20 September 2019.	<b>Appendix D<sub>3</sub></b> Proof of Site Notices
Stakeholder consultations	The information documentation detailed above was distributed to identified stakeholders by means of e-mail.	<b>Appendix D<sub>4</sub></b> Consultations with Authorities

## 2.9 The Environmental Attributes associated with the Development Footprint Alternatives

### 2.9.1 Baseline Environment

Potchefstroom is a town in the North West province, South Africa, on the Mooi River, southwest of Johannesburg. It was founded in 1838 as the first capital of the Transvaal and remained the capital until Pretoria displaced it in 1855. British troops held the town in the First Boer War (1880–81) and the South African War (1899–1902). Gold mining has been important in the extended area since 1933. Known historically as a significant educational, ecclesiastical, and newspaper publishing centre, Potchefstroom is the seat of several secondary schools and of North-West University, established in 2004 by the merger of the historically white Potchefstroom University for Christian Higher Education and the historically black University of North-West. A large proportion of the residents are young adults. There are many recreational facilities, and a large military camp is nearby. Potchefstroom is administered by the JB Marks Municipality.



Figure 9.1: The location of Potchefstroom in the North West Province.

### 2.9.1.1 Climate

No site specific climatic data are available for the study area, and therefore the statistics for the Potchefstroom weather station (located at 26° 44' S and 27° 04' E) were used to describe the climate of the area.

#### **Mean monthly and annual rainfall of the Potchefstroom area**

Potchefstroom occurs in the summer rainfall region with a long-term average annual rainfall of 613 mm occurring mainly between September and April. The high evaporation rates of the area imply a water deficit during the whole year.

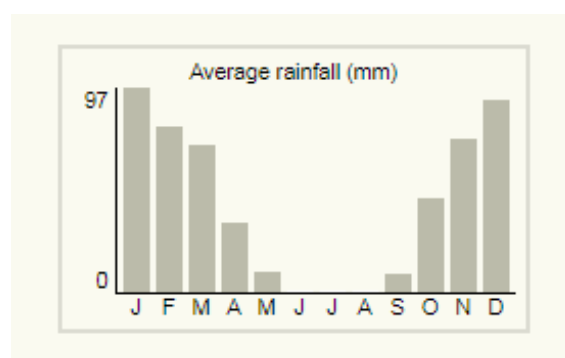


Figure 9.2: The average rainfall (mm) of the Potchefstroom area.

#### **Mean monthly maximum and minimum temperatures**

On average, the maximum summer temperature in the area varies between 27, 2 °C and 29,2 °C while in winter the average minimum temperature varies between 0, 5 °C to 0, 7 °C.

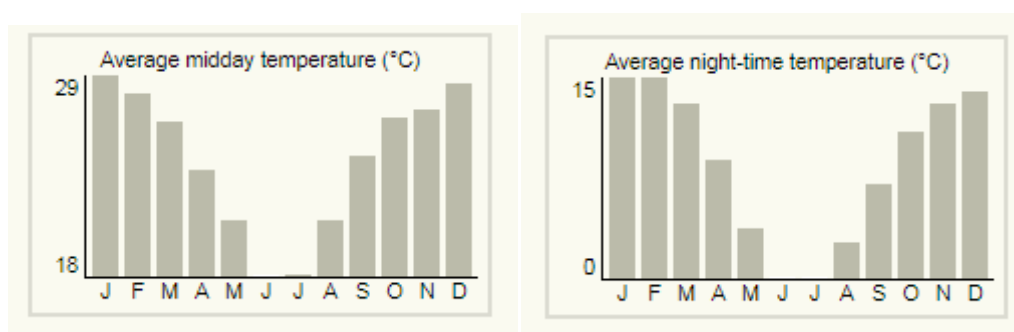


Figure 9.3: The average mid-day and night-time temperatures of the Potchefstroom area.

### **Mean monthly wind direction and speed**

The area is characterised by the highest frequency of (in decreasing order) NW, N, NE and SW winds, especially during the warmer months of August to January. The wind speeds recorded over a 30 year period are generally low, 0 – 8 m/s with wind speeds of higher than 14 m/s having a frequency of less than 13% and occurring only in August and September. The latter are very important in respect of wind erosion because they coincide with the end of a dry season i.e. in the period when soils and tailings are at their driest, making them very vulnerable to wind erosion.

### **2.9.1.2 Geology and Soils**

The major part of the study area is underlain by the sedimentary rocks of the Transvaal Supergroup while a small portion on the west is underlain by volcanic rocks of the Ventersdorp Supergroup.

The Transvaal Supergroup in the study area is represented by the Monte Christo and Oak tree Formations (which belong to the Malmani Subgroup of the Chuniespoort Group) and the Black Reef Formation. The composition of each formation is described after Brink. The Monte Christo Formation consists of light coloured chert-rich re-crystallised dolomite with stromatolites and basal oolitic bands.

The Oak tree Formation consists of dark coloured chert-poor dolomite, sometimes with wad and carbonaceous shale towards the base. The Oak tree Formation consists of six stratigraphic units which include zones of domical stromatolites, thin shale units as well as the convoluted chert marker. Occasional chert partings occur at the top of the formation. The Black Reef Formation consists of basal conglomerate unit overlain by the quartzite, wad and carbonaceous shale. The formation is generally 30 m thick in the West Rand area.

The Platberg Group of the Ventersdorp Supergroup occurs in the western portion of the Study area. Two formations of the Platberg Group, the Rietgat and the Kameeldoor Formation occur in the study area. The Rietgat Formation is composed of mainly greenish-grey amygdaloidal and porphyritic lava, with interbedded shale, tuff, greywacke, conglomerate and impure limestone with algal structures. The Kameeldoor Formation forms the base of the Platberg Group and it is confined mainly to fault troughs. The formation is composed mainly of coarse basal conglomerate and greywacke, agglomerate and tuff, calcareous shale and pure limestone with subordinate greenish-grey lava.

Emphasis must therefore be placed on the methods used to rehabilitate this area after mining, thus ensuring the conservation of this biome. The geology and soils of the Vet-Vaal Gravely Grassland can be described as Aeolian and Colluvial gravel overlying gravelstone, mudstone and shale from the Karoo Supergroup as well as Ventersdorp Supergroup andesite and basement gneiss in the north. Soils forms are mostly Avalon, Westleigh and Clovelly. Dominant land type Bd, closely followed by Bc, Ae and Ba. The geology and soils of the Vaal Reefs Dolomite Sinkhole Woodland area can be described as almost exclusively dolomites of the Malmani Subgroup where underground dissolution of rock causes sinkholes. More than 50% of the main soil types are relatively shallow (50 - 150mm) and rocky, with the dominant soil forms Mispah, Glenrosa and shallow Hutton. The latter soils are associated with the Fa land type.

#### **2.9.1.3 Topography**

The topography within 3 km of Potchefstroom contains only modest variations in elevation, with a maximum elevation change of 41 m and an average elevation above sea level of 1 342 m. Within 80 km contains significant variations in elevation (535 m).

The area within 3 km of Potchefstroom is covered by artificial surfaces (62%), grassland (26%), and cropland (12%), and within 80 km by grassland (57%) and cropland (37%).

#### **2.9.1.4 Vegetation**

This property falls within the Grassland Biome that is dominated by a single layer of grasses with a few trees in localized habitats. This biome is confined to the high central plateau of South Africa, and the inland areas of Kwa-Zulu Natal and the Eastern Cape.

This area furthermore falls within the Dry Highveld Grassland that is found on the extensive central plateau of South Africa. The topography is flat to undulating, occasionally broken by small mountains. The major environmental factor controlling vegetation patterns and the recognition of different vegetation types is annual rainfall, which forms part of an east to west gradient of decreasing moisture across the Highveld.

Erosion is also very low in 85.3% and low in 11% of this biotype. The conservation status of the Carletonville Dolomite Grassland biotype was vulnerable and the conservation target was 24%. Erosion is also very low in 84% and low in 15% of this biotype. This area has had 4-7 sensitive

features according to the Environmental Potential Atlas of the North West Province. The main ecological threats in this area are mining and poorly managed agricultural practices.

### **Species likely to occur on site**

Information extracted from published accounts was taken into account and evaluated as well as information gathered in the reconnaissance site visit. The site habitat description with the apparent restrictions imposed by human-settlements and other pressures on the environment were not considered in the compilation of species lists of those that might occur on the adjacent area.

The species currently present on the adjacent areas is a good indicative measure of species that will be encountered after successful rehabilitation and closure of the mined sites. Species from the adjoining areas will act as source populations. It can therefore be concluded that if the necessary steps is taken and proper rehabilitation methodology employed, that these species will return with succession and remain on the site after mining if no other further significant disturbances occur.

Not all species occurring on this site or all the species listed above were recorded during the brief site visit and initial reconnaissance due to various constraints such as seasonality and time. A few tree species have been observed. These trees and shrubs provide shade, shelter and food for various birds, mammals and insect species. The most dominant tree species was *Searsiapyroides*, the Common wild currant. This is also the lower lying area and severely impacted by the historical mining. Various other tree species grow on the northern part of the property and the higher lying areas that was less impacted by mining.

Only a few plant species have been identified as endangered in the North West Province .*No red data species were encountered during the field investigation.* The North West Biodiversity Site Inventory and Database Development report further reported that there is no red data species in this area. However, in the event of encountering a red data species during the preparation stage with clearing of vegetation prior to mining, the relevant measures must be put in place as to conserve these species.

### 2.9.1.5 Air Quality

#### **Potential sources and Mitigation**

No other sources of particulate or gaseous emissions other than the dust generated from tailings and gravel roads are expected to have an influence on the background air quality status of this region. The main sources of dust emission contributions will be wind-blown dust from vehicles travelling on gravel roads and the mining (excavating) of tailings facilities. From the wind-blown dust sources, the tailings dump will be the main source of emissions and mitigating concerns. Wind-blown dust typically impacts down-wind from the direction where the highest velocity winds occur. The three trucks involved in the transport would potentially be an insignificant source of re-suspension of soil on the gravel roads and the vehicle entrained dust will be bounded near the road where it is generated from.

Regardless fall-out dust buckets will be placed at strategic points along the gravel road. These buckets would be used to assess the dust fall-out from the trucks travelling along the gravel roads (source) and mitigating strategies would be implemented if guideline values for the dust fall-out monitoring program require so. No impact of tailings dust is anticipated beyond the 500 meter and therefore most fall-out dust buckets for managing and mitigating fall-out dust would be placed 500 meters from the tailings facility in the predominant wind directions. Extensive dust monitoring would be done at selected sites with potential significant environmental and health impacts and mitigation of mining methods and activities pertaining to tailings source would be managed accordingly.

A complaint register for surrounding farmers and community will be kept on site and the management of dust would be guided by these additionally comments of public.

### 2.9.1.6 Water

#### **Surface water**

The calculated run-off area from the site is approximately 100 ha. The mean annual precipitation is assumed to be 600 mm. With these assumptions in mind and estimated that the total runoff amounts to 80% of the precipitation, the average annual run-off from the site will be in the order of 480000 m<sup>3</sup>/annum.

The main surface water impact will be the potentially contaminated run-off from the ore body which is considered to be the old slimes dam and also the dispersed deposits of slime that has been eroded over the years and deposited in the lower laying areas downstream of the site.

### **Groundwater**

The project site is underlain by a karst dolomitic aquifer, to the east. Dolomitic aquifers are sensitive aquifer as the lateral transport time can be orders larger than in most of the fractured or inter granular aquifers. The western side of the project site is underlain by an inter granular and/or fractured aquifer from the Black Reef formation and the Kliprivierberg Group. The karst aquifer can be classified as a major aquifer while the inter granular and fractured aquifer can be classified as a minor aquifer. From the limited borehole census it is evident that the boreholes in the area are not exceptionally high yielding. The estimated yields vary between 0 - 0.4 l/s from the inter granular/fractured aquifer and up to 5 l/s from the karst aquifer.

### **Groundwater use**

The groundwater use in the area is utilized mainly for domestic, watering livestock, agricultural and mining purposes. The average estimated abstraction rate is 0.5-0.8 l/s per borehole.

### **Groundwater Levels**

The general water level on the site varies from 8.86 metres below ground level (upstream of the site) to 18 metres below ground level (downstream of the site).

### **2.9.1.7 Fauna**

#### **AVIFAUNA**

The mobility and in many case the adaptability of many bird species has meant that they more than any other vertebrate group have taken advantage of many of the changes we have brought about in the environment (North West Biodiversity Site Inventory and Database Development, 2003).

There are a total of 333 possible species for this area with 66 of them uncommon and the remainder common to this area. Twenty species are endemic and 33 near endemic. There are no endangered species but there are 9 vulnerable and 16 near threatened species. Seventy five species are migrants and specifically summer visitors. Some bird species and nests were observed on site. There were various burrows within the vertical walls of some of the old slimes dams that have been burrowed. It is expected that birds must have been responsible and use these as nesting sites. No direct observation was made to confirm this.



It seems as if this area supports a healthy avian community despite the old mining activities and effects thereof. Another adjacent site was visited in 2009 and various avian species were observed at this site visit. Species such as the *Streptopelia senegalensis*, *Euplectes progne*, *Myrmecocichla formicivora*, *Anthus cinnamomeus* and *Francolinus levaillantoides* were observed then. This is indicative that the greater area supports a healthy fauna community despite the fact that some natural area has been severely altered by all historical mining activities.

## **HERPETOFAUNA**

A total of 143 species of herpetofauna occur in the North West Province. This is approximately one third of the total number of species that occur in South Africa as a whole. This surprisingly high species richness is likely to be due to the high diversity of habitats found within the province. Despite the high species richness of the province, only five species are considered to be threatened from a conservation perspective.

### **Reptiles**

Reptile fauna form a significant component of terrestrial fauna in South Africa and play an important role in maintaining the functioning of ecosystems through nutrient cycling and population control of other terrestrial vertebrate species. Reptiles, in particular snakes, tend to be habitat generalists occurring wherever a suitable prey source can be found. The current site can therefore still support viable snake populations as long as a suitable prey source is present.

### **Amphibians**

Amphibians are important components of riparian systems. In these habitats they are the dominant predators of invertebrates, where many of which may impact directly, or indirectly on humans (as vectors of disease such as mosquitoes and bilharzias snails), or on the wildlife. Frogs are aptly referred to as bio-indicator species, whose abundance and diversity reflect the general health and well-being of an aquatic system.

Amphibians are both primary consumers and predators and therefore play an important role in the ecosystem. They consume large numbers of insects and are important in pest control. Tadpoles are natural monitors of water quality. Both adults and tadpoles are important links in the food web, being eaten by snakes, birds, mammals and other frogs. Certain species are expected to occur on the site.

Their absence however can be indicative of the pollution caused by the old mining activities and legacy thereof. No reptile or amphibian species were directly observed but is likely to occur on site considering the availability of various food and prey sources present.

## **ARTHROPODS**

Insects are essential in the various roles within ecosystems, e.g. nutrient cycling, plant pollination, maintenance of plant community composition and supporting insectivorous animals. Each insect forms part of a wider ecosystem, and if lost, the complexities and abundance of other life will be affected. Species such as wasps, butterflies, bees, ants, flies, crickets, beetles and other species are expected to occur naturally in the grasslands. For example, *Junonia hiertacebrene*, a butterfly species were observed.

Other arthropods that are also likely to occur are centipedes, millipedes, scorpions, spiders, ticks and mites.

## **Lepidoptera**

There are a number of species with red data status within the province. These species are associated with the Vaal Riparian Bush and the Palustrine wetlands associated with a riverine wetland. *Tuxentius melaenagrica* (Trimen & Bowke) is associated with the Vaal Riparian Bush and *Metisella meninx* (Trimen) is associated with the Palustrine Wetlands associated with riverine wetlands. A marsh habitat is one of the most easily disrupted habitats and the apparent plight of this species brings this sharply into focus. In recent times many of the marshy localities occupied by *M. meninx* in Gauteng have been destroyed. Care must be taken if any of these species are observed on site, it must be reported and the required actions taken.

## **MAMMALIA**

Most of the species, particularly larger species occurring in the area during historical times were lost because of hunting and farming practises together with human settlements. Only some species are currently present and the majority of them are small mammals and generalist species with a wide habitat range. Various sign of mammal species occurring on site were observed. These signs included spoor, burrows, mole mounds and droppings. Droppings of scrub hare (*Lepus saxatilis*) were abundant in the more open areas. There were also spoor of small mammals such as Steenbok (*Raphicerus campestris*) and Cape ground squirrel (*Xerus inauris*).

## **CONCLUSIONS AND RECOMMENDATIONS**

No species is only limited to this site with most of them being generalist and having a wide distribution range. However, reasonable measure must be put in place to protect endangered and protected species if they are encountered on this site.

Mining must not cause any disturbance outside the ecological footprint of the proposed mining site, thus ensuring a healthy ecological community adjacent to the mining site that can serve as source populations to facilitate the ecological successional processes in aid of the rehabilitation of the area. The developer of mining activities as proposed must be committed to enhancing the positive impacts of the development and to mitigate the negative impacts. It is believed that the biological integrity and functioning of the already severely disturbed area will be enhanced if an appropriate rehabilitation schedule is followed.

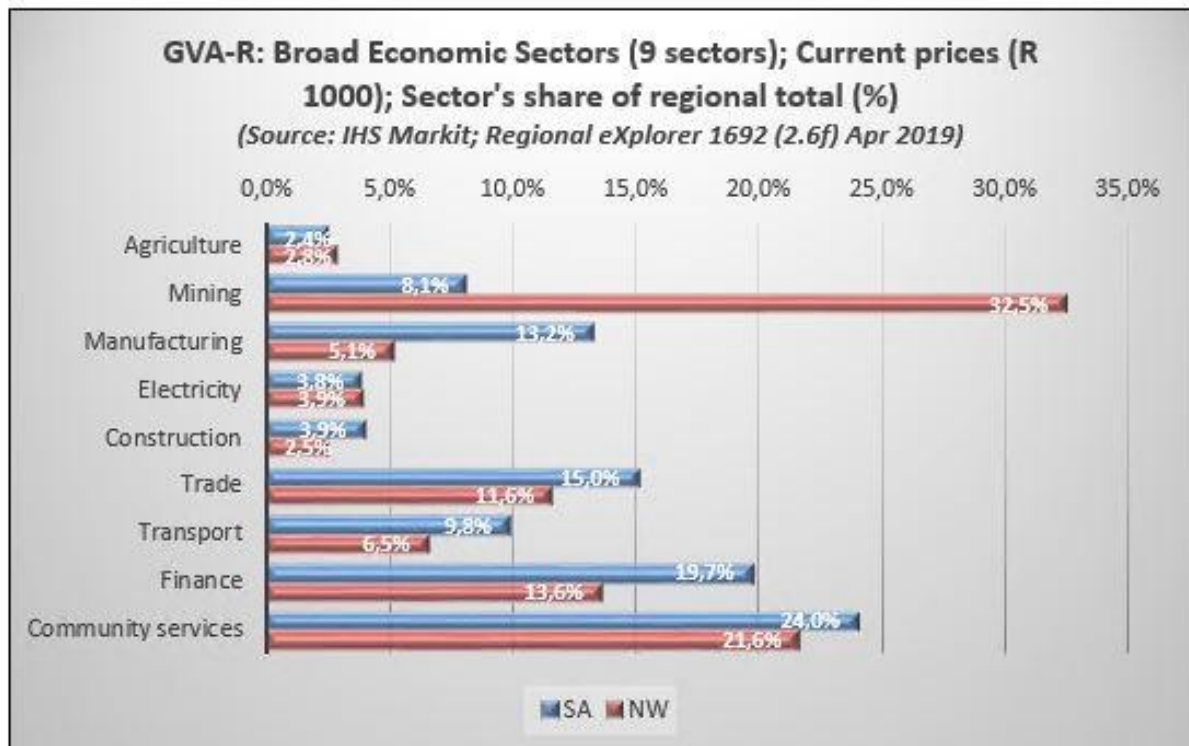
### **2.9.1.8 Social**

#### **Population**

The Potchefstroom Municipality, which encompasses several neighbouring settlements, had a population of 128,357 in the 2007 community survey. Of these, 69.6 percent were African, 27.0 percent were white, three percent were coloureds and 0.4 percent were Asian. However, the city itself and surrounding suburbs have a population of 43,448, of which 69.9 percent are white, 25.4 percent are African, 2.8 percent were coloured and 1.3 percent were Asian.

#### **North West Economy**

The economy of the North West Province is dominated by mining, contributing 32.5% to the provincial economy in 2018, followed by manufacturing at 5.1%, agriculture at 2.8%, and construction at 2.5%. The North West contributed 23.9% of national mining and 6.9% to national agriculture, but only 2.3% to manufacturing and 3.8% to construction. The graph below indicates the nine main sector contributions to the economy of the North West as compared to South Africa.



**Figure 9.4: Broad economic sectors; current prices; and sector's share of regional total.**

### **Agriculture and Agro-processing**

North West is considered to be an important contributor to the Southern African food basket with an estimated 43.9% of the province categorised as “arable” land. There are three distinct climate regions which allow a wide variety of agricultural activity. The drier western region is home to considerable cattle and game farming as well as hunting. The central and southern parts of the province tend to be dominated by maize and wheat farming, but also include the production of cash crops. The eastern and north-eastern region, on the other hand, receives a fair quantity of rainfall and therefore accommodates the cultivation of a variety of crops. More than 20% of South Africa’s maize crop is produced in this province. Other agricultural products produced are livestock (cattle, poultry and game), sunflower seeds and oils; nuts; citrus and tobacco.

## **Arts and Culture**

Arts and culture go beyond visual and emotional stimulation, it also has economic advantages and potential. The provincial Department of Arts, Culture, Sports and Recreational Affairs (dcata) has various programmes in place to promote art throughout the province

## **Tourism**

Total Tourism spend as a percentage of GDP (Current prices) contributed 7% to the North West Economy (2018) of which 64% was in the Bojanala District. 83% of the North West's tourism spend came from the six local municipalities of Rustenburg, Brits, Moses Kotane, Zeerust, Potchefstroom, Christiana /Bloemhof. Traditional tourism jobs in the North West are estimated at more than 33,000.

Cultural, natural and historical heritage products include the Taung Heritage Site, the Vredefort Dome Heritage Site and Mahikeng Capital City. Natural and wildlife attractions include 14 Nature Reserves of which Madikwe Game Reserve and Pilanesberg National Park are the most well known. Other attractions include Sun City and Hartbeespoort Dam with a host of adventure tourism opportunities.

## **Agro-processing and General Manufacturing**

A current priority is the establishment of an Agro-Industrial Park, including industrial and commercial facilities that are dedicated for production and business services to attract new businesses. It seeks to attain this by providing integrated infrastructure in one location and providing localised environmental controls that are specific to the needs of the industrial area, to:

- support the beneficiation of cattle through a world-class economy of scale abattoir, meat processing and packaging plant and cold storage facilities; and
- support the beneficiation of cattle hides through an economy of scale tannery, leather furniture manufacturing plant, leather footwear manufacturing plant, leather apparel manufacturing plant and shared warehousing.

The province also hosts manufacturing facilities that include automotive parts, non-metallic minerals, fabricated metals, food processing, soya protein, cereals and numerous other products

### **Mining and Mineral Beneficiation**

There are 300 active mines in the North West Province. The mining sector contributed 32.6% of regional GDP in 2017 amounting to R79 billion, with about 15.6% (133 976 jobs) of total employment in the province coming from mining.

Platinum group metals is the major product of the mining sector in the North West as the province contributed 40% of world's platinum and 55% of the platinum in South Africa in 2017. The North West also produces 70% of the dimension stone and granite, 32% of chrome and 20.7% of gold of South Africa. Other minerals produced in the province include diamonds, vanadium, slate, limestone, nickel, silica, manganese, phosphate, fluorspar, zinc and andalusite.

### **Energy and the Green Economy**

The province has a high potential for renewable energy opportunities from cogeneration, municipal waste conversion, biomass (converting alien invasive plants into energy) and solar technologies including off-grid energy for rural areas. Technologies that contribute to energy efficiency are also in demand as 63% of the energy of the province is consumed for mining activities.

### **Services**

Business and financial services contribute 13% to provincial GDP and account for 12% of employment. Significant opportunities for Business Process Outsourcing, Offshoring and contact centres (BPO&O) exist within the sector.

### **ICT**

ICT is regarded as a key enabler for economic growth and the province strives to develop world-class infrastructure to attract investment.

### **Research, Development and Innovation Support**

The province also offers Research, Development and Innovation support to prospective investors. The North West University (NWU) has two campuses in the province that boast a team of expert trade researchers.

An example of their expertise is that the World Trade Organisation (WTO) has awarded one of its seven research chairs on trade to the Trade Unit of the University. TRADE (an acronym for Trade and Development) is a research focus area at the North-West University (Potchefstroom Campus) specialising in the fields of international trade and economic development.

The University is also known for its engineering capabilities including mineral beneficiation and a hydrogen facility. The pharmaceutical and health faculties are also of international standard. Innovation and support to innovators are regarded as the second best in South Africa at this University.

Top 10 Positive Rankings for South Africa as per the WEF Global Competitiveness Rankings 2018/2019:

Out of 140 economies, South Africa ranked 67th (62nd in 2017) and received the following top 25 rankings on the indicated index components:

- 2nd: Market Capitalisation as a percentage of GDP – indicates the importance of the Stock Exchange
- 3rd: Insurance premium as a percentage of GDP – indicates the importance of the insurance industry
- 4th: Cost of starting a business as a percentage of GNI per capita (GNI = Gross National Income)
- 5th: Road connectivity
- 9th: Mobile-cellular telephone subscriptions per 100 pop
- 11th: Domestic credit to private sector as a percentage of GDP
- 11th: Conflict of interest regulation
- 14th: Labour tax rate
- 18th: On pillar 9 – Financial Systems
- 24th: Insolvency Regulatory Framework

The JB Marks Local Municipality is a Category B municipality situated within the Dr Kenneth Kaunda District in the North West Province. It is the largest municipality of three in the district, making up almost half its geographical area. It was established by the amalgamation of the Ventersdorp and Tlokwe City Council Local Municipalities in August 2016.

Gold mining is the dominant economic activity in the district, with Potchefstroom and Ventersdorp being the only exceptions. While Ventersdorp to the north-west of Potchefstroom focuses on agricultural activity, Potchefstroom's economic activity is driven by services and manufacturing. A big role-player in the provision of services in Potchefstroom is the world-class North-West University, which has its main campus in Potchefstroom.

Potchefstroom's industrial zone has many companies, focusing mainly on the industries of steel, food and chemicals, with big entities such as King Korn, Kynoch, Naschem and the Soya Protein Process (SPP) company. Within the city centre, the infrastructure of Potchefstroom supports roughly 600 businesses.

## **2.10 Final site map**

Please refer to Appendix C for the final site map at an appropriate scale. This map superimposes all the infrastructural activities proposed in this application against the surrounding communities.

## **2.11 Summary of the positive and negative implications and risks of the proposed activity and identified alternatives**

The positive and negative impacts associated with the Rietpoort518 IQ Mine are discussed below.

These are the cumulative negative impacts on the surrounding communities:

- Impacting the visual/aesthetic character of the site;
- Deteriorating the quality of air in the study area;
- Cumulative noise impacts; and
- Safety impacts to the communities.



There are several positive impacts associated with the Project include:

- employment,
- skills development, and
- local economic development,

## **2.12 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR**

The EMP Report seeks to achieve a required end state and describes how activities that have, or could have, an adverse impact on the environment will be mitigated, controlled and monitored. This EMP Report addresses the environmental impacts during the construction and operational phases of the Project. Due regard must be given to environmental protection during the entire Project. A number of environmental recommendations are therefore made to achieve environmental protection.

### **2.12.1 Environmental Objectives and Goals**

The environmental objectives for the construction and operational phases are to:

- Protect the biophysical environment from any impacts that cannot be mitigated and that will negatively impact on biodiversity on a regional scale;
- To ensure that activities are carried out so as to aid rehabilitation; and
- To ensure a safe environment for people to live in as is stipulated in the constitution.

### **2.12.2 Socio-economic Objectives and Goals**

The following socio-economic objectives should be attained during the construction, operation, and decommissioning phases of the Rietpoort518 IQ mining operations.

- Adhere to an open and transparent communication procedure with stakeholders at all times.
- Ensure that accurate and regular information is communicated to IAPs.
- Ensure that information is communicated in a manner which is understandable and accessible to IAPs.

- Enhance project benefits and minimise negative impacts through intensive consultation with stakeholders.
- Assemble adequate, accurate, appropriate, and relevant socio-economic information relating to the context of the operation.
- Ensure that recruitment strategies for the mine, prioritise the sourcing of local labour, and share in gender equality.
- Ensure an atmosphere of equality and non-discrimination among the workforce.
- Contribute to the development of functional literacy and numeracy among employees.
- Empower the workforce to develop skills that will equip them to obtain employment in other sectors of the economy.
- Ensure that decommissioning and retrenchments take place in a legally compliant and humane manner.

## **2.13 Reasoned Opinion as to whether the Proposed Activity should or should not be authorized**

### **2.13.1 Reasons why the Activity should be authorized or not**

The findings of the impact assessment have shown that the proposed Project may result in certain negative impacts to the environment; however, adequate mitigations measures have been included into the EMP Report to reduce the significance of all the identified negative impacts. Most negative impacts (minor and moderate) can be reduced through the implementation of mitigation measures. By reducing the mine's footprint area and subsequent infrastructure layout, Van Niekerk and Broers Vervoer CC can ensure the optimum operation of the Project as well as control the impacts to the surrounding communities. This authorisation should be granted for Van Niekerk and Broers Vervoer CC to continue with the mining operations at Rietpoort518 IQ Mine.

## **2.13.2 Conditions that must be included in the Authorization**

### **2.13.2.1 Specific Conditions to be included into the Compilation and Approval of EMPR**

In general, the conditions set out in this report for the Rietpoort518 IQ Mine should be adhered to. The following mitigation measure, considering the area surrounding the proposed mining operations, has been suggested and should be adhered to throughout the life of the Project.

- Restrict construction activities to daylight hours (06:00 – 18:00) and not during weekends and public holidays.

## **2.13.3 Rehabilitation Requirements**

The rehabilitation requirements, as set out in the rehabilitation plan is set out in Appendix E will be adhered to.

## **2.14 Period for which the Environmental Authorization is required**

Based on the Life of Mine (LoM) and considering various aspects that may delay mining operations, the period for which an authorisation is required is for a period of 5 years.

## **2.15 Undertaking**

The undertaking required to meet the requirements of this section is provided at the end of the EMP Report in Part B.

## **2.16 Financial Provision**

This financial provision assessment focused on the existing and proposed mining activities and was calculated by means of the Department of Mineral Resources' (DMR) standard method for assessment of mine closure. The cost for rehabilitation and closure of the proposed site according to the DMR Guideline is R 64, 893.98 for the full LoM.

### 2.16.1 Explain how the aforesaid amount was derived

The closure cost assessment is done in accordance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended and associated regulations. These Regulations provide that the holder of a Mining Permit must make full financial provision for rehabilitation of negative environmental impacts. The methodology used was based on the Department of Mineral Resources (DMR) *“Guideline Document for the Evaluation of the Quantum of Closure- related Financial Provision provided by a Mine”* (DME, 2005), as per the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

The financial provision must guarantee the availability of sufficient funds to undertake the following:

- Rehabilitation of the adverse environmental impacts of the listed or specified activities;
- Rehabilitation of the impacts of the prospecting or mining activities;
- Decommissioning and closure of the operations;
- Remediation of latent or residual environmental impacts which become known in the future;
- Removal of building structures and other objects; and
- Remediation of any other negative environmental impacts.

The closure cost assessment has been developed in line with these requirements. The DMR Guideline format makes use of a set template for which defined rates and multiplication factors are used. The multiplication and weighting factors which ultimately define the rate to be used are determined by amongst others the topography, the classification of the mine according to mineral mined, the risk class of the mine and its proximity to build up or urban areas.

The DMR Guideline Document for the Evaluation of the Quantum of Closure Related Financial Provision Provided by a Mine (DME, 2005), classifies a mine according to a number of factors which allows one to determine the appropriate weighting factors to be used during the quantum calculation.

The following factors are considered:

- The mineral mined;
- Environmental sensitivity of the mining area;
- Type of mining operation; and
- Geographic location.

The financial provision for the Life of Mine of Rietpoort Mine is calculated to be R 64, 893.98 based on the DMR method of calculation. The total cost includes contingencies, Preliminary and General (P&Gs) and is inclusive of VAT at 15%.

Table 16.1 presents the detailed forecast of the expected increase in financial provision as Van Niekerk and Broers Vervoer CC continues to progress through the construction phase into the operational phase in Year 2020. Van Niekerk and Broers Vervoer CC annually conducts a reassessment of their financial provision based on actual disturbances and it is recommended that this forecast be updated as the progress against the planned construction schedule can be verified.

**Table 16.1: The calculated Quantum**

Applicant: Evaluators:		VAN NIEKERK AND BROERS VERVOER CC (FS 10694 MP) Engedi Minerals and Energy (Pty) Ltd			Location: Date:		Potchefstroom Nov-19
No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	16	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	10	228	1	1	2280
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	336	1	1	0
3	Rehabilitation of access roads	m2	20	41	1	1	820
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	395	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	216	1	1	0
5	Demolition of housing and/or administration facilities	m2	15	455	1	1	6825
6	Opencast rehabilitation including final voids and ramps	ha	0.08	238697	1	1	19095.76
7	Sealing of shafts adits and inclines	m3	0	122	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	159131	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	198195	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	575653	1	1	0
9	Rehabilitation of subsided areas	ha		133249	1	1	0
10	General surface rehabilitation	ha	0.1	126059	1	1	12605.9
11	River diversions	ha	0	126059	1	1	0
12	Fencing	m	0	144	1	1	0
13	Water management	ha	0	47931	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0.3	16776	1	1	5032.8
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							46659.46
1	Preliminary and General		5599.1352	weighting factor 2 1			5599.1352
2	Contingencies			4665.946			4665.946
Subtotal 2							56924.54
VAT (15%)							7969.44
Grand Total						R	64,893.98

## **PART A: APPENDIXES**

**APPENDIX A:****THE CURRICULUM VITAE OF THE EAP/ECO****CURRICULUM VITAE****OF**

Tshimangadzo Mulaudzi

P.O Box 29567

Danhof

93120

Contacts: 0793626046 / 072 901 0990

E-mail: mulaudzit@engedime.com

Date of Birth: 26 March 1988

Nationality : South African

Languages : Speak and write (English and  
Tshivenda). GenderID : 8803265731082  
: Male

Driver's license: Code 10 (C1)

Health status : Excellent

**EDUCACTIONAL QUALIFICATION**

Institution : Litshovhu High School

Qualification : Grade 12 (Senior Certificate)

Major subject passed : Mathematics, Physical Science, Biology, Agric,  
English and Tshivenda all in Higher Grade.

Year : 2006

Institution : University of Venda

Qualification : BSc (Honours). Mining and Environmental Geology

Subject passed : See attached Academic Record

Year : 2011

**SUMMARY**

I am a Candidate in a possession of a BSc (Hons) in Mining and Geology with vast variety of experience in Geological, Geochemical, Geophysical Exploration, and Managing of a Manufacturing team. Currently I am working as a Consultant Geologist at Breeze Court Investments 47 (Pty) Ltd and



i have gained experience in Map Production (Using ArcGis), Identification of Minerals, and Applications for (Prospecting Right, Mining Right, and Mining Permit on DMR Samrad online portal), Petroleum applications (Compilation of EMP, EIA, Progress report, Environmental Performance Assessment, Closure application, and Mineral Laws Administration (knowledge of MPRDA, 2002, NWA, 1998, NEMA, 1998, NHRA, 1999, MHSA, 1996, Mining Charter, 2010 and Freedom Charter, 1955.)).

I have also worked with the small scale miners in the region of Northern Cape, Free State and North West helping them with the application for Mining permit, prospecting right and also attend the site inspection with the officials from Department Mineral Resources to help the small scale miners to comply with the legislation of the department.

I served at the Makhado Municipality for two (2) years under Local Economic Development as an Intern (**In Mining, Environmental and Geology Sectors**) and was attending seminars on Local Economic Development issues, interacting with the stake holders and helping the Small Micro Medium Enterprises (SMME's) to get funds from the sponsors.

#### EMPLOYMENT HISTORY

Job title	:	<b>Trainee Mine Geologist</b>
Name of organization	:	Agnes gold mine
Period	:	June 2010 – June 2011 (1 year)
Experiences and skills	:	Face mapping, stope observing, continuous sampling, Geological data capturing, Report writing and Geological mapping.
Job title	:	<b>Chief production, quality, and safety officer</b>
Name of Organization	:	Tshedza concrete art
Period	:	January 2012 – January 2013 (1 year, 1 month)
Experiences and skills	:	Managing high quality production and enforcing safe working Environment for workers
Job title	:	<b>LED Intern (in Mining, Environmental and Geology)</b>
Name of Organization	:	Makhado Local Municipality (North West)
Period	:	February 2013 – December 2014 (11 Months)
Experiences and skills	:	To formulate and implement measures and procedures to

		Facilitate for the development of SMME's. Implement Measures, processes, and procedures to attract the Investors, Facilitate and implement job creation projects and initiatives. Formulate, review and update LED plans in alignment with the Province and District Municipality. Facilitate and create Partnership with regard to service provider, trade exhibitions, Corporate and SMME's.
Job title	:	<b>Consultant Environmental Geologist and GIS specialist</b>
Name of organization	:	Breeze court investment (Pty) Ltd Geol& Min Consultants
Period	:	January 2014 – January 2015
Experiences and skills	:	Map Production (Using ArcGis), Identification of Minerals, and Applications for (Prospecting Right, Mining Right, and Mining Permit on DMR Samrad online portal), Technical Cooperation Permit, Reconnaissance Permit, Exploration Right, Production right (Petroleum applications) Compilation of EMP, EIA, Environmental Authorisation, Progress report, Environmental Performance Assessment, Closure application, and Mineral Laws Administration (Broad knowledge of MPRDA, 2002), Assisting small scale miners in the region of Northern Cape, North West, and Free State with application for Mining permit and Prospecting right, help them with compliance in terms of the MPRDA, 2002. Also do the site inspection with the officials from Department of Mineral Resources, and help the miners and management to comply with the statutory while operating and always work in a safe working conditions and enforce also that the act of one employee must be safer towards another employee to achieve zero harm.
Job title	:	<b>Consultant Environmental Geologist and GIS specialist</b>
Name of organization	:	Engedi Minerals and Energy (Pty) Ltd
Period	:	February 2015 – Present
Experiences and skills	:	Map Production (Using ArcGis), Identification of Minerals, and Applications for (Prospecting Right, Mining Right, and Mining Permit on DMR Samrad online portal), Technical Cooperation Permit, Reconnaissance Permit, Exploration Right, Production right (Petroleum applications) Compilation of EMP, EIA, Environmental Authorisation, Progress report, Environmental Performance Assessment, Closure application, and Mineral Laws Administration (Broad knowledge of MPRDA, 2002), Assisting small scale miners in the region of Northern Cape, North West, and Free State with

application for Mining permit and Prospecting right, help them with compliance in terms of the MPRDA, 2002. Also do the site inspection with the officials from Department of Mineral Resources, and help the miners and management to comply with the statutory while operating and always work in a safe working conditions and enforce also that the act of one employee must be safer towards another employee to achieve zero harm.

### Knowledge of Legislations and Acts

Constitution of the Republic of South Africa No.108 of 1996  
 Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)  
 Mineral and Petroleum Resources Development Act Amendments bill 15 of 2013  
 Mineral and Petroleum Resources Development Act Regulations  
 National Water Act, 1998 (Act 36 of 1998)  
 Mine Health and Safety Act, 1996 (Act 29 of 1996)  
 National Heritage Resources Act, 1999 (Act 25 of 1999)  
 National and Environmental Management Act, 1998 (Act 107 of 1998)  
 Public Finance Management Act, 1999 (Act 1 of 1999) and Act 29 of 1999 as Amended  
 2014 Environmental Impact Assessment Regulations  
 Mining Charter, 2010  
 Freedom Charter, 1955  
 Municipal System Act, 2000 (Act 32 of 2000)  
 Municipal Structure Act, 1998 (Act 117 of 1998) and as amended in Act 20 of 2002.

### COMPETENCIES

Ability to relate with people,  
 Ability to work independently and as a team,  
 Determination to succeed,  
 Strong leadership skills,  
 Proactive, resourceful, well organized and able to meet deadlines, and  
 Ability to communicate effectively

### EXTRAMURAL ACTIVITIES AND INTERESTS

I love reading newspapers, business literatures, watching discovery channels, News, writing and Public speaking, these help me share my ideas and opinion and to get my message across, and I love learning new things every day and I am eager to learn

## REFERENCES

Name : Mr P. Makoela  
 Name of organization : Agnes gold mine (Pty) Ltd  
 Position : Head of department of geology section  
 Contacts : 087 351 8304 (W), 076 311 7791 (C)

Name : Mr R.P. Mamphaga  
 Name of organization : Tshedza concrete art (Pty) Ltd  
 Position : Managing director  
 Contacts : 011 024 1167 (W), 082 857 3204 (C)

Name : Mr P. Netshivhuyu  
 Name of organization : Makhado Local Municipality  
 Position : Supervisor  
 Contacts : 072 718 3220(C)

Name : Mr A.J. Davids  
 Name of organization : Breeze Court Investments (Pty) Ltd  
 Position : Consultant Environmental Geologist  
 Contacts : 082 707 3239 (C)

**APPENDIX B:**

**LOCALITY MAP**

**APPENDIX C:**

**THE SITE PLAN**

APPENDIX D<sub>1</sub>:

KEY SHAREHOLDER CONSULTATION FORMS

CONSULTATION FORM – DMR REF.NO. NW 10694 EM

CONSULTATION FORM FOR COMMENTS AND CONCERNS OF  
INTERESTED AND AFFECTED PARTIES IN TERMS OF CHAPTER 6  
OF ENVIRONMENTAL IMPACT ASSESSEMENT REGULATION,  
2014.

I / we the undersigned individual (s) of (Place of stay /  
department) Owner of farm

Name: A. I. van Niekerk

Address: Schillbach 31

Parys

9585

Date: 14/8/2019

Hereby have no objections against the proposed mining permit application by Van Niekerk Boers  
Vervoer CC on the farm situated on portion 60 of farm Rietpoort 518 IQ, in the magisterial district of  
Potchefstroom, North West. Supporting:

No objection

Reasons of supporting:

Create job opportunities in Parys

Hereby have no objections against the proposed mining permit application by Van Niekerk Boers  
Vervoer CC on the farms situated on portion 60 of farm Rietpoort 518 IQ, in the magisterial district  
of Potchefstroom, North West. Objecting:

Reasons of objecting:



**CONSULTATION FORM – DMR REF.NO. NW 10694 EM**

**CONSULTATION FORM FOR COMMENTS AND CONCERNS OF INTERESTED AND AFFECTED PARTIES IN TERMS OF CHAPTER 6 OF ENVIRONMENTAL IMPACT ASSESSEMENT REGULATION, 2014.**

I / we the undersigned individual (s) of (Place of stay / department).....

Name: PIETER KEMP

Address: FARM RIETPOORT  
PORTION 11

REG DLV 518 IO NW.

Date: 14/08/2019



Hereby have no objections against the proposed mining permit application by Van Niekerk Boers Vervoer CC on the farm situated on portion 60 of farm Rietpoort 518 IQ, in the magisterial district of Potchefstroom, North West. Supporting: SUPPORTING.

Reasons of supporting:

- 1) JOB CREATION FOR LOCAL COMMUNITY
- 2) ECONOMIC INTEGRATION TO DISTRICT

Hereby have no objections against the proposed mining permit application by Van Niekerk Boers Vervoer CC on the farms situated on portion 60 of farm Rietpoort 518 IQ, in the magisterial district of Potchefstroom, North West. Objecting:

Reasons of objecting:

.....

P. KEMP  
0731486245



CONSULTATION FORM – DMR REF.NO. NW 10694 EM

**CONSULTATION FORM FOR COMMENTS AND CONCERNS OF  
INTERESTED AND AFFECTED PARTIES IN TERMS OF CHAPTER 6  
OF ENVIRONMENTAL IMPACT ASSESSEMENT REGULATION,  
2014.**

I / we the undersigned individual (s) of (Place of stay /  
department):

Name: Anton Weideman

Address: Rietpoort 61, 518 20  
PARYS Road,  
Potchefstroom.

Date: 15/8/2019.



Hereby have no objections against the proposed mining permit application by Van Niekerk Boers  
Vervoer CC on the farm situated on portion 60 of farm Rietpoort 518 IQ, in the magisterial district of  
Potchefstroom, North West. Supporting:

Supporting

Reasons of supporting:

Economic growth for the surrounding  
area. Job creation and employment  
opportunities.

Hereby have no objections against the proposed mining permit application by Van Niekerk Boers  
Vervoer CC on the farms situated on portion 60 of farm Rietpoort 518 IQ, in the magisterial district  
of Potchefstroom, North West. Objecting:

No objections

Reasons of objecting:

\_\_\_\_\_  
\_\_\_\_\_

A. Weideman.



15/8/2019

# APPENDIX D<sub>2</sub>:

## PROOF OF ADVERTISEMENT

**PEST CONTROL Professionals cc**

086 111 4103  
056 811 2022

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**38 Tuindienste**

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- ~ RUBBLE REMOVAL
- ~ TREE TRIMMING

**082 541 4190**

**KENNISGEWINGS • NOTICES**  
**KENNISGEWING AAN KREDITEUR:**

REGISTRASIESOMMER VAN BOEDDEL: 7218/2019  
VAN VAN DER WALLE  
VOORNAAM: ADRIAAN LOUIS  
GEBBOORTEDATUM: 11 AUGUSTUS 1941  
LAASTE ADRES: LOOFSSTRAAT 4, PARYS, 9585  
DATUM OORLEDE: 6 JULIE 2019  
MEESTERSKANTOOR: BLOEMFONTEIN

SKULDEISERS IN ROEGENOMDE BOEDDEL WORD VERSEK OOR HULLE VOORRENGE IN TE LEWEN EN SKULDENARE OM HULLE SKULDE TE BETAAL BY DIE ONDERGETEKENDE BINNE 30 DAE VANAF 27 SEPTEMBER 2019.

GETEKEN TE PARYS OP HIERDIE 17DE DAG VAN SEPTEMBER 2019.

EBEN KRIEK (ENGLYF)  
PROKUREUR  
KRIEKSTRAAT 17  
POSDUS 256  
PARYS  
9585

VERW.: MNR KRIEK/BLV/0465

**KENNISGEWINGS • NOTICES**  
**KENNISGEWING INGEVOLGE ARTIKEL 34(1) VAN WET NO 24 VAN 1936:**

LET DAAROP DAT **TWO PALMS TRUST** WAT HANDELDRIEF AS **PARYS SLAGPALE** BY ABATTOIRLAAN NR. 1, PARYS INDUSTRIELEGEBOED, PARYS, VRYSTAAT, 9585 VAN VOORNEME IS OM GENOEMDE BESIGHEID NA **XANTHUM TRADING 250 (EDMS) BPK** VAN OR TAMBOSTRAAT NR. 113, KLERKSDORP OP 1 NOVEMBER 2019 OOR TE DRA, VANAF WELKE DATUM DIE VERMELDE **XANTHUM TRADING 250 (EDMS) BPK** GENOEMDE BESIGHEID VIR EIE REKENING SAL BEDRIEF.

**NOTICE IN TERMS OF SECTION 34(1) OF ACT NO. 24 OF 1936**

TAKE NOTICE THAT **TWO PALMS TRUST**, CARRYING ON BUSINESS AS **PARYS ABATTOIR** AT 1 ABATTOIR AVENUE, PARYS INDUSTRIAL AREA, PARYS, FREE STATE 9585, INTENDS TO TRANSFER THE SAID BUSINESS TO **XANTHUM TRADING 250 (PTY) LTD** OF 113 OR TAMBO STREET, KLERKSDORP, ON 1 NOVEMBER 2019, FROM WHICH DATE THE SAID **XANTHUM TRADING 250 (PTY) LTD** WILL CARRY ON THE SAID BUSINESS FOR ITS OWN ACCOUNT.

HULP MET **SKULL**

082 321 1510  
**Elmarie Greeff**  
Geregistreerde Skuldbeerder (NCRDC1082)

### N.O.T.I.C.E.S

**KENNISGEWINGS • NOTICES**  
**KENNISGEWING**

IN DIE BOEDDEL VAN WYLF GERTRUIDA ANNA MAGDALENA MARIA STEENKAMP (IDENTITEITSNUMMER 440421 8086 88 7), GEBORE OP 23 APRIL 1941 IN DORPDE OP 27 JUNIE 2014, ONGETRUID, VAN DIE PLAAS ESPERANZA, DISTRIK VREDESDORP, PROVINSE VRYSTAAT, VREDESDORP, 9585.

BOEDDEL NR 4152/2018

INGEVOLGE ARTIKEL 35(1) VAN WET 66 VAN 1960 WORD BEKENT KENNIS GEGEE DAT DUKKATE VAN DIE EERSTE INDELAAS LIGWIDAGS- EN OESTREKKEWEEKSING IN ROEGENOMDE BOEDDEL IN DIE KANTOOR VAN DIE MEESTER VAN DIE RECHT GEDRONSOP BLOEMFONTEIN EN DIE LANDOOR VREDESDORP GEDRONSOP: IN TYDPERE VAN 21 DAE VANAF 27 SEPTEMBER 2019 TOT INKAS LE VAN ALLE PERSONE WAT DAARBY BELANG HET.

INDEN BINNE GENOEMDE TYDPERE GEEN BEWAAR: DAARTEEN BY DIE BETROKKE MEESTER INORDEN WORD NIE GAAN DIE EKSKEUTRISIE OOR TOT DIE UTHETALING. INGEVOLGE GEMELDE REKENING.

GETEKEN TE PARYS OP HIERDIE 17DE DAG VAN SEPTEMBER 2019.

MNR COETZEE DSU  
PROKUREUR VIR EKSKEUTRISIE  
KRIEKSTRAAT 25  
POSDUS 256  
PARYS  
9585  
(VERW.: MNR B/COETZEE (DORC/SMAT/976))

**JOU BESIGHEID**

**KON HIER GEWEE HET**

Media24

2014 (AS AMENDED), TOGETHER WITH SECTION 12 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 1988 (ACT NO 49 OF 1988) AS AMENDED

NAME OF APPLICANT: MASHUHI RESOURCES (PTY) LTD

**NATURE OF ACTIVITY**

APPLICATION FOR AMENDMENT OF AN ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO 107 OF 1998), AS AMENDED, AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS 2014

MASHUHI RESOURCES (PTY) LTD HAS APPLIED FOR SECTION 182 TO AMEND COAL IN ITS EXISTING PROSPECTING RIGHT ON THE FARMS SANIES RUST 26, PARNIA 18 AND KLEINPOORT 132. THE PROPERTIES ARE SITUATED IN THE ADMINISTRATIVE DISTRICT OF PARYS, FREE STATE PROVINCE. EXISTING RIGHT INCLUDE THE FOLLOWING MINERALS: SAND, LIMESTONE AND DOLOMITE

APPLICATION REFERENCE NUMBER FS 50/1/1/2/ 16482 PR

**REGISTRATION OF INTERESTED AND AFFECTED PARTIES**

IN TERMS OF REGULATIONS 42 & 43 OF THE EIA REGULATION PUBLISHED IN GOVERNMENT NOTICE NO. 583 OF 06 DECEMBER 2014 THE PUBLIC IS INVITED TO REGISTER AS INTERESTED AND AFFECTED PARTIES (IAPPS) EXPRESS IN THEIR COMMENT AND PARTICIPATE IN THE PUBLIC PARTICIPATION PROCESS (PPP). PLEASE SUBMIT YOUR WRITTEN CONCERN WITHIN 30 DAYS OF THIS NOTICE. DRAFT BAR WILL BE AVAILABLE FOR COMMENT FOR 30 DAYS

REGISTRATION, QUERIES AND WRITTEN COMMENT SHOULD BE SUBMITTED TO:

POSTAL ADDRESS: 202 SOUTHDORING, 40 VAN DALSEN, PRETORIA WEST, WEST PARK, 0018  
EMAIL: ashwin@ashwin.co.za  
TELEPHONE: 011 409 0816/012 752 5063  
FAX: 011 409 0800  
CONTACT PERSON: NDIKWANI MAVHUNGA

**NOTICE – DMR REF. NO. NW 10694 EM**

**APPLICATION FOR MINING PERMIT TO MINE FOR STONE AGGREGATE: GRAVEL AND SAND SITUATED ON PORTION 60 OF FARM RIETPOORT 518 BQ, IN THE MAGISTERIAL DISTRICT OF POTCHEFSTROOM, NORTH WEST PROVINCE**

Notice of public participation process is hereby given of the intent of **VAN NIEKERK BOERS VERVOER CC** to mine sand and stone aggregate gravel on the above mentioned property. An application for mining permit and Environmental Authorisation was simultaneously lodged in terms of Section 27 of the Mineral Petroleum Resources Development Act, 2002 (Act No 28 of 2002) read together with Chapter 4 of the 2014 Environmental Impact Assessment Regulation, and it has been accepted and acknowledged by the Department of Mineral Resources, North West Province.

In terms of the 2014 Environmental Impact Assessment Regulation, Listing notice 1, activity no. 21 promulgated in terms of Section 27(5) and 44 of the national Environmental Management Act (Act No 107 of 1998 as amended), read together with Chapter 6 of Environmental Impact Assessment regulation, 2014. The landowner or lawful occupier of the land, as well as any interested and affected parties must be notified and consulted regarding the proposed operation. The basic assessment report (BAR) must be submitted to the department of mineral resources and the copies of the draft BAR is available at the Parys library for reviewing and comments. You're hereby invited to address any comment to support / objection to the proposed operation to **ENGEDI MINERALS AND ENERGY (PTY) LTD** on / or before the **25 October 2019**. Please feel free to contact the undersigned on the following contact details:

Physical address: 15 Barnes Street, Langebaan building, Bloemfontein, 9301  
Email: info@engedtime.com  
Phone: 051 430 1748  
Fax: 086 556 2568

If no correspondence is received from you within the stated period, it will be accepted that you have no objections against the proposed mining activities.

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**056 817 2267**  
**Paulina.Barda@**

## **NOTICE – DMR REF. NO. NW 10694 EM**

### **APPLICATION FOR MINING PERMIT TO MINE FOR STONE AGGREGATE: GRAVEL AND SAND SITUATED ON PORTION 60 OF FARM RIETPOORT 518 IQ, IN THE MAGISTERIAL DISTRICT OF POTCHEFSTROOM, NORTH WEST PROVINCE**

Notice of public participation process is hereby given of the intent of **VAN NIEKERK BOERS VERVOER CC** to mine sand and stone aggregate gravel on the above mentioned property. An application for mining permit and Environmental Authorisation was simultaneously lodged in terms of Section 27 of the Mineral Petroleum Resources Development Act, 2002 (Act No 28 of 2002) read together with Chapter 4 of the 2014 Environmental Impact Assessment Regulation, and it has been accepted and acknowledged by the Department of Mineral Resources, North West Province.

In terms of the 2014 Environmental impact Assessment Regulation, Listing notice 1, activity no. 21 promulgated in term of Section 27(5) and 44 of the national Environmental Management Act (Act No 107 of 1998 as amended), read together with Chapter 6 of Environmental Impact Assessment regulation, 2014. The landowner or lawful occupier of the land, as well as any interested and affected parties must be notified and consulted regarding the proposed operation. The basic assessment report (BAR) must be submitted to the department of mineral resources and the copies of the draft BAR is available at the Parys library for reviewing and comments. You're hereby invited to address any comment to support / objection to the proposed operation to **ENGEDI MINERALS AND ENERGY (PTY) LTD** on / or before the **25 October 2019**. Please feel free to contact the undersigned on the following contact details:

*Physical address: 15 Barnes Street, Langebaan building, Bloemfontein, 9301*

*Email: [info@engedime.com](mailto:info@engedime.com)*

*Phone: 051 430 1748*

*Fax: 086 556 2568*

If no correspondence is received from you within the stated period, it will be accepted that you have no objections against the proposed mining activities.



**APPENDIX D<sub>3</sub>:**

**PROOF OF SITE NOTICES**







## APPENDIX D<sub>4</sub>:

### CONSULTATIONS WITH AUTHORITIES

#### Consultation Process for Mining Permit application for van Niekerk Broers Vervoer CC – NW 10694 EM

rose@engedime.com

Sent: Mon 2020/02/24 10:16 AM

To: 'pmokaila@nwp.gov.za'

Cc: 'mulaudzit'

Message | Revised BAR\_EMPr\_Van Niekerk\_ NW 10694 EM.pdf (2 MB)

Good morning,

Please kindly see the attached a copy of a Basic Assessment Report (BAR) for your attention, as you are one of the stakeholders that administer the law regarding matters affecting agriculture and the environment. We ask that you review this document and provide any comments regarding the proposed Mining Permit application.

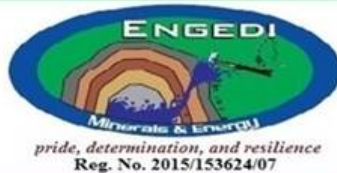
Thank you.

Kind regards,

KR Seboko (Environmental Consultant)

15 Barnes Street, Westdene,  
Langebaan Building  
Bloemfontein, South Africa  
9301

P.O.Box 29567  
Danhof  
9310



Cell: 079 362 6046 (+27)

Tel: 051 430 1748 (+27)

Fax: 086 556 2568 (+27)

email: info@engedime.com  
mulaudzit@engedime.com  
www.engedime.com


**Consultation Process for Mining Permit application for van Niekerk Broers Vervoer CC – NW 10694 EM**

rose@engedime.com

Sent: Mon 2020/02/24 10:19 AM

To: 'Atlaletsi@nwpg.gov.za'

Cc: 'mulaudzit'

Message |  Revised BAR\_EMPr\_Van Niekerk\_ NW 10694 EM.pdf (2 MB)

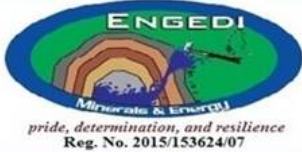
Good morning,

Please kindly see hereby attached a copy of a Basic Assessment Report (BAR) for your attention, as you are one of the stakeholders that administer the law regarding matters affecting the environment. We ask that you review this document and provide any comments regarding the proposed Mining Permit application.

Thank you.

Kind regards,

KR Seboko (Environmental Consultant)

<p>15 Barnes Street, Westdene, Langebaan Building Bloemfontein, South Africa 9301</p> <p>P.O.Box 29567 Danhof 9310</p>		<p>Cell: 079 362 6046 (+27)</p> <p>Tel: 051 430 1748 (+27) Fax: 086 556 2568 (+27)</p> <p>email: info@engedime.com mulaudzit@engedime.com www.engedime.com</p>
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**Consultation Process for Mining Permit application for van Niekerk Broers Vervoer CC – NW 10694 EM**

rose@engedime.com

Sent: Mon 2020/02/24 10:17 AM

To: 'Moduku.Khwene@drdlr.gov.za'

Cc: 'mulaudzit'

Message |  Revised BAR\_EMPr\_Van Niekerk\_ NW 10694 EM.pdf (2 MB)


Good morning,

Please kindly see the attached a copy of a Basic Assessment Report (BAR) for your attention, as you are one of the stakeholders that administer the law regarding matters affecting land reform and access to land-use. We ask that you review this document and provide any comments regarding the proposed Mining Permit application. Please advise whether there are any land claims on the farm.

Thank you.

Kind regards,

KR Seboko (Environmental Consultant)

<p>15 Barnes Street, Westdene, Langebaan Building Bloemfontein, South Africa 9301</p> <p>P.O.Box 29567 Danhof 9310</p>		<p>Cell: 079 362 6046 (+27)</p> <p>Tel: 051 430 1748 (+27) Fax: 086 556 2568 (+27)</p> <p>email: info@engedime.com mulaudzit@engedime.com www.engedime.com</p>
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## Consultation Process for Mining Permit application for van Niekerk Broers Vervoer CC – NW 10694 EM

rose@engedime.com

Sent: Mon 2020/02/24 10:28 AM

To: 'munman@kaundadistrict.gov.za'

Cc: 'mulaudzit'

Message | Revised BAR\_EMPr\_Van Niekerk\_ NW 10694 EM.pdf (2 MB)

Good morning,

Please kindly see the attached a copy of a Basic Assessment Report (BAR) for your attention, as you are one of the stakeholders that administer the law regarding matters affecting the Dr. Kenneth Kaunda District Municipality. We ask that you review this document and provide any comments regarding the proposed Mining Permit application.

Thank you.

Kind regards,

KR Seboko (Environmental Consultant)

15 Barnes Street, Westdene,  
Langebaan Building  
Bloemfontein, South Africa  
9301

P.O.Box 29567  
Danhof  
9310



Cell: 079 362 6046 (+27)

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mulaudzit@engedime.com  
www.engedime.com

## Consultation Process for Mining Permit application for van Niekerk Broers Vervoer CC – NW 10694 EM

rose@engedime.com

Sent: Mon 2020/02/24 10:26 AM

To: 'mmsecretary@jbmarks.gov.za'

Cc: 'mulaudzit'

Message | Revised BAR\_EMPr\_Van Niekerk\_ NW 10694 EM.pdf (2 MB)

Good morning,

Please kindly see the attached a copy of a Basic Assessment Report (BAR) for your attention, as you are one of the stakeholders that administer the law regarding matters affecting the JB Marks Local Municipality. We ask that you review this document and provide any comments regarding the proposed Mining Permit application.

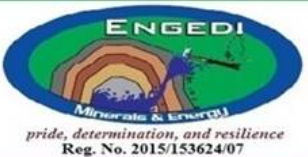
Thank you.

Kind regards,

KR Seboko (Environmental Consultant)

15 Barnes Street, Westdene,  
Langebaan Building  
Bloemfontein, South Africa  
9301

P.O.Box 29567  
Danhof  
9310



Cell: 079 362 6046 (+27)

Tel: 051 430 1748 (+27)

Fax: 086 556 2568 (+27)

email: info@engedime.com  
mulaudzit@engedime.com  
www.engedime.com



## Consultation Process for Mining Permit application for van Niekerk Broers Vervoer CC – NW 10694 EM

rose@engedime.com

Sent: Mon 2020/02/24 10:21 AM

To: 'maumelad@dws.gov.za'

Cc: 'lobakengc@dws.gov.za'; 'mulaudzit'

Message | Revised BAR\_EMPr\_Van Niekerk\_ NW 10694 EM.pdf (2 MB)


Good morning,

Please kindly see hereby attached a copy of a Basic Assessment Report (BAR) for your attention, since you are one of the stakeholders that administer the law regarding matters affecting the environment. We ask that you review this document and provide any comments regarding the proposed Mining Permit application.

Thank you.

Kind regards,

KR Seboko (Environmental Consultant)

15 Barnes Street, Westdene, Langebaan Building Bloemfontein, South Africa 9301  P.O.Box 29567 Danhof 9310		Cell: 079 362 6046 (+27)  Tel: 051 430 1748 (+27) Fax: 086 556 2568 (+27)  email: info@engedime.com mulaudzit@engedime.com www.engedime.com
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## Consultation Process for Mining Permit application for van Niekerk Broers Vervoer CC – NW 10694 EM

rose@engedime.com

Sent: Mon 2020/02/24 10:22 AM

To: 'mosianem@nwpg.gov.za'

Cc: 'mulaudzit'

Message | Revised BAR\_EMPr\_Van Niekerk\_ NW 10694 EM.pdf (2 MB)

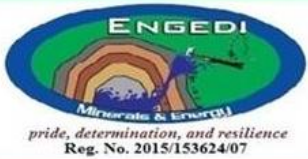
Good morning,

Please kindly see hereby attached a copy of a Basic Assessment Report (BAR) for your attention, as you are one of the stakeholders that administer the law regarding matters affecting heritage. We ask that you review this document and provide any comments regarding the proposed Mining Permit application.

Thank you.

Kind regards,

KR Seboko (Environmental Consultant)

15 Barnes Street, Westdene, Langebaan Building Bloemfontein, South Africa 9301  P.O.Box 29567 Danhof 9310		Cell: 079 362 6046 (+27)  Tel: 051 430 1748 (+27) Fax: 086 556 2568 (+27)  email: info@engedime.com mulaudzit@engedime.com www.engedime.com
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## **PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

## 1. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

**Table 1: Details of the EAP**

EAP:	Tshimangadzo Mulaudzi		
Professional affiliation/registration:	SACNASP (Pr.Nat.Sci.) Registration no.: 114576		
Company:	Engedi Minerals and Energy (Pty) Ltd		
Physical address:	15 Barnes Street, Langebaan building, Bloemfontein 9301		
Postal address:	P.O Box 29567, Danhof		
Postal code:	9310	Cell:	079 362 6046
Telephone:	051 430 1748	Fax:	086 556 2568
E-mail:	<a href="mailto:info@engedime.com">info@engedime.com</a>		

## 2. ENVIRONMENTAL IMPACT STATEMENT

The major environmental impacts, which are likely to result from this activity have been assessed and included in this report. The impact assessment illustrates that there is a potential for both negative and positive impacts that may result from the proposed operation of the gravel mining.

Through the implementation of suitable mitigation measures associated with each of the possible impacts, the effect thereof can to a large extent be mitigated to acceptable/low levels. Section 2.11 above identifies and assesses the identified impacts, with ratings. Section 2.12 also provides mitigation measures that are pragmatic and can be undertaken by the Contractor. These mitigation measures must be adhered to, to ensure that the desired outcome of the mitigation is realised – as least impacted upon as possible. There should be no activities within the demarcated no-go areas.

### **3. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY**

Please refer to Part A: Section 2.4 for the table of aspects.

### **4. COMPOSITE MAP**

The composite plan can be found in Part A: Appendix C.

### **5. DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS**

#### **5.1 Determination of Closure Objectives**

The Project has the following objectives:

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

#### **5.2 The Process for managing any environmental damage, pollution, and ecological degradation as a result of undertaking a listed activity**

The approved EMP Report and associated management options are intended to minimise environmental risk as far as possible. Should, however, circumstances lead to unacceptable risks, emergency systems and procedures have been designed and will be implemented in the case of an emergency to prevent or minimise the consequential environmental damage. The environmental emergency contingency plan addresses any reasonably anticipated failure (most probable risk) for the entire mining area and focuses on incidents that could cause environmental emergencies.

The most crucial aspect of the emergency system is the identification and communication of the emergency to the appropriate persons. Consequently, the names of the appropriate contact person together with their contact numbers would be prominently displayed around the facility. The contact details will be updated on a regular basis. First-party employees (such as security, safety superintendents, mine overseers, environmental officers) will be trained to respond to the responsible personnel in the event of an emergency.

The environmental emergency contingency plan covers the following risks:

- Fall of Ground;
- Explosions;
- Fires;
- Inundation of workings (including gas, water and mud);
- Transport (surface busses);
- Ventilation fan; and
- Labour Unrest.

## 6. IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

ACTIVITY	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<b>Air Quality</b>				
Site clearing of infrastructure footprint	Construction	<ul style="list-style-type: none"> <li>○ Application of dust suppressant or watering of the dirt roads an exposed areas;</li> <li>○ The area of disturbance at all times must be kept to a minimum and no unnecessary clearing or digging must occur; and</li> <li>○ Drop heights when loading and offloading material should be minimised.</li> </ul>	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) NAAQS, 2009 Dust Control Regulations, 2013	During Construction
Construction of access roads and storm water drains /	Construction	<ul style="list-style-type: none"> <li>○ Application of dust suppressant or watering of the dirt roads an</li> </ul>	National Environmental Management: Air Quality Act,	During Construction

berms		<p>exposed areas;</p> <ul style="list-style-type: none"> <li>○ The area of disturbance at all times must be kept to a minimum and no unnecessary clearing or digging must occur; and</li> <li>○ Drop heights when loading and offloading material should be minimised.</li> </ul>	<p>2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009 Dust Control Regulations, 2013</p>	
Generation of power using diesel generators (10 MW)	Construction	<ul style="list-style-type: none"> <li>○ Ensure generators are working at optimal conditions; and</li> <li>○ Fitting of gas scrubbers on generators;</li> </ul>	<p>National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009 Dust Control Regulations, 2013</p>	During Construction
Crushing	Operational	<ul style="list-style-type: none"> <li>○ Application of dust suppressant or watering of the dirt roads and exposed areas; and</li> <li>○ Enclosure for crushers to</li> </ul>	<p>National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009 SANS 10103:2008 Dust Control</p>	During Operations

		contain dust and noise levels.	Regulations, 2013	
Hauling: Internal Mine Roads, and Access Roads	Operational	<ul style="list-style-type: none"> <li>○ Application of dust suppressant or watering of the dirt roads and exposed areas;</li> <li>○ Set maximum speed limits and have these limits enforced.</li> </ul>	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) NAAQS, 2009 Dust Control Regulations, 2013	During Operations
Stockpiling: Waste Rock Berm, Waste Rock Stockpile	Operational	<ul style="list-style-type: none"> <li>○ Application of dust suppressant or watering of the dirt roads and exposed areas;</li> <li>○ Minimise drop heights when loading and offloading material; and</li> <li>○ Set maximum speed limits and have these limits enforced.</li> </ul>	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) NAAQS, 2009 Dust Control Regulations, 2013	During Operations



Generation of Power using Diesel Generators	Operational	<ul style="list-style-type: none"> <li>○ Ensure generators are working at optimal conditions; and</li> <li>○ Fitting of gas scrubbers on generators;</li> </ul>	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) NAAQS, 2009 Dust Control Regulations, 2013	During Operations
Demolition of Infrastructure	Decommissioning	<ul style="list-style-type: none"> <li>○ The dismantling area disturbed must be kept to a minimum;</li> <li>○ Drop heights when offloading materials for rehabilitation must be minimised; and</li> <li>○ Limit demolition activities to non-windy days.</li> <li>○ Rehabilitation in accordance with rehabilitation plan</li> <li>○ Dust suppression on exposed surfaces.</li> </ul>	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) NAAQS, 2009 Dust Control Regulations, 2013	During Decommissioning
Rehabilitation	Decommissioning	<ul style="list-style-type: none"> <li>○ Drop heights should be</li> </ul>	National Environmental Management: Air Quality Act,	During Decommissioning

		<p>minimised when offloading materials for rehabilitation;</p> <p>Limit rehabilitation activities to non-windy days;</p> <ul style="list-style-type: none"> <li>○ Rehabilitation in accordance with rehabilitation plan; and</li> <li>○ Dust suppression on exposed surfaces.</li> </ul>	<p>2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009 Dust Control Regulations, 2013</p>	
<b>Noise</b>				
Site clearance and vegetation removal	Construction	<ul style="list-style-type: none"> <li>○ Restricting construction activities to 06:00 – 18:00 and not during weekends and public holidays;</li> <li>○ Mining related machinery and vehicles must be included in a planned maintenance schedule and services carried out accordingly;</li> <li>○ Switching off equipment when</li> </ul>	<ul style="list-style-type: none"> <li>○ National Noise Control Regulations, R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)</li> <li>○ The South African National Standards SANS</li> </ul>	During Construction

		<p>not in use; and</p> <ul style="list-style-type: none"> <li>○ Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence.</li> </ul>	<p>10103:2008 “The measurement and rating of environmental noise with respect to annoyance and to speech communication” (SANS 10103:2008).</p>	
Operational activities such as mining process, stockpiling and power generation	Operation	<ul style="list-style-type: none"> <li>○ Locating of diesel generator away from noise sensitive receptors;</li> <li>○ Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence.</li> <li>○ Mining related machinery and vehicles must be included in a planned maintenance schedule and services carried out accordingly; and</li> <li>○ Switching off equipment when not in use</li> </ul>	<ul style="list-style-type: none"> <li>○ National Noise Control Regulations, R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)</li> <li>○ The South African National Standards SANS 10103:2008 “The measurement and rating of environmental noise with respect to annoyance and</li> </ul>	During Operation

			to speech communication” (SANS 10103:2008).	
Demolish and remove site infrastructure	Decommissioning	<ul style="list-style-type: none"> <li>Restricting decommissioning activities to 06:00 – 18:00 and not during weekends and public holidays;</li> <li>Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence;</li> <li>Mining related machinery and vehicles must be included in a planned maintenance schedule and services carried out accordingly; and</li> <li>Switching off equipment when not in use.</li> </ul>	<ul style="list-style-type: none"> <li>National Noise Control Regulations, R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)</li> <li>The South African National Standards SANS 10103:2008 “The measurement and rating of environmental noise with respect to annoyance and to speech communication” (SANS 10103:2008).</li> </ul>	During Decommissioning
<b>Visuals</b>				

Site clearance and vegetation removal for storm water drains	Construction	<ul style="list-style-type: none"> <li>○ Vegetation should only be removed when and where necessary;</li> <li>○ Topsoil should only be removed when and where necessary;</li> <li>○ Topsoil stockpiles should be vegetated with grasses so as to blend into the surrounding landscape;</li> <li>○ Limit footprint area of topsoil stockpiles where possible;</li> <li>○ Limit the height of topsoil stockpiles to 4 – 5 metres;</li> <li>○ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and</li> <li>○ Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation.</li> </ul>	<ul style="list-style-type: none"> <li>○ IFC Performance Standard 3</li> <li>○ IFC Environmental, Health and Safety Guidelines</li> </ul>	During Construction
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Mine development requires drilling and blasting	Construction	Apply dust suppression techniques to limit the dust dispersion from blasting.	<ul style="list-style-type: none"> <li>o IFC Performance Standard 3</li> <li>o IFC Environmental, Health and Safety Guidelines</li> </ul>	During Construction
Mine development requires infrastructure development	Construction	<ul style="list-style-type: none"> <li>o Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established.</li> </ul>	<ul style="list-style-type: none"> <li>o IFC Performance Standard 3</li> <li>o IFC Environmental, Health and Safety Guidelines</li> </ul>	During Construction
Access roads, and storm water drains / berms require infrastructure development)	Construction	<ul style="list-style-type: none"> <li>o Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established.</li> </ul>	<ul style="list-style-type: none"> <li>o IFC Performance Standard 3</li> <li>o IFC Environmental, Health and Safety Guidelines</li> </ul>	During Construction
Crushing	Operational	Apply dust suppression techniques to limit the dust dispersion from crushing.	<ul style="list-style-type: none"> <li>o IFC Performance Standard 3</li> <li>o IFC Environmental, Health and Safety Guidelines</li> </ul>	During Operation
Hauling	Operational	Roads should be wetted	<ul style="list-style-type: none"> <li>o IFC Performance Standard</li> </ul>	During Operation

		frequently by means of a water browser to suppress dust	3 ○ IFC Environmental, Health and Safety Guidelines	
Stockpiling	Operational	<ul style="list-style-type: none"> <li>○ Ensure the waste rock berm does not exceed the proposed height of 10 m;</li> <li>○ Ensure the waste rock stockpile do not exceed the proposed height of 25 m;</li> <li>○ Apply dust suppression techniques to limit the dust dispersion from stockpiles;</li> <li>○ Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation; and</li> <li>○ Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained.</li> </ul>	○ IFC Performance Standard 3 ○ IFC Environmental, Health and Safety Guidelines	During Operation

Mining Processes	Operational	Down lighting must be implemented to minimise light pollution around the infrastructure area at night.	<ul style="list-style-type: none"> <li>○ IFC Performance Standard 3</li> <li>○ IFC Environmental, Health and Safety Guidelines</li> </ul>	During Operation
Rehabilitation of disturbed areas	Decommissioning	<ul style="list-style-type: none"> <li>○ Apply dust suppression techniques to limit the dust from the demolition area; and</li> <li>○ Limit the quantity of rubble stored on site</li> </ul>	<ul style="list-style-type: none"> <li>○ IFC Performance Standard 3</li> <li>○ IFC Environmental, Health and Safety Guidelines</li> </ul>	During Decommissioning
Demolition and removal of all infrastructure	Decommissioning	<ul style="list-style-type: none"> <li>○ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;</li> <li>○ Spread topsoil over the rehabilitated area;</li> <li>○ Ensure that surface water and drainage lines are rehabilitated to create a free-draining</li> </ul>	<ul style="list-style-type: none"> <li>○ IFC Performance Standard 3</li> <li>○ IFC Environmental, Health and Safety Guidelines</li> </ul>	During Decommissioning



		<p>topography;</p> <ul style="list-style-type: none"><li>○ Re-vegetate the rehabilitated areas; and</li><li>○ Ensure all mitigation measures outlined in the Closure and Rehabilitation Reports are conducted.</li></ul>		
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## 7. IMPACT MANAGEMENT OUTCOMES

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Site clearing of infrastructure footprint	Dust generation	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads and exposed areas;  <input type="checkbox"/> The area of disturbance at all times must be kept to minimum and no unnecessary clearing or digging must occur; and  <input type="checkbox"/> Drop heights when loading and offloading material should be minimised.	During Construction	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Construction of access / haul	Reduction in air quality	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt	During Construction	National Environmental Management: Air

roads and storm water drains/ berms			<p>roads and exposed areas;</p> <ul style="list-style-type: none"> <li>□ The area of disturbance at all times must be kept to a minimum and no unnecessary clearing, digging or scraping must occur; and</li> <li>□ The drop heights when loading onto trucks and at tipping points should be minimised.</li> </ul>		<p>Quality Act, 2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009</p> <p>Dust Control Regulations, 2013</p>
Generation of power using diesel generators (10 MW)	Reduction in air quality due to gaseous emissions	Air Quality	<ul style="list-style-type: none"> <li>□ Ensure generators are working at optimal conditions;</li> <li>□ Fitting of gas scrubbers on generators; and</li> <li>□ Fitting electrostatic precipitators on generators.</li> </ul>	During Construction	<p>National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009</p> <p>Dust Control Regulations, 2013</p>

Crushing	Airborne dust leads to reduced air quality	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads and exposed areas; and  <input type="checkbox"/> Enclosure for crushers to contain dust and noise levels.	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Hauling: Internal Mine Roads, Haul Roads and Access Roads	Reduction in the quality of air	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads and exposed areas; and  <input type="checkbox"/> Set maximum speed limits and have these limits enforced	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Stockpiling: Waste Rock Berm, Waste Rock Stockpile	Reduction in the quality of air	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads and exposed areas;	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

			<input type="checkbox"/> Minimise drop heights when loading and offloading material; and  <input type="checkbox"/> Set maximum speed limits and have these limits enforced.		NAAQS, 2009  Dust Control Regulations, 2013
Generation of Power using Diesel Generators	Reduction in air quality due to gaseous emissions	Air Quality	<input type="checkbox"/> Ensure generators are working at optimal conditions; and  <input type="checkbox"/> Fitting of gas scrubbers on generators.	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Demolition of Infrastructure	Reduce air quality due to dust emission	Air Quality	<input type="checkbox"/> The dismantling area disturbed must be kept to a minimum;  <input type="checkbox"/> Drop heights when offloading materials for rehabilitation must be minimised; and	During Decommissioning	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009

			<input type="checkbox"/> Limit demolition activities to non-windy days.  <input type="checkbox"/> Rehabilitation in accordance with the rehabilitation plan  <input type="checkbox"/> Dust suppression on exposed surfaces.		Dust Control Regulations, 2013
Site clearance and vegetation removal	Noise will emanate from the machinery and vehicles operating during the construction activities	Ambient Noise	<input type="checkbox"/> Restricting construction activities to daylight hours (06:00 –18:00) and not during weekends and public holidays;  <input type="checkbox"/> Mining related machinery and vehicles must be included in a planned maintenance schedule and services carried out accordingly;  <input type="checkbox"/> Switching off equipment when not in	During Construction	National Noise Control Regulations,R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act,1989 (Act 73 of 1989)  The South African National Standards SANS 10103:2008 “The measurement and rating of

			<p>use; and</p> <p><input type="checkbox"/> Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence.</p>		<p>environmental noise with respect to annoyance and to speech communication” (SANS 10103:2008).</p>
<p>Operational activities such as mining process, hauling, stockpiling and power generation</p>	<p>Noise from the machinery and vehicles operating crushing circuit, hauling of ore on surface, continuous stockpiling and shaping of waste rock dump and over burden stockpiles as well the use of generators</p>	<p>Ambient Noise</p>	<p><input type="checkbox"/> Locating of diesel generator away from noise sensitive receptors;</p> <p><input type="checkbox"/> Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence;</p> <p><input type="checkbox"/> Mining related machinery and vehicles must be included in a planned maintenance schedule and services carried out accordingly; and</p>	<p>During Operation</p>	<p>National Noise Control Regulations, R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)</p> <p>The South African National Standards SANS 10103:2008 “The measurement and rating of environmental noise with respect to annoyance and to</p>

			<input type="checkbox"/> Switching off equipment when not in use.		speech communication" (SANS 10103:2008).
Demolish and remove site infrastructure	Noise from the machinery and vehicles operating during the decommissioning activities.	Ambient Noise	<input type="checkbox"/> Restricting decommissioning activities to daylight hours (06:00– 18:00) and not during weekends and public holidays;  <input type="checkbox"/> Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence;  <input type="checkbox"/> Mining related machinery and vehicles must be included in a planned maintenance schedule and services carried out accordingly; and	During Decommissioning	<p>National Noise Control Regulations,R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act,1989 (Act 73 of 1989)</p> <p>The South African National Standards SANS 10103:2008 "The measurement and rating of environmental noise with respect to annoyance and to speech communication" (SANS 10103:2008).</p>



			<input type="checkbox"/> Switching off equipment when not in use.		
Mine development results in change of land use from agriculture to mining	The change of land use from agriculture to mining will have a negative visual impact on the receiving environment	Visual	Ensure all mitigation measures outlined in the Closure and Rehabilitation Reports (2016) are conducted.	During Construction	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines
Site clearance and vegetation removal for storm water drains	Infrastructure area will become noticeable to nearby receptors as it will contrast the surrounding areas.	Visual	<input type="checkbox"/> Vegetation should only be removed when and where necessary;  <input type="checkbox"/> Topsoil should only be removed when and where necessary;  <input type="checkbox"/> Topsoil stockpiles should be vegetated with grasses so as to blend into the surrounding landscape;  <input type="checkbox"/> Limit footprint area of topsoil stockpiles	During Construction	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines

			<p>where possible;</p> <p><input type="checkbox"/> Limit the height of topsoil stockpiles to 4 – 5 metres;</p> <p><input type="checkbox"/> Apply dust suppression techniques to limit the dust dispersion from stockpiles;</p> <p><input type="checkbox"/> Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation; and</p> <p><input type="checkbox"/> Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained.</p>		
Access / haul roads and storm water	The construction of surface infrastructure will have a negative	Visual	<input type="checkbox"/> Surface infrastructure should	During Construction	IFC Performance Standard 3

drains / berms require infrastructure development)	visual impact on the receiving environment		<p>be painted natural hues so as to blend into the surrounding landscape where possible;</p> <p><input type="checkbox"/> Pylons and metal structures should be galvanised, where possible so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used;</p> <p><input type="checkbox"/> Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; and</p> <p><input type="checkbox"/> If construction</p>		IFC Environmental, Health and Safety Guidelines
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			activities take place at night, down lighting must be implemented to minimise light pollution.		
Crushing	Dust from the waste rock crusher and mine crushers will also have a negative visual impact.	Visual	☐ Apply dust suppression techniques to limit the dust dispersion from crushing.	During Operation	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines
Hauling	Dust from vehicular activity will also have a negative visual impact	Visual	☐ Roads should be wetted frequently by means of a water bowser to suppress dust	During Operation	IFC Environmental, Health and Safety Guidelines
Stockpiling	Stockpiling of material on the waste rock berm, waste rock stockpile will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact	Visual	☐ Ensure the waste rock berm does not exceed the proposed height of 10 m;  ☐ Ensure the waste rock stockpile, high grade ore stockpile and low grade ore	During Operation	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines

			<p>stockpile do not exceed the proposed height of 25 m;</p> <p><input type="checkbox"/> Apply dust suppression techniques to limit the dust dispersion from stockpiles;</p> <p><input type="checkbox"/> Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation; and</p> <p><input type="checkbox"/> Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained.</p>		
Mining Processes	Infrastructure and mine area lighting will be visible at night resulting in a negative visual impact. These visual impacts will	Visual	<p><input type="checkbox"/> Down lighting must be implemented to minimise light pollution around the</p>	During Operation	<p>IFC Performance Standard 3</p> <p>IFC Environmental,</p>

	occur for the life of the Project.		infrastructure area at night.		Health and Safety Guidelines
Demolition and removal of all infrastructure	Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment	Visual	<input type="checkbox"/> Apply dust suppression techniques to limit the dust from the demolition area;  <input type="checkbox"/> Limit the quantity of rubble stored on site.	During Decommissioning	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines
Rehabilitation of disturbed areas	Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment	Visual	<input type="checkbox"/> Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;  <input type="checkbox"/> Spread topsoil over the rehabilitated area;  <input type="checkbox"/> Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;  <input type="checkbox"/> Re-vegetate the	During Decommissioning	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines

			rehabilitated areas; and <input type="checkbox"/> Ensure all mitigation measures outlined in the Closure and Rehabilitation Reports are conducted.		
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## 8. IMPACT MANAGEMENT ACTIONS

Table B8.1: description of impact management actions.

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Site clearing of infrastructure footprint	Dust generation	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads and exposed areas;  <input type="checkbox"/> The area of disturbance at all times must be kept to a minimum and no unnecessary clearing or digging must occur; and  <input type="checkbox"/> Drop heights when loading and offloading material should be minimised.	During Construction	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Construction of access / haul	Reduction in air quality	Air Quality	<input type="checkbox"/> Application of dust suppressant or	During Construction	National Environmental



roads and storm water drains/ berms			<p>watering of the dirt roads and exposed areas;</p> <p>□ The area of disturbance at all times must be kept to a minimum and no unnecessary clearing, digging or scraping must occur; and</p> <p>□ The drop heights when loading onto trucks and at tipping points should be minimised.</p>		<p>Management: Air Quality Act, 2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009</p> <p>Dust Control Regulations, 2013</p>
Generation of power using diesel generators (10 MW)	Reduction in air quality due to gaseous emissions	Air Quality	<p>□ Ensure generators are working at optimal conditions; and</p> <p>□ Fitting of gas scrubbers on generators.</p>	During Construction	<p>National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)</p> <p>NAAQS, 2009</p> <p>Dust Control Regulations, 2013</p>

Crushing	Airborne dust leads to reduced air quality	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads  and exposed areas; and  <input type="checkbox"/> Enclosure for crushers to contain dust and noise levels.	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Hauling: Internal Mine Roads, Haul Roads and Access Roads	Reduction in the quality of air	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads and exposed areas; and  <input type="checkbox"/> Set maximum speed limits and have these limits enforced	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Stockpiling: Waste Rock Berm, Waste Rock Stockpile, High Grade and Low Grade Ore	Reduction in the quality of air	Air Quality	<input type="checkbox"/> Application of dust suppressant or watering of the dirt roads and exposed areas;	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

			<input type="checkbox"/> Minimise drop heights when loading and offloading material; and  <input type="checkbox"/> Set maximum speed limits and have these limits enforced.		NAAQS, 2009  Dust Control Regulations, 2013
Generation of Power using Diesel Generators	Reduction in air quality due to gaseous emissions	Air Quality	<input type="checkbox"/> Ensure generators are working at optimal conditions; and  <input type="checkbox"/> Fitting of gas scrubbers on generators.	During Operations	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009  Dust Control Regulations, 2013
Demolition of Infrastructure	Reduce air quality due to dust emission	Air Quality	<input type="checkbox"/> The dismantling area disturbed must be kept to a minimum;  <input type="checkbox"/> Drop heights when offloading materials for rehabilitation must be minimised; and	During Decommissioning	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)  NAAQS, 2009

			<input type="checkbox"/> Limit demolition activities to non-windy days.  <input type="checkbox"/> Rehabilitation in accordance with the rehabilitation plan  <input type="checkbox"/> Dust suppression on exposed surfaces.		Dust Control Regulations, 2013
Operational activities such as mining process, hauling, stockpiling and power generation	Noise from the machinery and vehicles operating crushing circuit, hauling of ore on surface, continuous stockpiling and shaping of waste rock dump and over burden stockpiles as well the use of generators	Ambient Noise	<input type="checkbox"/> Locating of diesel generator away from noise sensitive receptors;  <input type="checkbox"/> Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence;  <input type="checkbox"/> Mining related machinery and vehicles must be included in a planned maintenance schedule	During Operation	National Noise Control Regulations, R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)  The South African National Standards SANS 10103:2008 "The measurement and rating of

			and services carried out accordingly; and  <input type="checkbox"/> Switching off equipment when not in use.		environmental noise with respect to annoyance and to speech communication” (SANS 10103:2008).
Demolish and remove site infrastructure	Noise from the machinery and vehicles operating during the decommissioning activities.	Ambient Noise	<input type="checkbox"/> Restricting decommissioning activities to daylight hours (06:00– 18:00) and not during weekends and public holidays;  <input type="checkbox"/> Reduce the number of vehicles and machinery operating near the perimeter to reduce noise emissions fence;  <input type="checkbox"/> Mining related machinery and vehicles must be included in a planned maintenance schedule and services carried	During Decommissioning	National Noise Control Regulations, R.154 of 10 January 1992 (the Noise Regulations) in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)  The South African National Standards SANS 10103:2008 “The measurement and rating of environmental noise with respect to annoyance and to speech

			out accordingly; and  <input type="checkbox"/> Switching off equipment when not in use.		communication” (SANS 10103:2008).
Mine development results in change of land use from agriculture to mining	The change of land use from agriculture to mining will have a negative visual impact on the receiving environment	Visual	Ensure all mitigation measures outlined in the Closure and Rehabilitation Reports (2016) are conducted.	During Construction	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines
Site clearance and vegetation removal for storm water drains	Infrastructure area will become noticeable to nearby receptors as it will contrast the surrounding areas.	Visual	<input type="checkbox"/> Vegetation should only be removed when and where necessary;  <input type="checkbox"/> Topsoil should only be removed when and where necessary;  <input type="checkbox"/> Topsoil stockpiles should be vegetated with grasses so as to blend into the surrounding landscape;  <input type="checkbox"/> Limit footprint area	During Construction	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines

			<p>of topsoil stockpiles where possible;</p> <p><input type="checkbox"/> Limit the height of topsoil stockpiles to 4 – 5 metres;</p> <p><input type="checkbox"/> Apply dust suppression techniques to limit the dust dispersion from stockpiles;</p> <p><input type="checkbox"/> Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation; and</p> <p><input type="checkbox"/> Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained.</p>		
Access / haul roads,	The construction of surface	Visual	<input type="checkbox"/> Construction of	During Construction	IFC Performance

storm water drains / berms require infrastructure development)	infrastructure will have a negative visual impact on the receiving environment		vegetation berms must be implemented close to surface infrastructure so that vegetation can be established.		Standard 3  IFC Environmental, Health and Safety Guidelines
Crushing	Dust from the waste rock crusher and mine crushers will also have a negative visual impact.	Visual	☐ Apply dust suppression techniques to limit the dust dispersion from crushing.	During Operation	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines
Hauling	Dust from vehicular activity will also have a negative visual impact	Visual	☐ Roads should be wetted frequently by means of a water bowser to suppress dust	During Operation	IFC Environmental, Health and Safety Guidelines
Stockpiling	Stockpiling of material on the waste rock berm, waste rock stockpile, high grade ore stockpile and low grade ore stockpile will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact	Visual	☐ Ensure the waste rock berm does not exceed the proposed height of 10 m;  ☐ Ensure the waste rock stockpile, high grade ore stockpile	During Operation	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines



			<p>and low grade ore stockpile do not exceed the proposed height of 25 m;</p> <p><input type="checkbox"/> Apply dust suppression techniques to limit the dust dispersion from stockpiles;</p> <p><input type="checkbox"/> Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation; and</p> <p><input type="checkbox"/> Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained.</p>		
Mining Processes	Infrastructure and mine area lighting will be visible at night resulting in a negative visual	Visual	<input type="checkbox"/> Down lighting must be implemented to minimise light pollution	During Operation	IFC Performance Standard 3

	impact. These visual impacts will occur for the life of the Project.		around the infrastructure area at night.		IFC Environmental, Health and Safety Guidelines
Demolition and removal of all infrastructure	Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment	Visual	<input type="checkbox"/> Apply dust suppression techniques to limit the dust from the demolition area;  <input type="checkbox"/> Limit the quantity of rubble stored on site.	During Decommissioning	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines
Rehabilitation of disturbed areas	Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment	Visual	<input type="checkbox"/> Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;  <input type="checkbox"/> Spread topsoil over the rehabilitated area;  <input type="checkbox"/> Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;	During Decommissioning	IFC Performance Standard 3  IFC Environmental, Health and Safety Guidelines

			<input type="checkbox"/> Re-vegetate the rehabilitated areas; and  <input type="checkbox"/> Ensure all mitigation measures outlined in the Closure and Rehabilitation Reports are conducted.		
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## 9. FINANCIAL PROVISION

The closure cost assessment is done in accordance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended and associated regulations.<sup>6</sup> These Regulations provide that the holder of a mining permit must make full financial provision for rehabilitation of negative environmental impacts. The methodology used was based on the Department of Mineral Resources (DMR) *“Guideline Document for the Evaluation of the Quantum of Closure- related Financial Provision provided by a Mine”* (DME, 2005), as per the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

The financial provision must guarantee the availability of sufficient funds to undertake the following:

- Rehabilitation of the adverse environmental impacts of the listed or specified activities;
- Rehabilitation of the impacts of the prospecting or mining activities, including the pumping and treatment of polluted or extraneous water;
- Decommissioning and closure of the operations;
- Remediation of latent or residual environmental impacts which become known in the future;
- Removal of building structures and other objects; and
- Remediation of any other negative environmental impacts.

The closure cost assessment has been developed in line with these requirements. The regulations for the determination of financial provision for mine rehabilitation and closure were promulgated on 20 November 2015 (GN R1147) under the NEMA, as amended. This report and associated review of the financial provision did not, however, address any of the requirements of these regulations. This report is based on the Regulations applicable as at 1 December 2014.

However, in accordance with the Financial Provisioning Regulations, 2015, the holder within 15 months after the coming into effect of the Regulations and annually thereafter, must ensure a review, assessment and adjustment of the approved financial provision in accordance with the Financial Provisioning Regulations, 2015. An audit of the Environmental Authorisation and update of the approved EMP may also be required.

## **10.DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION**

### **10.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under regulation 22 (2) (d)**

The objective of the rehabilitation plan is to ensure activities associated with the infrastructure located within the mining footprint area will be designed to prevent, minimise or mitigate adverse long-term environmental and social impacts and create a self-sustaining ecosystem.

The original rehabilitation plan identified the following objectives:

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

The above mentioned rehabilitation and closure objectives set out in the rehabilitation plan are applicable to the mine infrastructure and layout.

### **10.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties**

All the closure objectives based on the post mining land use was consulted with I&APs during the PPP as part of the process. These objectives were also previously shared with I&APs during the PPP undertaken.

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

Based on the proposed mine layout plan approximately 3 ha of the total surface area is expected to be disturbed by the mining activities. The rehabilitation specially pertaining to this report is attached as Appendix E.

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

The closure objectives are regarded as guidelines for what the rehabilitation plan should entail. The rehabilitation plan discussed in this application, details how rehabilitation will need to be undertaken and will include management of soil resources and placement of soil once mining is completed.

In addition to this, the rehabilitation plan also contains information associated with re-shaping of the landforms (topography plan), replacement of soils, re-vegetation of the landscape; and monitoring and maintenance. The successful rehabilitation of the site will ensure the rehabilitated area is free draining, erosion free and produce sustainable vegetation as per the closure objectives stated above.

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

The financial provision was assessed to accommodate the mine layout. The closure liability only focused on the proposed mining activities and the cost for rehabilitation and closure of the proposed site for the LoM according to the DMR Guideline format is R 64, 893.98.

## **10.6 Confirm that the financial provision will be provided as determined**

Van Niekerk and Broers Vervoer CC will update its financial provision annually and will contribute to a trust fund or other form of financial guarantee for rehabilitation provision, as required in terms of Section 24P of NEMA, as amended. Contributions to the fund will be made in accordance with the requirements of tax legislation and policy and this will be made up in a manner acceptable to the DMR.

## **11. MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT**

Mechanisms for monitoring compliance with and performance assessment against the EMP Report.

### **11.1 Monitoring of Impact Management Actions**

Below is a summary of the monitoring method for air quality and noise as these aspects are directly affected by this application.

#### **11.1.1 Air Quality Monitoring**

Dust monitoring networks in the area should be maintained during the Project. As and when necessary, Van Niekerk and Broers Vervoer CC can undertake a regular review and update of these networks.

#### **11.1.2 Noise Monitoring**

Noise meter recordings shall be taken quarterly and bi-annually to measure noise levels at various sample points in accordance with the SANS 10103:2008. The results obtained will be measured against the rating limits prescribed in the SANS 10103:2008 guidelines to assess the impact of ambient noise at the mine. Noise measurement should be taken for a period not less than 10 min at each location.

### **11.2 Monitoring and Reporting Frequency**

#### **11.2.1 Air Quality**

Dust samples from the buckets should be collected monthly and analysed and a monthly report should be compiled to monitor fall-out dust from the construction activities and mining operations.

### **11.2.2 Noise**

Once it is established that the mitigation measures have decreased the specific noise levels from the mining activities, the noise monitoring should be carried out on a bi-annual basis thereafter throughout the life of mine. A report must be compiled quarterly/ bi-annual, depending on the intervals of the monitoring programme then submitted to management to ascertain compliance with the required standards.

### **11.3 Responsible Persons**

The Environmental Manager (or person in a similar capacity) must act as the responsible person in charge of undertaking the various monitoring programs.

### **11.4 Time Period for Implementing Impact Management Actions**

The impacts associated with the activities to be undertaken at Rietpoort Mine were assessed for the construction, operational and decommissioning phases of this Project. Therefore, the time period for implementing the proposed mitigation measures may be continual through a specific phase or throughout the LOM.



### 11.5 Mechanism for Monitoring Compliance

An annual performance audit (both internal and external) should be conducted by the Mine and an external consultant, respectively.

ACTIVITIES	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
All project activities	Air quality	Dust deposition rates will be expressed in the units of mg/m <sup>2</sup> day over a 30-day average.  Standards South Africa (SANS1929:2011) has published two important standards in terms of air quality underlying limits for dust fallout rates.	It is the role and responsibility of an appointed environmental officer to collect samples	Monthly
	Noise	Noise levels from the proposed mining activities should not measure above the measured baseline level at each mentioned community.	It is the role and responsibility of an appointed environmental officer to collect the noise samples and assess them against the SANS 10103:2008 guidelines.	Quarterly/ Bi-annual

## **12.INDICATE THE FREQUENCY OF THE SUBMISSION OF THEPERFORMANCE ASSESSMENT REPORT**

It is recommended that a performance assessment is submitted to the Regional Manager every two years.

## **13.ENVIRONMENTAL AWARENESS PLAN**

### **13.1 Manner in which the Applicant intends to inform his Employees of any Environmental Risk which may result from their Work**

The purpose of the Environmental Awareness Plan is to outline the methodology that will be used to inform Van Niekerk and Broers Vervoer CC staff of environmental risks that may result from the working environment, and the manner in which these risks will be dealt with to reduce the potential degradation of the environment.

#### **13.1.1 Communication Strategy**

The communication of the environmental risks for each phase of the Project will take place at local training centres with personnel from both the administrative and mine worker sectors of the mine.

#### **13.1.2 Management Sector**

The communication of the environmental risks to the administrative sector will occur through a one-day workshop. This workshop will seek to explain the following necessary actions: Firstly each aspect will be described, as well as their significance. Risks associated with each aspect will be discussed to ensure that an understanding of how each action of the project may impact on the environment.

The mitigation of the environmental risk will be elaborated on. It is important that each person understands these management strategies as it ensures that the impact on the environment is kept to a minimum. Data collection regarding each aspect will also be explained to ensure that each aspect is monitored according to those protocols specified by the mine and DME. Along with data collection the reporting of findings will be discussed.

This workshop will take place before the construction phase begins thus ensuring a full understanding of the project and its associated environmental risks before any mining begins. The course will be repeated at the beginning of the operational phase and the material will be integrated in the induction for new personnel.

#### **13.1.3 Mine Workers Sector**

The mine workers sector will attend an induction course to ensure that each person is aware of the environmental risks associated with the project. This induction will form part of the health and safety induction.

This induction course will explain and describe the relevant phases of the project as well as those environmental risks that may occur during these phases. The environmental risks of each aspect as well as the mitigation will be elaborated on.

As a method of gaining an understanding of the relevant risks, a play or industrial theatre will be performed to explain lay issues and the employees will be encouraged to rehearse and act out a play of their own. These workshops will be conducted in English as well as one of the local languages and translators will be provided where necessary. The course will take place prior to mining commencing, thus ensuring an understanding of the mine workings and risks.

#### **13.1.4 Evaluation of the Environmental Awareness Plan**

The evaluation of the Environmental Awareness Plan will be conducted by either the management or qualified sub-contractors chosen by the mine. This evaluation will entail the auditing of the activities in both the construction and operation phases. Evaluation is also observed through the raising of environmental issues and the frequency thereof which are highlighted at regular meetings scheduled at the mine.

### **13.2 Manner in which Risks will be dealt with in order to avoid Pollution or the Degradation of the Environment**

The EMP Report and associated management options are intended to minimise environmental risk as far as possible. Should, however, circumstances lead to unacceptable risks, emergency systems and

procedures have been designed and will be implemented in the case of an emergency to prevent or minimise the consequential environmental damage. The environmental emergency contingency plan addresses any reasonably anticipated failure (most probable risk) for the entire mining area and focuses on incidents that could cause environmental emergencies.

The most crucial aspect of the emergency system is the identification and communication of the emergency to the appropriate persons. Consequently, the names of the appropriate contact person together with their contact numbers would be prominently displayed around the facility. The contact details will be updated on a regular basis. First-party employees (such as security, safety superintendents, mine overseers, environmental officers) will be trained to respond to the responsible personnel in the event of an emergency.

The environmental emergency contingency plan covers the following risks:

- Fall of Ground;
- Explosions;
- Fires;
- Inundation of workings (including gas, water and mud);
- Transport (surface busses);
- Ventilation fan; and
- Labour Unrest.

#### **14. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY**

The financial provision for the environmental rehabilitation and closure requirements of mining operations is governed by NEMA, as amended, which provides in Section 24P that the holder of a mining permit must make financial provision for rehabilitation of negative environmental impacts. The rehabilitation plan and financial provision will be reviewed annually.

## 15. MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON, INCLUDING

- a) Monitoring of Impact Management Actions
- b) Monitoring and reporting frequency
- c) Responsible persons
- d) Time period for implementing impact management actions
- e) 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 Establishment activities (fencing, signage, access formation, etc.)	Loss of vegetation, Habitat destruction, Visual scarring, Soil erosion	Visual checks, monitoring incidences of non-compliance, recording of key parameters	Appointed Contractor	At start and as and when required. Record incidences of non-compliance monthly.
Excavation	Dust emissions, Drainage disruption, Slope instability, Visual Scarring,	visual checks, monitoring incidences of non-compliance, recording of	Appointed Contractor	At start and as and when required. Record incidences of non-compliance monthly.

	Soil erosion, Destruction of heritage resource	key parameters		
Waste Disposal and Material storage	Soil contamination, Water pollution, Increased risk of fire	Visual checks, monitoring incidences of non-compliance, recording of key parameters	Appointed Contractor	At start and as and when required. Record incidences of non-compliance monthly.
Material handling, hauling and transportation	Dust, Increased risk of accidents, Noise, Soil contamination	Visual checks, monitoring incidences of non-compliance, recording of key parameters	Appointed Contractor	At start and as and when required. Record incidences of non-compliance monthly.
Removal of infrastructure & equipment and re-shaping of proposed mining	Noise, Dust, Soil contamination, Disruption of surface drainage	Visual checks, monitoring incidences of non-compliance, recording of key parameters	Appointed Contractor	At start and as and when required. Record incidences of non-compliance monthly.
Community and labour relations management	Community conflicts and tensions, Increase risk of fire, Reduced security on area, Improved employment rates, Improved skills	Visual checks, monitoring incidences of non-compliance, recording of key parameters	Appointed Contractor	At start and as and when required. Record incidences of non-compliance monthly.

In complying with Appendix 1 (2)(d)(i)(ii) of the 2014 NEMA EIA Regulations, as amended, this section specifically relates to the impacts and risk identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed, cause irreplaceable loss of resources, and that can be avoided, managed or mitigated. The impact assessment aims at identifying potential environmental impacts (both positive and negative impacts) and evaluating these impacts in terms of their significance. The following table contains information on the impacts associated with the activity and the methods used to assess the impacts are in section 6.

### 15.1 Impact Assessment Methodology

In assessing the identified impacts, the following criteria and key was utilized for the proposed activity.

<b>Extent of impact being either:</b>	Immediate (the site and immediate surrounds);
	Local (adjacent residential areas);
	Regional (North West);
	National (Country wide);
	International
<b>Duration of impact being either:</b>	Low (where natural, cultural and social functions and processes are not affected);
	Medium (where the affected environment is altered but natural, cultural and social functions and processes can continue);
	High (where the affected environment is altered but natural, cultural and social functions and processes are altered to the extent that it will temporarily or permanently cease);

<b>Probability of impact being either:</b>	Low probability (possibility of impact occurring is low);
	Probable (where there is a distinct possibility that it will occur);
	Highly probable (where the impact is most likely to occur);
	Definite (where the impact will occur);
<b>Significance of impact:</b>	Low (where natural, cultural and social functions and processes are slightly affected);
	Medium (where the affected environment is altered but natural, cultural and social functions and processes can continue);
	High (where the affected environment is altered but natural, cultural and social functions and processes are altered to the extent that it will temporarily or permanently cease);
<b>Reversibility Rating:</b>	Irreversible (the activity will lead to an impact that is permanent);
	Partially reversible (The impact is reversible to a degree e.g. acceptable re-vegetation measures can be implemented but the pre-impact species composition and/or diversity may never be attained. Impacts may be partially reversible within a short (during construction), medium (during operation) or long term (following decommissioning) timeframe);
	Fully reversible (The impact is fully reversible, within a short, medium or long term timeframe);
In all instances (-) indicates a perceived negative / adverse impact and (+) is a perceived positive / beneficial impact.	



### **15.1.1 The positive and negative impacts that the proposed activity and alternatives will have on the environment and the community**

Two alternatives are presented: Alternative A is the proposal to mine the site and thereby level the excessive gravel on site; and Alternative B is the do-nothing option where the site will not be mined and levelled.

The negative impacts of Alternative A can be adequately mitigated through the implementation of the recommendations contained in the Basic Assessment Report and Environmental Management Programme. Alternative B, the “No-Go Option” means the excessive gravel will remain put.

## 15.2 Mitigation Measures

Mitigation measures have been provided in the Impact Tables below.

**Table 3.1: Impact Assessment Summary Table**

IMPACT	ALTERNATIVE	NATURE OF IMPACT	EXTENT	DURATION	PROBABILITY	REVERSIBILITY	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
<b>Loss Of Vegetation</b>	Alternative 1	Negative	Local	Short term	Probable	Reversible	Low (-)	Very low (-)
	Alternative 2	Neutral	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Waste Management Impacts</b>	Alternative 1	Negative	Local	Local and long term	Probable	Irreversible	Very low (-)	Very low (-)
	Alternative 2	Neutral	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Dust Impacts</b>	Alternative 1	Negative	Local	Short term	Highly probable	Reversible	Medium (-)	Very low (-)
	Alternative 2	Neutral	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Increase In Ambient Noise Level</b>	Alternative 1	Negative	Local	Short term	Highly probable	Reversible	Low (-)	Very Low (-)
	Alternative 2	Neutral	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

<b>Hazardous Substance Spills From Machines</b>	Alternative 1	Negative	Local	Short term - long term	Probably	Irreversible	Medium (-)	Very Low (-)
	Alternative 2	Neutral	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Traffic Impacts</b>	Alternative 1	Negative	Local	Short term	Probable	Reversible	Medium (-)	Low (-)
	Alternative 2	Neutral	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Health And Safety</b>	Alternative 1	Negative	Local	Short- term	Probable	Reversible	Medium (-)	Very low (-)
	Alternative 2	Neutral	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Improved Safety And Security</b>	Alternative 1	Positive	Local	Short-long term (improved safety and security)	Highly Probable	Not applicable	Medium (+)	Not applicable
	Alternative 2	Negative	Local	Short-long term	Not Applicable	Reversible	Medium (-)	Not applicable
<b>Job Creation</b>	Alternative 1	Positive	Local	Short -term	Probable	Not applicable	Medium (+)	Not applicable
	Alternative 2	Negative	Local	Not Applicable	Not Applicable	Not Applicable	Medium (-)	Not Applicable

**Table 3.2: Site Preparation (Construction Phase) (fencing and vegetation removal)**

<b>LOSS OF VEGETATION</b>	<b>ALTERNATIVE 1 THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2 NO GO ALTERNATIVE</b>
Description:	The proposed site is already in use for gravel mining and thus minimum vegetation removal is required.	The no-go alternative implies that the vegetation present on the site will remain.
Nature of impact:	Negative	Neutral
Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Probable	Not Applicable
Degree to which the impact can be reversed:	Irreversible	Not Applicable
Degree to which the impact may cause irreplaceable loss of resources:	Low	No loss of resources
Cumulative impact prior to mitigation:	Low (-)	Not Applicable
Significance rating of impact prior to mitigation (Very low, Medium, MediumHigh, High, or Very-High)	Low (-)	Not Applicable
Degree to which the impact can be mitigated:	Very low (-)	No impact

Proposed mitigation:	No mitigation is required.	Not Applicable
Cumulative impact post mitigation:	Very low (-)	Not Applicable
Significance rating of impact after mitigation (Very low, Medium, MediumHigh, High, or Very-High)	Very low (-)	Not Applicable
<b>WASTE MANAGEMENT IMPACTS</b>	<b>ALTERNATIVE 1</b> <b>THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2</b> <b>NO GO ALTERNATIVE</b>
Description:	During the site preparation phase, green waste is anticipated as a result of the removal of vegetation on the site. Vegetation would need to be removed in order for the commencement of the mining activity. It cannot yet be accurately determined how much solid waste will be produced in the construction phase. The activity is not expected to generate waste in its mining phase except for minimal volume of solid waste and effluent into the respective licensed municipal streams.	The no-go alternative implies that the vegetation present on the site will remain.
Nature of impact:	Neutral (if mitigation measures adhered to, otherwise low impact)	Neutral

Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Probable	Not Applicable
Degree to which the impact can be reversed:	Fully reversible	Not Applicable
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources
Cumulative impact prior to mitigation:	Very low (-)	Not Applicable
Significance rating of impact prior to mitigation (Very low, Medium, Medium High, High, or Very-High)	Very low (-)	Not Applicable
Degree to which the impact can be mitigated:	Negligible	No impact
Proposed mitigation:	<ul style="list-style-type: none"> <li>•The contractor shall ensure that waste generated at working areas is collected and disposed at a licensed facility at least once a week.</li> <li>• It is a requirement of the Environmental Management Programme that unused material and general waste be managed and handled in accordance with the NEM: Waste Act and its regulations.</li> </ul>	Not Applicable
Cumulative impact post mitigation:	Negligible	Not Applicable

Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Negligible	Not Applicable
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**Table 3.3: Mining Phase (gravel excavation and transportation).**

INCREASE IN AMBIENT NOISE LEVEL	ALTERNATIVE 1 THE PROPOSED ACTIVITY	ALTERNATIVE 2 NO GO ALTERNATIVE
Description:	During the mining phase, the activities will require the use of equipment and machinery that will generate noise within the area. This may become a great nuisance to nearby communities. It is therefore important that the noise be as minimal as possible.	No works will be undertaken for this alternative therefore, no noise will be anticipated from the proposed activity.
Nature of impact:	Negative	Neutral
Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Highly probable	Not Applicable
Degree to which the impact can be reversed:	Reversible	Not Applicable
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable - No loss of resources	No loss of resources

Cumulative impact prior to mitigation:	Low (-)	Not Applicable
Significance rating of impact prior to mitigation (Very low, Medium, Medium High, High, or Very-High)	Low (-)	Not Applicable
Degree to which the impact can be mitigated:	Very low (-)	Not Applicable
Proposed mitigation:	<p>The following mitigation measures should be implemented:</p> <ul style="list-style-type: none"> <li>• Equipment should be operated with appropriate noise abatement accessories, such as silencers and sound hoods, which must be correctly maintained. The equipment should be operated in as diversified manner as possible (i.e. spread the operation of equipment throughout working periods rather than operating several items simultaneously).</li> <li>• Construction activities should be limited to normal working hours - between 08:00-18:00. Mondays to Fridays.</li> <li>• Machinery and equipment must not be allowed to be on when not in use.</li> </ul>	Not Applicable
Cumulative impact post mitigation:	Very low (-)	No impact



Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Very low (-)	No impact
<b>DUST IMPACTS</b>	<b>ALTERNATIVE 1</b> <b>THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2</b> <b>NO GO ALTERNATIVE</b>
Description:	During the gravel mining process excavation, dragging methods will be used. These methods are expected to result in the increase in dust within the surrounding area. Furthermore, the movement of construction vehicles on the site and the loading of gravel for transportation off the site could also results in the increase in dust. Should mitigation not be put in place, the increase in dust will become a nuisance to residents within the area.	No works will be undertaken for this alternative therefore no dust will be anticipated for this alternative.
Nature of impact:	Negative	Neutral
Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Highly probable	Not Applicable
Degree to which the impact can be reversed:	Reversible	Not Applicable

Degree to which the impact may cause irreplaceable loss of resources:	Very low (-)	No loss of resources
Cumulative impact prior to mitigation:	Medium (-)	Not Applicable
Significance rating of impact prior to mitigation (Very low, Medium, Medium High, High, or Very-High)	Medium (-)	Not Applicable
Degree to which the impact can be mitigated:	Low (-)	No impact
Proposed mitigation:	<ul style="list-style-type: none"> <li>• If required, a screen should be placed around the site to reduce the intensity of the dust at any one time</li> <li>• Sheeting or temporary screens should be used to cover stockpiles or areas generating excessive dust to prevent windblown dust</li> <li>• Ideally, excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present. During high wind conditions.</li> <li>• Stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind and where they</li> </ul>	Not Applicable

	<p>will cause minimal disturbance. Stockpiles must be managed so as to prevent the material from being spread over a wide surface, to prevent erosion and compaction of the stockpiles. In addition, this will prevent stockpiles from being washed away in the event of heavy rains.</p> <ul style="list-style-type: none"> <li>• A water tanker must be available permanently on site. The water must not be potable water. Water should be acquired either from a waste water treatment plant which is suitable for irrigation purposes, or from any other suitable grey water system.</li> <li>• The National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) must be adhered to during the stripping of the topsoil and mining activities.</li> <li>• Weather conditions must be monitored and considered upon commencement of daily operations and mining activities. Mining activities and operations must not be</li> </ul>	
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	<p>conducted on severe windy days. On severe windy days, the site agent must record this in his daily log.</p> <ul style="list-style-type: none"> <li>• In reducing fugitive dust emissions and windblown gravel, all haulage vehicles must be suitably covered when transporting materials to minimise the impact of windblown dust.</li> </ul>	
Cumulative impact post mitigation:	Low (-)	Not Applicable
Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Low (-)	Not Applicable
<b>HAZARDOUS SUBSTANCE SPILLS FROM MACHINES</b>	<b>ALTERNATIVE 1</b> <b>THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2</b> <b>NO GO ALTERNATIVE</b>
Description:	<p>During mining phase there is potential for oil spills to occur through staff negligence and leaking machinery. If close enough to the sensitive aquatic areas, this would be detrimental and result in potential long-term impact on the watercourses. It is important that the prescribed mitigation measures are adhered to at all times.</p>	<p>No works will be undertaken for this alternative therefore no impacts are anticipated in relation to the proposed activity</p>

Nature of impact:	Negative	Neutral
Extent and duration of impact	Local potentially regional extent. Short term to long term	Local and long term
Probability of occurrence:	Probable	Not Applicable
Degree to which the impact can be reversed:	Irreversible	Not Applicable
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Not Applicable
Cumulative impact prior to mitigation:	Medium (-)	Not Applicable
Significance rating of impact prior to mitigation (Very low, Medium, Medium High, High, or Very-High)	Medium (-)	Not Applicable
Degree to which the impact can be mitigated:	Very low (-)	No impact
Proposed mitigation:	<p>The following mitigation measures should be implemented:</p> <ul style="list-style-type: none"> <li>• Should diesel be stored on site, it will need to be stored on a hard surface and along the southern or western edges of the site.</li> <li>• Ensure equipment is regularly serviced and inspected to make sure there are no leaks of</li> </ul>	Not Applicable

	<p>oil, diesel, fuel, detergents or hydraulic fluids.</p> <ul style="list-style-type: none"> <li>• Servicing and maintenance of vehicles as far as possible must occur outside of the boundaries of mining permit area. If maintenance does occur on site due to breakdown, all steps must be undertaken to avoid oil spills/leakages – placement of drip trays beneath machinery and equipment. A spill kit must be at hand.</li> <li>• Drip trays must be emptied regularly and secured. Under no circumstances should oil or diesel be disposed of at the site.</li> </ul>	
Cumulative impact post mitigation:	Very low (-)	Not Applicable
Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Very low (-)	Not Applicable
<b>TRAFFIC IMPACTS</b>	<b>ALTERNATIVE 1</b>  <b>THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2</b>  <b>NO GO ALTERNATIVE</b>
Description:	During the mining phase, trucks will be transporting gravel off the site. This may result in traffic congestions within the area if traffic is not managed appropriately.	No works will be undertaken for this alternative therefore, no traffic impacts will be anticipated as a result of the proposed activity.

Nature of impact:	Negative	Neutral
Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Highly probable	Not Applicable
Degree to which the impact can be reversed:	Reversible	Not Applicable
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable – no resources will be lost.	No resources will be lost
Cumulative impact prior to mitigation:	Medium (-)	Not Applicable
Significance rating of impact prior to mitigation (Very low, Medium, Medium High, High, or Very-High)	Medium (-)	Not Applicable
Degree to which the impact can be mitigated:	Low (-)	No impact
Proposed mitigation:	<ul style="list-style-type: none"> <li>• Access to the site by construction vehicles must be strictly managed to prevent congestion on nearby roads.</li> <li>• Warning signage, flag persons, and barriers must be provided at appropriate locations.</li> <li>• Vehicles transporting gravel must be appropriate for the task.</li> </ul>	Not Applicable

	<ul style="list-style-type: none"> <li>• Access roads and roads adjacent to the site must be kept clean of soil or other material at all times during the operation phase.</li> </ul>	
Cumulative impact post mitigation:	Low (-)	No impact
Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Low (-)	No impact
<b>HEALTH AND SAFETY</b>	<b>ALTERNATIVE 1</b> <b>THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2</b> <b>NO GO ALTERNATIVE</b>
Description:	During the mining phase, this activity will require the use of equipment and machinery which may result in an increase security risk to adjacent properties, residents and workers thereof.	No works will be undertaken for this alternative therefore; no safety impacts as a result of the proposed activity will be anticipated.
Nature of impact:	Negative	Neutral
Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Probable	Not Applicable
Degree to which the impact can be reversed:	Reversible	Not Applicable



Degree to which the impact may cause irreplaceable loss of resources:	Not applicable – no resources will be lost.	No resources will be lost
Cumulative impact prior to mitigation:	Medium (-)	Not Applicable
Significance rating of impact prior to mitigation (Very low, Medium, Medium High, High, or Very-High)	Medium (-)	Not Applicable
Degree to which the impact can be mitigated:	Very low (-)	No impact
Proposed mitigation:	<ul style="list-style-type: none"> <li>• Staff should be informed that access to adjacent properties is strictly off-limits and that it will be deemed a serious offence (i.e. no fences should be jumped at any time)</li> <li>• Safety measures should be put in place to protect the pedestrians and the learners. For example, a flag man should be on site to direct the pedestrians and traffic</li> <li>• The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No.85 of 1993)</li> </ul>	Not Applicable
Cumulative impact post mitigation:	Very low (-)	No impact

Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Very low (-)	No impact
<b>IMPROVED SAFETY AND SECURITY</b>	<b>ALTERNATIVE 1</b> <b>THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2</b> <b>NO GO ALTERNATIVE</b>
Description:	With excessive gravel on site, dust storms are likely to occur in adverse weather conditions. Dust storms arise when a gust front or other strong wind blows loose gravel and dirt from a dry surface. These storms can be quite a nuisance.	Should this alternative be decided, the ground and excessive gravel will not be levelled. If the excessive gravel remains on the site, dust storms remain a risk.
Nature of impact:	Positive	Negative
Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Highly probable	Not probable
Degree to which the impact can be reversed:	Not applicable	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable	No Applicable
Cumulative impact prior to mitigation:	High (+)	Medium ( - )
Significance rating of impact prior to mitigation (Very	High (+)	Medium ( - )

low, Medium, Medium High, High, or Very-High)		
Degree to which the impact can be mitigated:	Not applicable	No impact
Proposed mitigation:	No mitigation required	Not Applicable
Cumulative impact post mitigation:	Not applicable	No impact
Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Not applicable	No impact
<b>JOB CREATION</b>	<b>ALTERNATIVE 1</b> <b>THE PROPOSED ACTIVITY</b>	<b>ALTERNATIVE 2</b> <b>NO GO ALTERNATIVE</b>
Description:	During the mining phase, temporary jobs will be created for local community. This will create an opportunity for those working on the site to learn skills in the gravel mining industry that they can use in the future. Over and above, the living standard of those working on the site will improve as they will be able to afford some basic needs.	Through this alternative, should the mining not occur, no job opportunities will be realised. This will result in no skills development through the mining activity which could be used when finding other jobs, after the two month mining phase.
Nature of impact:	Positive	Negative
Extent and duration of impact	Local and long term	Local and long term
Probability of occurrence:	Highly probable	Not probable

Degree to which the impact can be reversed:	Not applicable	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable	Not applicable
Cumulative impact prior to mitigation:	Medium (+)	Medium (-)
Significance rating of impact prior to mitigation (Very low, Medium, Medium High, High, or Very-High)	Medium (+)	Medium (-)
Degree to which the impact can be mitigated:	Not applicable	No impact
Proposed mitigation:	No mitigation required	Not Applicable
Cumulative impact post mitigation:	Not applicable	Not applicable
Significance rating of impact after mitigation (Very low, Medium, Medium High, High, or Very-High)	Not applicable	Not applicable

The negative impacts of Alternative 1 can be adequately mitigated through the implementation of the recommendations contained in the Basic Assessment Report and Environmental Management Programme. Alternative 2, the “Do Nothing” means the excessive gravel will remain and therefore safety concerns would not be improved upon.

### **15.3 The Process Undertaken to Identify, Assess and Rank the Impacts and Risks the Activity will impose on the Preferred Site**

The impact assessment phase of the BAR comprises of a number of steps in the assessment of the proposed impacts of the gravel mining activity on the surrounding environment including the physical, biological and social/cultural. The different phases include:

- Project screening and compiling of all information and relevant Acts/Guidelines;
- Identification of Interested and Affected Parties (I&AP) for Public Participation.
- Assessment and compilation of information by the EAP.

## **APPENDIX E**

### **REHABILITATION PLAN**

# EXECUTIVE SUMMARY

## Introduction and Project Background

Van Niekerk and Broers Vervoer CC wishes to develop and operate a gravel mine near Potchefstroom, North West Province (the Project). The Project is located on Portion 60 of the farm Rietpoort. Engedi Minerals and Energy has been appointed by Van Niekerk and Broers Vervoer CC to oversee the application process as well as identify and assess any additional impacts that may result from any changes to the environment.

## Terms of Reference

It is widely recognised that landscape rehabilitation, post mining is essential to reinstate a functional end land use which positively contributes towards the future biophysical and societal demands of the people and fauna living in proximity to a disturbed environment. Mining activity in South Africa has a legacy of poor rehabilitation post extraction although this has changed substantially in recent years due to legislation, enforcement and environmentally responsible practices being implemented by the mining industry.

## Aims and Objectives

The objective of the rehabilitation plan is to ensure activities associated with the infrastructure located within the mining footprint area will be designed to prevent, minimise or mitigate adverse long-term environmental and social impacts and create a self-sustaining ecosystem. The rehabilitation plan identifies the following objectives:

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

## Rehabilitation and Closure Planning

It is important that a post closure vision is defined from the outset. Workshops and Toolbox Talks are methodologies in which this vision is discussed and defined:

*"Rehabilitation of the site must be geared towards leaving an environment that is stable and acceptable to the regulators and to ensure that the land can be utilised post closure"*

According to the Chamber of Mines Guidelines for the rehabilitation of mined land 'effective rehabilitation', is defined as *"rehabilitation that will be sustainable, in the long term, under normal land management practices"* (Chamber of Mines, 2007; Department of Minerals and Energy, 2008). Mine rehabilitation therefore must be considered as an on-going process aimed at restoring the physical, chemical and biological quality or potential of air, land and water regimes disturbed by mining to a state acceptable to the regulators and to post mining land users (Whitehorse Mining Initiative, 1994). Annual rehabilitation planning and monitoring is now a legal requirement and the holder of a Mining Permit will be required to:

- Review concurrent rehabilitation and remediation activities already implemented;
- Establish rehabilitation and remediation goals and outcomes for the forthcoming 12months in line with the outcomes of the final mine closure plan;
- Establish a plan, schedule and budget for rehabilitation for the forthcoming 12months;
- Identify and address shortcomings experienced in the preceding 12 months of rehabilitation; and
- Evaluate and update the closure costs.

It is recommended that rehabilitated land should be reconstructed to pre-mining grazing within the areas where surface infrastructure will be.

With the evolution of the closure and rehabilitation plan, the post-mining use of the mining infrastructure needs to be evaluated and determined whether or not it will support the mine's vision and to ensure that if infrastructure remains that it can be utilised post closure.



In instances where surface infrastructure remains post closure, the mine must ensure that it could be used sustainably by local communities. If there is no sustainable use for mine infrastructure it is recommended that such infrastructure rather be demolished to avoid it being vandalized.

When utilising soil for rehabilitation purposes the following should be avoided if possible:

- Contamination impacts on soil quality;
- Erosion impacts on soil volume;
- Incorrect storage and handling of soil, leading to a deterioration in soils quality
- Indiscriminate storage impacts on soil quality; and
- Utilising soil for other purposes, other than rehabilitation, leading to impacts on soil volume (loss of soil as a resource).

The following steps should be followed during infrastructure removal:

- Identify infrastructure items that may be of use to the future land users;
- In association with those users and the authorities, define what could be left, how it would be used and how sustainable that use would be;
- The remaining infrastructure should be assessed for its suitability for reuse/recycling;
- The re-usable items should be removed from the site;
- Hazardous material locations and deposits require specialised assessment and analysis to determine how these materials should be decontaminated and to ensure that all residual hazardous materials are disposed of at licensed hazardous waste disposal facilities;
- Mining infrastructure that will be left on site must be rendered safe;
- Remaining structures should be demolished and the demolition rubble removed;
- The final landform agreed for the infrastructure areas should be created; and
- Soil should be replaced on the disturbed area and re-vegetated.

The report provides specific measures associated with the rehabilitation of the following infrastructure:

- Mine development;

- Access and haul roads and storm water drains;
- Crushing and Screening Operations;
- Stockpiling;
- Water management infrastructure; and
- Demolition and removal of all infrastructures.

Once the site has been cleared of all removable infrastructures (excluding infrastructure identified for future use) and rubble the exposed underlying materials should be re-shaped to create a gently sloping, free-draining topography. The topsoil and subsoil that was removed during the construction phase should be replaced (as the final top layer), fertilised and dripped. In cases where the foundations of the structures are impractical to remove, the foundations should be covered with a combination of soft overburden or B horizon material topped with a layer of topsoil, which should be at least 1 m thick (700 mm of B horizon and 300 mm of topsoil). After these tasks have been completed the infrastructure sites can be included in the rehabilitation process for re-vegetation, monitoring and maintenance.

The rehabilitation “seed cocktails” generally consist of grasses as they rapidly establish and provide excellent protection against surface erosion. Soils are mostly gravelly and do not retain water well. Given the extreme conditions, self-seeding and *stoloniferous* grasses have been suggested.

## Monitoring and Maintenance

The purpose of monitoring is to ensure that the rehabilitation objectives are met and that the rehabilitation process is followed. The physical aspects of rehabilitation should be carefully monitored as well as during the progress of establishment of desired final ecosystems.

The following items should be monitored whilst rehabilitation activities are being performed:

- Alignment of actual final topography to agreed planned landform (surveyor's records);
- Depth of topsoil stripped and placed (surveyor's records);
- Chemical, physical and biological status of replaced soil (soil analyses);
- Erosion status (visual observations and records);
- Surface drainage systems and surface water quality at agreed locations (surface water assessments);
- Vegetation basal cover (fauna and flora monitoring);
- Vegetation species diversity (fauna and flora monitoring);
- Faunal re-colonisation (Sherman and pitfall trapping) (fauna and flora monitoring);and
- Proportion of mined land that has been fully rehabilitated (rehabilitation monitoring).

Monitoring of surface resources as well as air quality (dust sampling) should take place on a monthly basis for the first 12 months after rehabilitation has been completed. After the first 12 months of monitoring, the frequency of sampling should be adjusted to quarterly monitoring for the surface and groundwater resources. This monitoring should continue for an additional 36-48 months.

## Conclusion

The overall objective of the rehabilitation plan is to ensure activities associated with the infrastructure within the mining footprint area will be designed to prevent, minimise or mitigate adverse long-term environmental and social impacts and create a self-sustaining ecosystem.

This report must be considered as a living document and is required to be updated on an annual basis with respect to the legislative requirements which have come into effect. In terms of recommendations the following was made in the original report compiled and remain unchanged:

- It is recommended that the financial provision for closure and rehabilitation be annually updated as per legislative requirements outlined in GN R 1147 (GG 39425 of 20 November 2015);
- Site infrastructure:
  - Long term management of the rehabilitated areas will be required via contractual agreements with land owners in the area;
  - Rehabilitation should also be undertaken to best practise and taking into account legal requirements.
- Regular audits should be undertaken to monitor the progress of areas that have been rehabilitated for a period of 3-4 years at a minimum;
- Regular audits should be undertaken by a soil scientist during the soil stripping process. This will guarantee that soils are stripped and stockpiled correctly; and
- Surface water and groundwater monitoring should be undertaken to determine the impacts associated with operations of the proposed mine.

# **1 METHODOLOGY**

## **1.1 Rehabilitation and Closure Planning**

### **1.1.1 Legal Requirements**

Relevant legislation governing mine rehabilitation, closure cost assessment (closure provision), and closure planning is described in National Environmental Management Act, as Amended (NEMA). Section S24(R)(3) of the NEMA now deals with Mine Closure. This Section states that every holder, holder of an old order right or owner of works must plan, manage and implement such procedures and requirements in respect of the closure of mine as may be prescribed. In support of this is Regulation GN R 982, which provides the substantive content requirements for closure and rehabilitation plans. In addition, the Financial Provisioning Regulations, 2015 were published under GN R 1147 (GG 39425 of 20 November 2015) and are now in operation. The Financial Provisioning Regulations are applicable to rehabilitation and closure plans as they prescribe the minimum content of an “annual rehabilitation plan” and the minimum content of a “final rehabilitation, decommissioning and mine closure plan”.

The rehabilitation plan will be relevant for a period of 1 year, after which the plan will be updated by the holder of a right or permit to reflect progress relating to rehabilitation and remediation activities in the preceding 12 months and to establish a plan, schedule and budget for the forthcoming 12 months. The annual rehabilitation plan must contain information that defines concurrent rehabilitation and remediation activities for the forthcoming 12 months and how these relate to the operations' closure vision, as detailed in the final rehabilitation, decommissioning and mine closure plan. It must also indicate what closure objectives and criteria are being achieved through the implementation of the plan. The final rehabilitation, decommissioning and mine closure plan must be measurable and auditable, must take into consideration the proposed post-mining end use of the affected area and must contain information that is necessary for the definition of the closure vision, objectives and design and relinquishment criteria, indicating what infrastructure and activities will ultimately be decommissioned, closed, removed and remediated and the risk drivers determining actions, indicating how the closure actions will be implemented to achieve closure relinquishment criteria and indicating monitoring, auditing and reporting requirements.

There are several guideline documents which provide recommendations on how rehabilitation and closure should be undertaken. For the purpose of the plan the following guideline documents were considered:

- Guidelines for the Rehabilitation of Mined Land. Chamber of Mine of South Africa/Coaltech. November 2007;
- Surface Strip Coal Mining Handbook. South African Colliery Managers Association, Project SACMA 01/03. Compiled by R J Thompson, 2005; and
- Best Practice Guidelines (BPGs) series developed by the Department of Water Affairs (DWA).  
In addition to the abovementioned guideline documents, further regulations must be considered pertaining to closure and rehabilitation. These are as follows:
- Mineral and Petroleum Resources Development Act 28 of 2002: Mineral and Petroleum Resources Development Regulations (2004);
- International Finance Corporation (IFC) Environmental, Health and Safety (EHS)guidelines;
- Constitution of the Republic of South Africa Act 108 of 1996;
- National Environmental Management Act 107 of 1998, as amended;
- National Water Act 36 of 1998;
- National Environmental Management: Waste Act 59 of 2008, as amended;
- Mine Health and Safety Act 29 of 1996;
- National Environmental Management: Air Quality Act 39 of 2004;
- National Heritage Resources Act 25 of 1999; and
- Conservation of Agricultural Resources Act 43 of 1983.

### **1.1.2 Approach**

There were a number of tasks that were involved in the compilation of this rehabilitation plan for the proposed project operation; namely:

- Review of all existing information (specifically the contents of the previous rehabilitation plan);
- Setting objectives;
- GIS mapping; and

- Report compilation.

## 2 ASSUMPTIONS AND LIMITATIONS

- It is assumed that the rehabilitation plan will be based on the final end land use;
- The rehabilitation plan should be revised and updated annually to take into account further developments, which is now a legal requirement in terms of the Financial Provisioning Regulations (GN R 1147 of 20 November 2015).

## 3 STRATEGIC PLANNING AND SUSTAINABLE DEVELOPMENT FOR CLOSURE

### 3.1 Closure Vision/Land Use Vision

It is important that a post closure vision is defined from the outset. Workshops and Toolbox Talks are methodologies in which this vision is discussed and defined:

### 3.2 Post-Mining Land Use

According to the Chamber of Mines Guidelines for the rehabilitation of mined land ‘effective rehabilitation’, is defined as *“rehabilitation that will be sustainable, in the long term, under normal land management practices”* (Chamber of Mines, 2007; Department of Minerals and Energy, 2008).

Annual rehabilitation planning and monitoring is now a legal requirement and the holder of a mining permit will be required to:

- Review concurrent rehabilitation and remediation activities already implemented;
- Establish rehabilitation and remediation goals and outcomes for the forthcoming 12months in line with the outcomes of the final mine closure plan;
- Establish a plan, schedule and budget for rehabilitation for the forthcoming 12months;
- Identify and address shortcomings experienced in the preceding 12 months of rehabilitation; and
- Evaluate and update the closure costs.

It is recommended that rehabilitated land should be reconstructed to pre-mining grazing within the areas where surface infrastructure will be.

### **3.3 Post-Mining Infrastructure Use**

With the evolution of the closure and rehabilitation plan, the post-mining use of the mining infrastructure needs to be evaluated and determined whether or not it will support the mine's vision and to ensure that if infrastructure remains that it can be utilised post closure.

In instances where surface suitable infrastructure remains post closure, the mine must ensure that it could be used sustainably by local communities. If there is no sustainable use for mine infrastructure it is recommended that such infrastructure rather be demolished to avoid it being vandalized.

### **3.4 Key Stakeholders and Closure Needs**

The aim of this step is to identify in the local community the individuals, organisations and/ or businesses that are interested in participating in the realisation of the closure and assessments of infrastructure for post closure use. Stakeholder engagement regarding the project is and will be an ongoing process. With specific reference to stakeholder engagement associated with closure and rehabilitation, the Interested and Affected Parties (I&APs) will need to be involved in the closure planning process from the beginning, through the life of mine and should be part of the mine closure solution. The affected stakeholders are incorporated into the agreed draft closure vision that has been defined in Closure Vision.

The public participation process (PPP) should be viewed as an on-going process during the EIA Process and should present stakeholders with relevant and accessible project information as it becomes available. The setting up of the Communication Strategy will encourage open and transparent communication for the development of trust between all stakeholders and will contribute to the facilitation of a project whose design and implementation, if approved, will be acceptable, and ideally beneficial, to all stakeholders involved.

Any changes that occur with respect to the closure vision or particular aspects associated with closure and rehabilitation will require input from the project stakeholders.



## **4 LAND PREPARATION**

The aim of land preparation is to ensure that the area impacted is kept to an absolute minimum. All infrastructure and mining activities need to be designed with closure in mind. Sensitive areas should be demarcated as no-go areas and managed appropriately. Top soil stockpile areas are also to be demarcated as no-go areas.

### **4.1 Vegetation conservation**

The vegetation is mostly to be mulched across the areas of disturbance prior to soil stripping. The mulched vegetation must be removed together with the topsoil so as to preserve the organic content in the soil as well as the seed bank for the replacement of soil and re-vegetation. Protected trees which require permits for their relocation are either provincially protected and listed under Schedule 12 of North West Environmental Management Act (LEMA; 2003) or nationally protected and listed under the Protected Trees List as part of the National Forests Act, 1998 (Act No. 84 of 1998). These trees may therefore not be mulched at all.

### **4.2 Soil**

It is expected that soil will be stripped during the construction phase of the project. This material will be utilised as a cover material over the waste rock berm that will be constructed around the proposed operations. This material will act as the growth medium for the establishment of vegetation and assist with visually screening of the operation from the surrounding community. Once the soils has been utilised on the waste rock berm it is suggested that the berm be vegetated to prevent loss of this soil resource.

When utilising soil for rehabilitation purposes the following should be avoided if possible:

- Contamination impacts on soil quality;
- Erosion impacts on soil volume;
- Incorrect storage and handling of soil, leading to a deterioration in soils quality
- Indiscriminate storage impacts on soil quality; and

- Utilising soil for other purposes, other than rehabilitation, leading to impacts on soil volume (loss of soil as a resource).

#### 4.2.1 Soil Types for Stripping and Stockpiling

The soil survey that was conducted for the proposed project must be utilised to generate the soil stripping guideline. The boundaries of the different soil types should be demarcated and each soil horizon (within each soil type's suitability for rehabilitation) should be defined. If possible, the stripped soils should be replaced immediately in a similar location in the topographical slope to their natural location (for the proposed project soil will be stripped and used to construct a berm and the unused balance stockpiled. After vegetation has been stripped, soil types need to be pegged out accurately (pegging out soil types ahead of stripping). The topsoil and subsoil should also be removed from the areas associated with the proposed mine infrastructure and stockpiles. Table 17-1 provides measures that should be considered during the stripping of soil during the construction phase of the project.

**Table 17.1: Soil stripping measures during construction and operation**

<b>Construction (including site preparation)</b>
Plan site clearance and alteration activities for the dry season (May to October).
Restrict extent of disturbance within the Rietpoort project site and minimise activity within designated areas of disturbance.
Minimise the period of exposure of soil surfaces through dedicated planning;
Stripping operations should only be executed when soil moisture content will minimise the risk of compaction (during dry season).
It is proposed that there will not be a dedicated soil stockpile and soil will be placed on the waste rock berm as rehabilitation growth medium for establishment of vegetation.
<b>Operation</b>

Monitoring of the condition of all unpaved roads is necessary due to the high rainfall and potential water runoff and erosion of the soils present in the Van Niekerk and Broers Vervoer CC project site. Water runoff from compacted road surfaces may cause erosion of road shoulders degrading the road surface. Weekly inspections need to be carried out of all unpaved roads especially during the rainy season.

Stockpiling should be minimised as far as possible as it increases compaction and decreases the viability of the seed bank. The soils should be stockpiled on the parent soils and as close to the originally stripped and final rehabilitation areas as possible. The top and subsoils are to be stockpiled in a berm like manner within the project area.

#### **4.2.2 Stockpile Management**

Established stockpiles should be managed to ensure that soil losses are minimised and that additional damage to the physical, chemical or biotic content is minimised. Stockpile soil health, volume and biotic integrity can potentially be harmed by factors including erosion, 'borrowing' for other purposes, contamination and water logging. Stockpiles should be re-vegetated to avoid soil loss due to erosion and weed colonisation if stockpiles remain in the same location for more than one growing season and have not re-vegetated naturally. A similar seed mixture to the final mixture recommended for rehabilitation should be used.

The looseness of the soil in stockpiles should be preserved (assuming stripping and construction of the stockpiles are done correctly) by fertilising and seeding by hand, hydroseeding (as is the norm in the industry) or seeding aerially to minimise the introduction of compaction. If stockpiles are already compacted, standard agricultural equipment can be used to establish grass cover. Weed infestation should also be controlled on the stockpiles by approved methods and herbicides (e.g. Roundup).

It is very important that soils are only used for the intended purposes. The dumping of waste materials next to or on stockpiles and the pumping out of contaminated water from infrastructure areas are hazards to stockpiles. Employees must be made aware of these hazards and a detailed management

and monitoring programme should be put in place. It is proposed that the berm that surrounds the proposed project site is vegetated.

#### 4.2.2.1 Compaction Avoidance

Soils should be stockpiled loosely. Achieving this will depend on the equipment being used during the stripping and stockpiling process. Soils should be dumped in a single lift if truck and shovel methods are used. If the dumps are too low, then the height could be increased by using a dozer blade or back actor bucket to raise the materials. The use of heavy machinery should be avoided as it results in the compaction of soils and destruction of the soil structure. It is not recommended that a bowl scraper or grader be used to level and shape the stockpiles. If heavy machinery must be used, then compaction can be reduced by stripping and dumping as thick a cut as possible. Deposition of soils in a single track line may also reduce the compaction of the dumped or replaced soil.

## 5 REHABILITATION ACTIONS

The criteria which are described herein are mostly conceptual actions and the table below gives the definitions of the various aspects involved in the compilation of the plan and the level of detail required at this time of the project. Some areas may at a further stage than anticipated, and this is described in the summary table below.

**Table 18.1: Definitions of the main closure criteria of a preliminary closure plan**

Main criteria	Definition of preliminary closure plan requirements
Closure criteria – Preliminary Rehabilitation Plan	The criteria used in the closure cost estimate are based on experience and available information.
Impacts / Mitigation - Preliminary Rehabilitation Plan	The potential closure and post closure impacts are based on general experience and technical investigations or significance rating.

Rehabilitation – Preliminary Rehabilitation Plan	The suggested rehabilitation methods are based on experience and known methods from other sites. No trails have been undertaken.
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## 5.1 Physical Closure

This section refers to the recommended actions to be taken when the physical surface structures associated with the recently ceased mining needs to be decommissioned, demolished, closed and ensured to be safe. This only includes infrastructure within the 3 ha mining footprint area.

## 5.2 Surface Closure

### 5.2.1 Infrastructure Removal

The following steps should be followed during infrastructure removal:

- Identify infrastructure items that may be of use to the future land users;
- In association with those users and the authorities, define what could be left, how it would be used and how sustainable that use would be;
- The remaining infrastructure should be assessed for its suitability for reuse/recycling;
- The re-usable items should be removed from the site;
- Hazardous material locations and deposits require specialised assessment and analysis to determine how these materials should be decontaminated and to ensure that all residual hazardous materials are disposed of at licensed hazardous waste disposal facilities;
- Mining infrastructure that will be left on site must be rendered safe;
- Remaining structures should be demolished and the demolition rubble removed;
- The final landform agreed for the infrastructure areas should be created; and

Soil should be replaced on the disturbed area and re-vegetated.

## **5.2.2 Rehabilitation of Infrastructure**

The following section gives a brief description regarding rehabilitation and closure of the infrastructure associated with surface infrastructures.

### **7.2.2.1 Mine Infrastructure:**

The closure costing assessment undertaken provided a financial quantum for the demolition of mine infrastructure. Infrastructure such as power lines etc., could be utilised post closure to assist with the development of the area once closure of the site occurs. In the event that such infrastructure remains the associated long term liabilities need to be assessed and determined.

In the instance that such infrastructure is decommissioned the following should be implemented:

- All infrastructure, including buildings and selected access roads are removed and appropriate rehabilitation measures implemented to achieve the desired final land use;
- Any hazardous material found within the areas is removed and disposed of at the appropriate facility; this includes hydrocarbon spillages that may have occurred to soil. These areas need to be remediated using the appropriate measures and either the soil needs to be bio remediated or disposed of at a licensed hazardous waste disposal site;
- Concrete facilities, such as supporting foundations, should be demolished to 1 m below ground level;
- The mine areas must be cleared of all demolition waste and rubble;
- When shaping of the site is undertaken, reshaping must be free draining and should resemble the surrounding topography; shaping should be signed off by the chief land surveyor;
- Appropriate topsoil must be placed back on disturbed areas, the thickness of topsoil deposited should be aligned to the final land use;
- An appropriate seed mixture of species that are drought tolerant should be utilised for rehabilitation purposes.

### **7.2.2.2 Run of Mine and Stockpiles**

These stockpiles that will be designed and constructed will be temporary for the life of mine, when the mine is decommissioned, these facilities should also be decommissioned and rehabilitated. Areas where stockpiles are located need to be cleaned up of any contamination and disposed of in the appropriate manner. The area needs to be shaped and ripped to an appropriate depth (normally 1m) and should be free draining. An appropriate seed mixture should be utilised and monitoring of alien invasive needs to be undertaken.

#### **7.2.2.3 Areas where hydrocarbons and hazardous materials are stored (Fuel Infrastructure)**

Facilities such as the fuel facility will need to be decommissioned and made safe. All infrastructures, such as tanks, that potentially could be utilised for future use should be removed. Concrete lined bunded areas need to be broken down and this material disposed of at an appropriate facility. Shaping, topsoil replacement and vegetation establishment can commence once this has been undertaken.

#### **7.2.2.5 Waste Rock Berms/Stockpiles**

Topsoil and subsoil from the proposed waste rock stockpile footprint should be stripped and stockpiled with the initial purpose of delimiting the perimeter of the stockpile prior to placing the waste rock on site. It has been assumed that a proportion of the waste rock will be utilised (assumed to be inert) during the construction phase as a berm and the remainder of the waste rock will be stockpiled.

Taking this into account the rehabilitation of the final waste rock stockpile will occur during the closure phase.

A berm will be constructed around the proposed project site and will consist of rock material extracted during mining operations. The soil that is also stripped during the construction phase should be placed on this berm and shaped. The soil will act as a growth medium for the establishment of vegetation and aid in screening the operations. It is proposed that the berm will remain post closure, this it is crucial that it is constructed appropriately and made safe. The vegetation of the berm will

minimise the potential for erosion on the side slopes. To further limit the erosion potential, indigenous vegetation should be seeded prior to the onset of the wet season.

Maintenance of the vegetation and topsoil on the berm must take place after closure with the areas of erosion being rehabilitated and re-vegetated. This should take place for a minimum of three-four years or until appropriate vegetation has established on the berm.

### **5.3 Biophysical Closure and Rehabilitation**

#### **5.3.1 Final Landform and Ecological Functionality**

In terms of the remaining infrastructure, once the site has been cleared of all removable infrastructure and rubble the exposed underlying materials should be reshaped to create a gently sloping, free-draining topography. The topsoil and sub soil that was removed during the construction phase should be replaced (as the final top layer), fertilised and ripped. In cases where the foundations of the structures are impractical to remove, the foundations should be covered with a combination of soft overburden or B horizon material topped with a layer of topsoil, which should be at least 1 m thick (700 mm of B horizon and 300 mm of topsoil). After these tasks have been completed the infrastructure sites can be included in the rehabilitation process for re-vegetation, monitoring and maintenance.

##### **5.3.1.1 Final Land Use and Capability**

It is recommended that rehabilitated land should as far as possible, be reconstructed to pre-mining grazing capabilities within the areas where surface infrastructure will be.

##### **5.3.1.2 Soil Replacement**

###### **5.3.1.2.1 Location**

Once the final land-form has been created, soil replacement can begin. The soils are to be replaced, if possible, into the original locations of these soils.



#### **5.3.1.2.2 Compaction Avoidance**

Compaction limits the effectiveness of replaced soils. The equipment used during the replacement of the soils has a major impact on the compaction levels. Ideally heavy machinery should not be used to spread and level soils during replacement. The truck and shovel method should be used since it causes less compaction than, for example, a bowl scraper.

When using trucks to deposit soils, the full thickness of the soil required can be placed in one lift. This does, however, require careful management to ensure that the correct volumes of soil are replaced. The soil piles deposited by the trucks will have to be smoothed before re-vegetating the area. The soils that are deposited with trucks need to be smoothed before re-vegetation can take place. A dozer (rather than a grader) should preferably be used to smooth the soils since it exerts a lower bearing pressure and thus compacts less than wheeled systems.

#### **5.3.1.2.3 Soil Amelioration**

Replaced soils require both physical and chemical amelioration as the actions of soil removal, stockpiling and replacement result in high levels of soil compaction and a dilution of the fertility of the soil originally present and concentrated in the surface layers.

The actions that should be taken during the amelioration of soils are as follows:

- The deposited soils must be ripped to ensure reduced compaction;
- An acceptable seed bed should be produced by surface tillage;
- Restore soil fertility;
- Incorporate the immobile fertilisers in to the plant rooting zone before ripping; and
- Apply maintenance dressing of fertilisers on an annual basis until the soil fertility cycle has been restored.

#### **5.3.1.3 Re-Vegetation and Biodiversity Establishment**

##### **5.3.1.3.1 Aims and Objectives**

The main aim of re-vegetation for the project area is to restore the area to the indigenous Bushveld. It is advised to restore the project area as far as possible to wild game grazing potential or higher. The overall objectives for the re-vegetation of reshaped and top-soiled land are to:

- Prevent erosion;
- Restore the land to the agreed land capability;
- Re-establish eco-system processes to ensure that a sustainable land use can be established without requiring fertilizer additions; and
- Restore the biodiversity of the area as far as possible.

#### **5.3.1.3.2 Rehabilitation Species**

The rehabilitation “seed cocktails” generally consist of grasses as they rapidly establish and provide excellent protection against surface erosion. The area has a relatively low rainfall with evaporation often 4 times higher than rainfall on an annual basis. Soils are mostly gravelly and do not retain water well. Given the extreme conditions, self-seeding and *stoloniferous* grasses have been suggested.

#### **5.3.1.3.3 Re-Vegetation**

The stockpiles and topsoil storage areas need to be stabilised with vegetation, mainly grasses. Long-term post-closure rehabilitation will allow the re-vegetation of the grasses, bushes and trees. Given that the area is highly water stressed, hydroseeding is most likely not a viable option. The methodology of a Pitting Machine is recommended for this area and climate. The project area is a summer rainfall region and the first significant rains generally occur around October.

- It is advised to seed the grass seed mixture soon after the first rains of the wet summer season. These areas are to remain as “No Go” areas and all grazing animals must be kept out.
- Fertilising of 250kg/ha 2:3:2 (22) is proposed at seeding time and a follow up dose during the first season following good rain.
- Maintenance applications of 100kg/ha LAN can be applied after good rain in the follow up season.

#### **5.3.1.4 Surface and Groundwater**

The final profile achieved should be acceptable in terms of the surface water drainage requirements and the end land use objectives.

#### **5.3.2 Air Quality**

Revegetation is critical for acceptable closure of the area to achieve sustainable and good air quality. It is recommended to minimise the erosion to reduce the potential for fugitive dust generation.

### **6 MONITORING AND MAINTENANCE**

The purpose of monitoring is to ensure that the rehabilitation objectives are met and that the rehabilitation process is followed. The physical aspects of rehabilitation should be carefully monitored as well as during the progress of establishment of desired final ecosystems.

The following items should be monitored whilst rehabilitation activities are being performed:

- Alignment of actual final topography to agreed planned landform (surveyor's records);
- Depth of topsoil stripped and placed (surveyor's records);
- Chemical, physical and biological status of replaced soil (soil analyses);
- Erosion status (visual observations and records);
- Surface drainage systems and surface water quality at agreed locations (surface water assessments);
- Groundwater quality at agreed locations (groundwater assessments);
- Vegetation basal cover (fauna and flora monitoring);
- Vegetation species diversity (fauna and flora monitoring);
- Faunal re-colonisation (Sherman and pitfall trapping) (fauna and flora monitoring); and
- Proportion of mined land that has been fully rehabilitated (rehabilitation monitoring).

Monitoring of surface and groundwater resources as well as air quality (dust sampling) should take place on a monthly basis for the first 12 months after rehabilitation has been completed. Aquatic ecosystems should be monitored bi-annually i.e. once during the wet season and once during the dry

season. After the first 12 months of monitoring the frequency of sampling should be adjusted to quarterly monitoring for the surface and groundwater resources. Aquatic ecosystems should still be monitored on a bi-annual basis and dust sampling should be undertaken on a monthly basis. This monitoring should continue for an additional 36-48 months.

The overall objective of the rehabilitation plan and this subsequent addendum is to ensure activities associated with the infrastructure within the mining footprint area will be designed to prevent, minimise or mitigate adverse long-term environmental and social impacts and create a self-sustaining ecosystem.

## **6.1 Final Topography**

The topography that is achieved during rehabilitation should be monitored and compared to the planned topography. The final profile achieved should be acceptable in terms of the surface water drainage requirements and the end land use objectives. The survey department should do an assessment of the reshaping carried out on the site and sign off should be obtained from the rehabilitation specialist before the topsoil is replaced.

## **6.2 Depth of Topsoil Stripped and Replaced**

The recovery and effective use of the usable topsoil available is very important. It is also important to undertake regular reconciliation of the volumes stripped, stockpiled and returned to the rehabilitated areas. A topsoil balance can be used to keep track of soil resources on the mine.

A final post-mining rehabilitation performance assessment should be done and information should be adequate for closure applications that involve:

- Assessment of rehabilitated soil thickness and soil characteristics by means of auger observations using a detailed grid;
- A post-mining land capability map based on soil thickness and characteristics;
- A proposed post-mining land use map;
- Erosion occurrences;

- Fertility analysis and soil analysis; and
- Representative bulk density analysis.

### **6.3 Chemical, Physical and Biological Status of Replaced Soils**

It is advised that after rehabilitation the depth of the replaced soils should be assessed using a soil auger in a regular grid pattern. The standard spacing of auger holes is 100 m by 100 m which results in one hole per hectare. It is suggested that each auger hole is georeferenced and that the results are plotted. The auger points can be used to identify compact soil layers, the degree of disturbance of the soil and the plant rooting pattern.

It is recommended that soil fertility sampling is undertaken independently of the auger survey. The land should be split into logical land use units and should not be bigger than 100 ha. These assessments should be conducted pre-establishment to ensure that immobilenutrients can be applied and incorporated deep into the plant rooting zone during the initial tillage process.

### **6.4 Erosion**

Erosion monitoring of rehabilitated areas should be undertaken for a minimum of 3-4years. Areas with excessive erosion should be identified. Erosion can either be quantified or the occurrence thereof simply recorded for the particular location.

### **6.5 Surface Water**

#### **6.5.1 Drainage systems**

The functionality of the surface water drainage systems should be assessed on an annual basis. This should preferably be done after the first major rains of the season and then after any major storm. An assessment of these structures will ensure that the drainage on the recreated profile matches the rehabilitation plan as well as to detect early on when any drainage structures are not functioning efficiently. These can then be repaired or replaced before it causes significant erosion damage.

#### **6.5.2 Water quality**

The quality of all water leaving the property should be monitored on a regular basis (as per the EMP) to ensure compliance of the various constituents with the standards approved by the Department of Water and Sanitation (DWS). Samples should be analysed for particulate and soluble contaminants as well as biological. Additional monitoring should include aquatic bio-monitoring (invertebrates, habitat, waterquality and fish) on a bi-annual basis (high and low flow) to determine the ecologicalfunctioning and health of the rivers and streams, in and around the rehabilitated areas. Theecological functioning of the wetlands should similarly be assessed on an annual basis.

## **6.6 Vegetation Basal Cover**

Basal cover refers to the proportion of ground at root level which is covered by vegetationand by the rooting portion of the cover plants. The line-transect method can be used to establish sampling positions. A target of 15% basal cover should beset for fully established vegetation

### **6.6.1 Vegetation Species**

Post rehabilitation biodiversity assessments and surveys should be undertaken by externalexperts to establish the full range of plants that have become established. Summer andwinter samplings should be done during these assessments. These type of assessmentsshould continue for a minimum of 3-4 years or until an appropriate vegetation cover andspecies composition has established.

## **7 CONCLUSION**

The overall objective of the rehabilitation plan and addendum is to ensure activitiesassociated with the infrastructure within the mining footprint area will be designed to prevent,minimise or mitigate adverse long-term environmental and social impacts and create a self-sustainingecosystem.

This report must be considered as a living document and is required to be updated on anannual basis with respect to the legislative requirements which have come into effect.

- In terms of recommendations the following was made in the original report compiledand remain unchanged:

- It is recommended that the financial provision for closure and rehabilitation be annually updated as per legislative requirements outlined in the Financial Provisioning Regulations, GN R 1147 (GG 39425 of 20 November 2015);
- Site infrastructure:
  - Long term management of the rehabilitated areas will be required via contractual agreements with land owners in the area;
  - Rehabilitation should also be undertaken to best practise and taking into account legal requirements;
- Regular audits should be undertaken to monitor the progress of areas that have been rehabilitated for a period of 3-4 years at a minimum;
- Regular audits should be undertaken by a soil scientist during the soil stripping process. This will guarantee that soil are stripped and stockpiled correctly; and
- Surface water and groundwater monitoring to be undertaken to determine the impacts associated with operations of the proposed mine.

**APPENDIX F**

**CALCULATED QUANTUM**



Applicant:  
Evaluators:

VAN NIEKERK AND BROERS VERVOER CC (FS 10694 MP)  
Engedi Minerals and Energy (Pty) Ltd

Location:  
Date:

Potchefstroom  
Nov-19

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	16	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	10	228	1	1	2280
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	336	1	1	0
3	Rehabilitation of access roads	m2	20	41	1	1	820
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	395	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	216	1	1	0
5	Demolition of housing and/or administration facilities	m2	15	455	1	1	6825
6	Opencast rehabilitation including final voids and ramps	ha	0.08	238697	1	1	19095.76
7	Sealing of shafts adits and inclines	m3	0	122	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	159131	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	198195	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	575653	1	1	0
9	Rehabilitation of subsided areas	ha		133249	1	1	0
10	General surface rehabilitation	ha	0.1	126059	1	1	12605.9
11	River diversions	ha	0	126059	1	1	0
12	Fencing	m	0	144	1	1	0
13	Water management	ha	0	47931	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0.3	16776	1	1	5032.8
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							46659.46

1	Preliminary and General	5599.1352	weighting factor 2	5599.1352
			1	
2	Contingencies	4665.946		4665.946
Subtotal 2				56924.54

VAT (15%)	7969.44
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Grand Total	R 64,893.98
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## **APPENDIX G**

### **EAP UNDERTAKING**

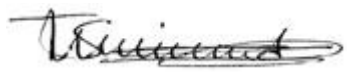
## 1. Undertaking

The EAP herewith confirms:-

- 2(a) the correctness of the information provided in the reports;
- 2(b) the inclusion of comments and inputs from stakeholders and I&APs;
- 2(c) the inclusion of inputs and recommendations from the specialist reports whererelevant; and
- 2(d) the acceptability of the Project in relation to the finding of the assessment and level of mitigation proposed.

### UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I Tshimangadzo Mulaudzi herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.

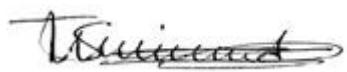


Signature of the EAP

**DATE: 17 February 2020**

### UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Tshimangadzo Mulaudzi herewith undertakes that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



Signature of the EAP

**DATE: 17 February 2020**